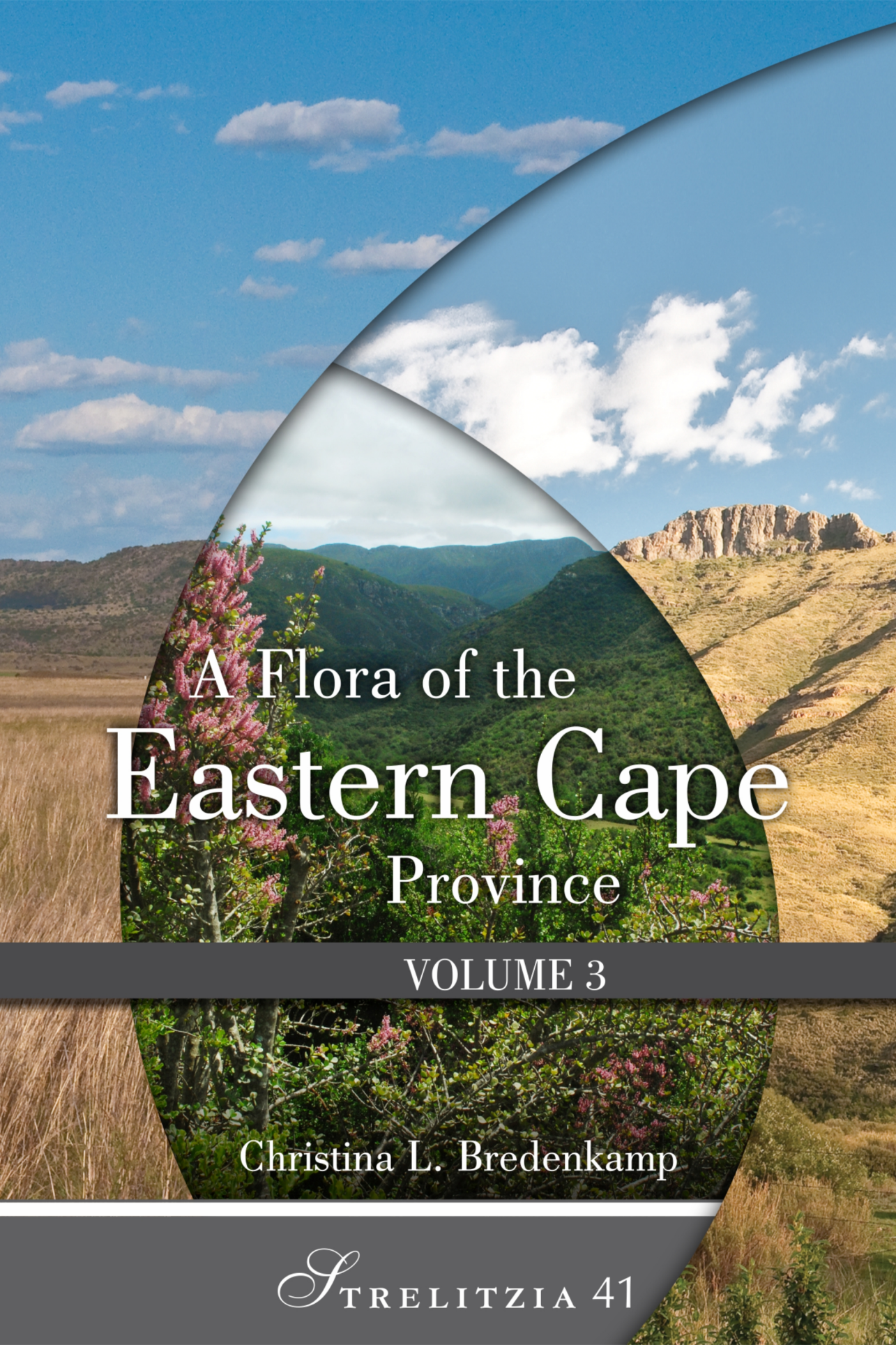
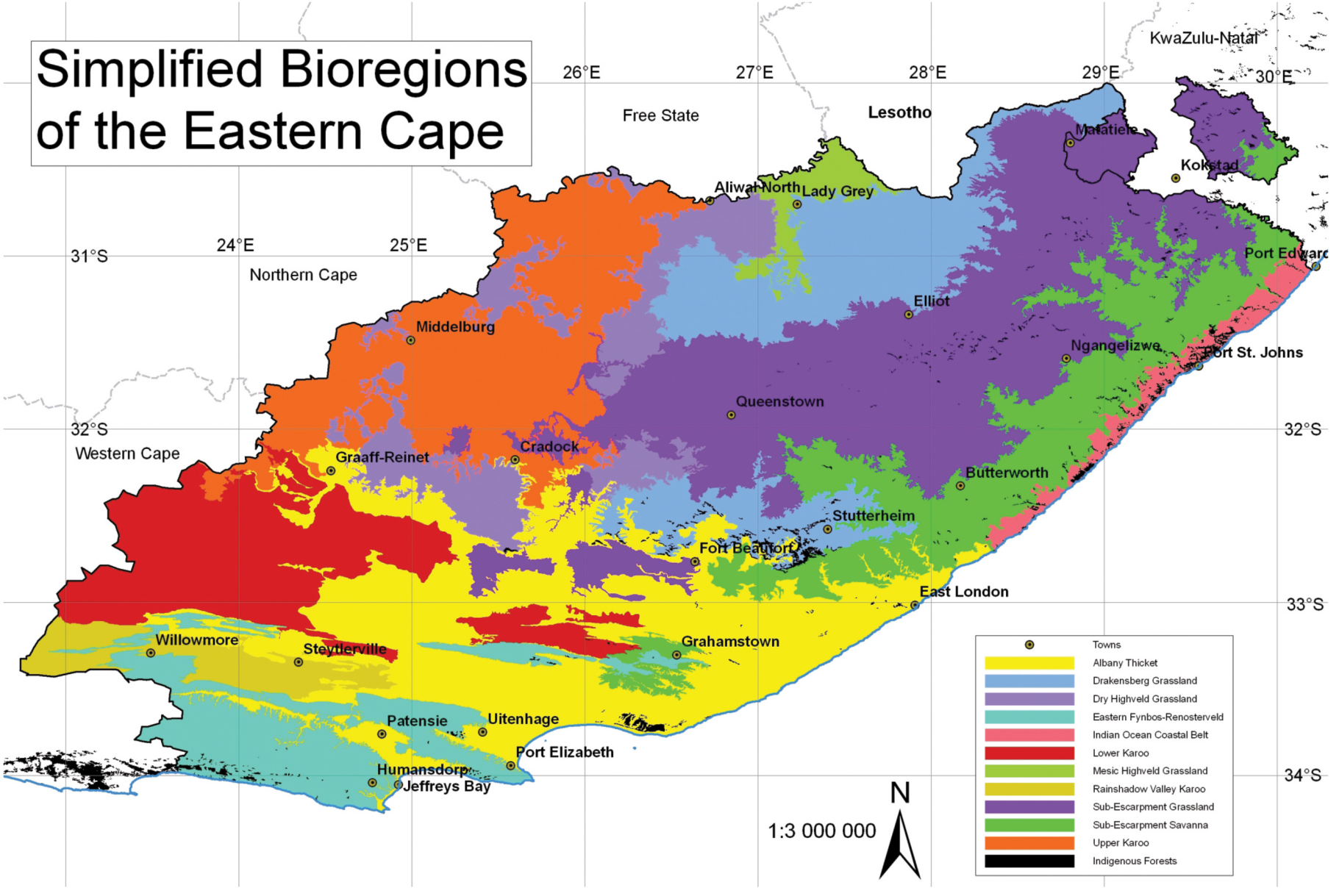

A Flora of the
Eastern Cape
Province
VOLUME 3
Christina L. Bredenkamp
STRELITZIA 41


Simplified Bioregions of the Eastern Cape
KwaZulu-Natal
Free State
Lesotho
Northern Cape
Western Cape
26°E
27°E
28°E
29°E
30°E
24°E
25°E
31°S
32°S
33°S
34°S
Matatiele
Kokstad
Aliwal North
Lady Grey
Port Edward
Elliot
Middelburg
Ngangelizwe
Port St. Johns
Queenstown
Graaff-Reinet
Cradock
Butterworth
Stutterheim
Fort Beaufort
East London
Willowmore
Steytlerville
Grahamstown
Patensie
Uitenhage
Port Elizabeth
Humansdorp
Jeffreys Bay
1:3 000 000
N
Towns
Albany Thicket
Drakensberg Grassland
Dry Highveld Grassland
Eastern Fynbos-Renosterveld
Indian Ocean Coastal Belt
Lower Karoo
Mesic Highveld Grassland
Rainshadow Valley Karoo
Sub-Escarpment Grassland
Sub-Escarpment Savanna
Upper Karoo
Indigenous Forests

STRELITZIA 41

A Flora of the Eastern Cape Province

Christina L. Bredenkamp

Volume 3

SANBI
Biodiversity for Life
South African National Biodiversity Institute

Pretoria
2019

STRELITZIA

This series has replaced *Memoirs of the Botanical Survey of South Africa* and *Annals of the Kirstenbosch Botanic Gardens* which the South African National Biodiversity Institute (SANBI) inherited from its predecessor organisations.

The plant genus *Strelitzia* occurs naturally in the eastern parts of southern Africa. It comprises three arborescent species, known as wild bananas, and two acaulescent species, known as crane flowers or bird-of-paradise flowers. The logo of SANBI is partly based on the striking inflorescence of *Strelitzia reginae*, a native of the Eastern Cape and KwaZulu-Natal that has become a garden favourite worldwide. It symbolises the commitment of the Institute to champion the exploration, conservation, sustainable use, appreciation and enjoyment of South Africa's exceptionally rich biodiversity for all people.

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Christina L. Bredenkamp

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Foreword

Floristic riches of South Africa's Eastern Cape, a true plant paradise

In a sense, the publication of A Flora of the Eastern Cape Province — the work you are holding in your hands–has brought the *Strelitzia* publication series full circle. Now, more than 90 years after the *Memoirs of the Botanical Survey* of South Africa, one of the forerunners of *Strelitzia*, first appeared shortly after World War I, the topic of this volume is again the flora of the Eastern Cape. The very first volume of the *Memoirs* series dealt with the flora of the Uitenhage and Port Elizabeth districts (Schönland 1919), one of the main metropolitan areas in the Eastern Cape. In a letter dated 5 May 1919, Dr I.B. Pole Evans, the then director of the Botanical Survey of South Africa, recommended to the Secretary of Agriculture, Mr F.B. Smith, the publication of this first *Memoir*. His words, with respect to the manuscript produced by Schönland, beg repeating here: '[it] supplies valuable information regarding an area that comprises an important phytogeographical boundary and with respect to which more exact details have long been wanting.' Over 90 years ago these words were true for the Uitenhage and Port Elizabeth divisions, and they remain true today for the Eastern Cape as a whole. Indeed, ever since the Eastern Cape was first explored botanically, there has been no doubt that the region's flora and conglomerate of vegetation types such as impenetrable thickets, waving grasslands, dense dune scrub, tall forests, and fynbos, constitute an exceptionally rich and unique paradise. With 6 611 species spread across 1 440 genera and 226 families of vascular plants, of which 11.9% are range-restricted to the province, the Eastern Cape is in every sense a botanist's delight.

In the years since the first *Memoir* was published in 1919, 63 volumes of the *Memoirs* and about 40 of the *Strelitzia* series, collectively comprising thousands of scientific, peer-reviewed pages, have been published by the South African National Biodiversity Institute (SANBI) and the various organisations that preceded it. A few other scholarly works on the Eastern Cape were also published as *Memoirs* in the interim (see for example Dyer 1937), and the early work of Schönland (1919) has now been quite magnificently expanded to cover the entire province.

Over the years several illustrious plant scientists and natural historians, both professional and amateur, were fascinated by the terrestrial and aquatic floras of the Eastern Cape and contributed to our knowledge of it; the list is long and includes: Mr John Acocks, Prof. Nigel Barker, Prof. George Bredenkamp, Ms Estelle Brink, Prof. Eileen Campbell, Prof. Richard Cowling, Prof. Neil Crouch, Mr Tony Dold, Dr R. Allen Dyer, Prof. Roy Lubke, Prof. John Manning, Dr Ria Olivier,

Dr Tony Palmer, Mr Pete Phillipson, Dr Robbie Robertson, Prof. Selmar Schönland, Prof. Stanley C. Seagrief, Prof. Braam [A.E.] van Wyk, Prof. Ben-Erik van Wyk, and many others. Even earlier, the collecting activities of pioneer explorers such as Ecklon and Zeyher, and James Bowie added to the cornucopia of artefacts and exsiccatae that subsequent field workers had at their disposal to clarify and confirm the richness of the Eastern Cape flora. To these names must now be added that of Dr Christien Bredenkamp who tirelessly worked for many years to complete the enormous work presented here. Field guides to parts of the Eastern Cape are available, but these can never be comprehensive because the flora is simply too voluminous. The present Flora now fills this gap.

This project was initially conceived as merely a treatise of the flora of the Baviaanskloof, but was soon expanded to cover the entire province, a task not for the faint of heart. Christien did not have an existing volume to update and expand; she had to start this project from scratch, which makes it even more of an achievement. She did not work alone, of course, and had the benefit of drawing on the expertise of several of her colleagues, both from within and beyond SANBI, and she provided the momentum and encouragement to colleagues to get the work completed.

A book like this, which brings together experience gained over a period of time by many experts, undoubtedly requires a range of acknowledgments. From my perspective as the author of the foreword, I have one only: to Dr Christien Bredenkamp and all her co-workers, for accomplishing this – a work providing a comprehensive floristic treatment of one of the richest botanical areas on Earth. Or as Cowling & Pierce (2009) so aptly called this part of South Africa: an Eden, east of the Cape. I am deeply grateful for being able to hold the completed manuscript, if not yet the published book, in my hands. Christien and her colleagues deserve more than – and more than deserve – the accolades due to them.

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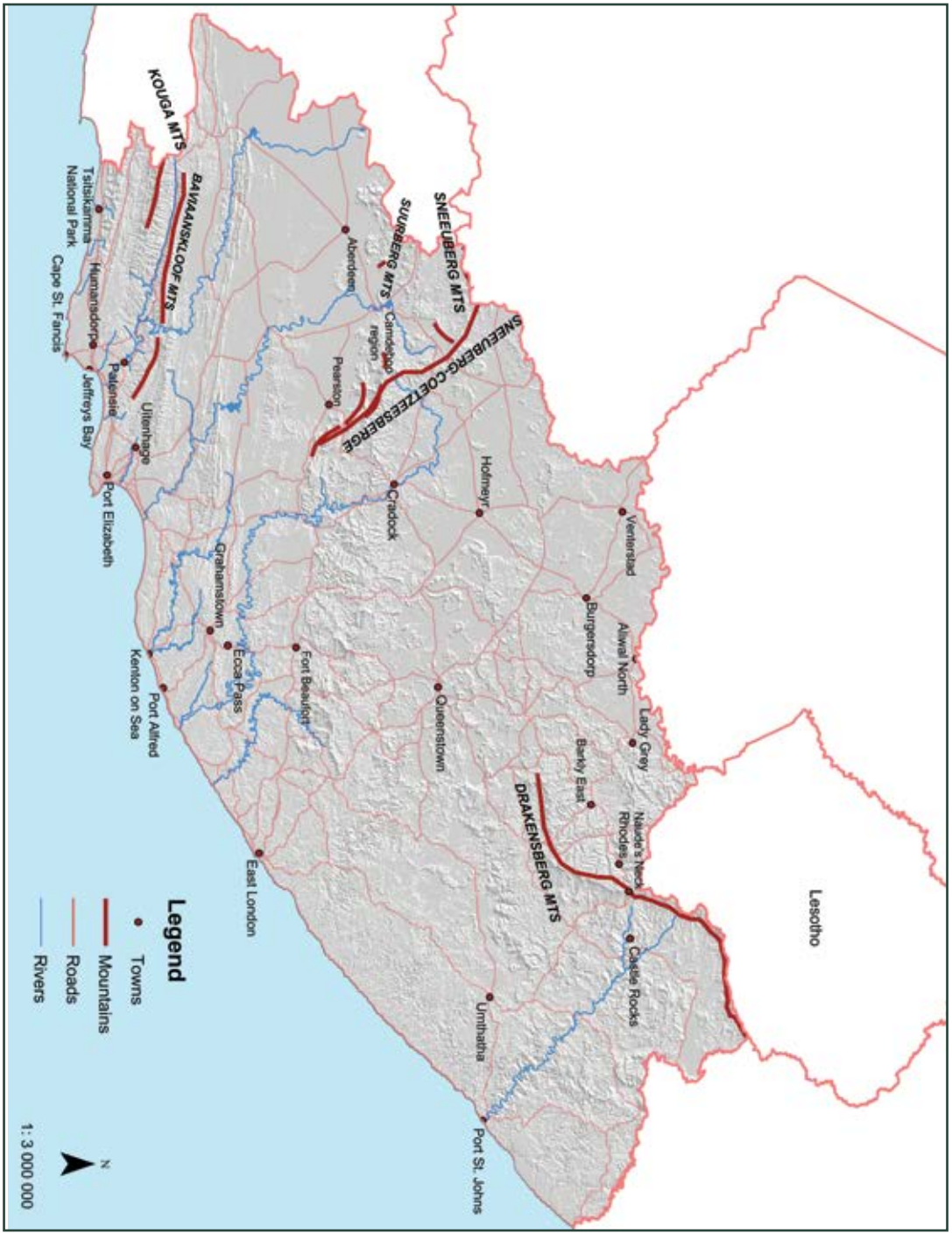


FIGURE 1—Map of the Eastern Cape Province showing selected towns, roads, rivers and mountains. Produced by L.W. Powrie.

Flowering time May–Oct. **Fruit** drooping, roundish, 26–40 × 26–40 mm, 4-winged, wings 10–15 mm wide, with a deep sinus at apex and base. Sandy soil, disturbed areas, closed shrubland; Eastern Fynbos-Renosterveld, Albany Thicket (between Willowmore and Baviaanskloof, Addo, Uitenhage, Despatch, Port Elizabeth, Humansdorp and Cape Recife).

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End of Volume 2

Monocotyledons

AGAPANTHACEAE

(Order Asparagales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

AGAPANTHUS L'Hér.

Bloulelie (A)

Monotypic family endemic to sthn Afr.; species 10, variable, widespread, except N, B and NC, mainly at higher altitudes, some species are grown as ornamentals.

campanulatus F.M.Leight.

Bell agapanthus, bloulelie (A), leta-laphofu (SS), ugebeleweni (X), ubani (Z)

Perennial herb, geophyte, 0.4–1.5 m high. **Leaves** glaucous or glossy green, purple at base, deciduous, 6–12 per individual plant, 150–500 × 10–25 mm, apex obtuse. **Peduncle** 400–700 mm high. **Inflorescence** not densely flowered; pedicels 20–70 mm, spreading. **Perianth** pale to medium blue or rarely white; segments 20–35 mm long, spreading, not recurving; tube 5–10 mm long. **Stamens** with lilac pollen. **Flowering time** Dec.–Mar. Grassland, loamy soil and rocky mountain ledges, full sun or semi-shade; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (Matatiele District S to Maclear and Mkambati Waterfall).

caulescens Spreng.

Perennial herb, geophyte, 0.6–1.7 m high; **Leaves** bright green or glossy green, deciduous, 7–15 per individual plant; basal leaves 50–150 × 15 mm, upper leaves

250–600 × 15 mm, apex acute to obtuse. **Peduncle** 600–1 300 mm high. **Inflorescence** densely flowered; pedicels 30–70 mm long, spreading and somewhat drooping. **Perianth** purplish blue to deep blue; segments 30–70 mm long, spreading and recurving; tube 10–19 mm long. **Stamens** with purple pollen. **Flowering time** Nov.–Feb. Well-drained, rich soil and on grassy slopes; Sub-Escarpment Grassland and Sub-Escarpment Savanna (Oribi Gorge District and Queenstown).

praecox Willd.

Blue lily; *bloulelie*, *agapant* (A); *isicakathi* (X); *ubani* (Z)

Perennial herb, geophyte, 0.4–1.2 m high. **Leaves** bright green, evergreen, leathery or flaccid, 7–20 per individual plant, 200–700 × 15–55 mm, apex obtuse or acute. **Inflorescence** not densely flowered; pedicels 40–120 mm long. **Peduncle** 400–1 000 mm high. **Perianth** pale blue or occasionally greyish white; segments 30–70 mm long; tube 7–26 mm long. **Stamens** with yellow pollen. **Flowering time** Oct.–Apr. Moist, rich soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad District S to Port St Johns, King William's Town, Kentani, Whiskey Creek River, East London and Humansdorp).

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AGAVACEAE

(= ANTHERICACEAE J.Agardh)

(Order Asparagales)

Compiled by G.F. Smith, M. Walters, E. Figueiredo, R.R. Klopper & C.L. Bredenkamp

Robust, monocarpic perennials, usually rosulate arising from short rhizome or short, erect caudex; leaves crowded in basal rosette, leathery to succulent ..... ***Agave** (subfamily **Agavoideae** Herb.)

Perennial herbs with erect, largely leafless aerial stem; leaves in a basal rosette, spirally arranged or distichous, rarely scleromorphic, rigid or succulent ..... **Chlorophytum** (subfamily **Anthericoideae** Irvine)

***AGAVE** L.

Century plant; *garingboom* (A)

Species ± 200, Mexico; 6 naturalised in sthn Afr., mainly in arid and semi-arid areas, as well as subtropical thicket, B, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

Plants suckering from the base

americana L. var. **americana**

American aloe, century plant; *Amerikaanse aalwyn*, *blouaalwyn*, *garingboom*, *makaalwyn* (A)

Medium-sized to large, acaulescent or short-stemmed, monocarpic tree-like herb, up to 2 m high; rosulate, perennial, leaf succulent; profusely proliferous through basal suck-

ers. **Leaves** light blue, erect at first, becoming spreading to reflexed, lanceolate, 1–2 m long, margins armed with many, straight to flexuous or variously recurved, simple teeth, up to 10 mm long; apical spine conical to subulate, 30–50 mm long. **Inflorescence** paniculate, 5–9 m tall, branched, never bulbiferous. **Flowers** erect, yellow to greenish yellow, 70–100 mm long. **Stamens** epipetalous; filaments 60–90 mm long; anthers yellow, 30–36 mm long, centric to excentric. **Flowering time** Dec.–Feb. **Fruit** oblong capsules, 40–50 mm long. **Seeds** lunate to lacrimiform, 7–8 × 5–6 mm, shiny black. Arid plains, karroid and fynbos shrublands, subtropical thicket, watercourses, disturbed sites; in all bioregions (distributed throughout the EC).

angustifolia Haw. var. **angustifolia**

Kleingaringboom (A)

Medium-sized, caulescent, monocarpic herb, up to 1.2 m high; rosulate, perennial, leaf succulent; rosettes up to 1.2 m tall, proliferous through basal suckers. **Leaves** light green to glaucous grey, ascending to horizontal in midrosette, linear to narrowly lanceolate, 0.6–1.2 m long, margins armed with small teeth, curved or variously flexed, 2–5 mm long; apical spine conical to subulate, 15–35 mm long. **Inflorescence** paniculate, 3–5 m tall, branched, usually bulbiferous. **Flowers** erect, green to yellow, 50–65 mm long. **Stamens** epipetalous; filaments 35–45 mm long; anthers yellow, centric or excentric, 20–30 mm long. **Flowering time** Feb.–Mar. **Fruit** ovoid capsules, 30–50 mm long. **Seeds** D-shaped, 9–12 × 7–8 mm, dull black. Arid plains, karroid and fynbos shrublands, subtropical Thicket, watercourses, disturbed sites; Albany Thicket, Eastern Fynbos-Renosterveld (S Jansenville, N Uitenhage, Port Elizabeth).

sisalana Perrine

Sisal plant, *sisal*, *kleingaringboom* (A)

Medium-sized to large, acaulescent or short-stemmed, monocarpic, tree-like herb, up to 2 m high; rosulate, perennial, leaf succulent; rosettes up to 2 m tall; profusely proliferous through elongated rhizomes. **Leaves** dark green, erect throughout, lanceolate, 0.9–1.3 m long, margins lacking teeth; apical spine subulate, 20–25 mm long. **Inflorescence** paniculate, 4–9 m tall, branched, profusely bulbiferous. **Flowers** erect, greenish yellow, 55–65 mm long. **Stamens** epipetalous; filaments 50–60 mm long; anthers yellow, centric, 23–25 mm long. **Fruit** generally lacking; plants sterile. **Seeds** generally lacking. Arid plains, karroid and fynbos shrublands, subtropical thicket, watercourses, disturbed sites; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket (Flagstaff SW to Daggaboersnek and Weston).

vivipara L. var. **vivipara**

Garingboom (A)

Medium-sized, caulescent, monocarpic herb, up to 1.3 m high; rosulate, perennial, leaf succulent; rosettes up to 1.3 m tall; proliferous through subterranean stolons. **Leaves** dark green, rigidly spreading to recurving, narrowly lanceolate, 0.75–1.00 m long, margins armed with simple teeth, recurved, 1–2 mm long; apical spine conical, 10–15 mm long. **Inflorescence** paniculate, 6–7 m tall, branched, usually bulbiferous. **Flowers** erect, yellowish green, 50–55 mm long. **Stamens** epipetalous, filaments 45–48 mm long; anthers light green with brownish red speckles, excentric, 20 mm long. **Flowering time** variable, mostly June–Aug. **Fruit** ellipsoid to oblong capsules, 35–50 mm long. **Seeds** not seen. Arid plains, karroid shrublands, subtropical thicket, watercourses, disturbed sites; Lower Karoo, Albany Thicket (N Jansenville, Port Elizabeth).

Plants solitary

wercklei F.A.C.Weber ex Wercklé

Cluster century plant; *bondelgaringboom* (A)

Medium-sized to large, acaulescent, monocarpic herb, up to 2 m high; rosulate, perennial, leaf succulent; rosettes up to 2 m tall, non-surculose. **Leaves** light glaucous green, often with whitish grey sheen, rigidly spreading, ovate to lanceolate, short-acuminate, 0.7–1.5 m long, margins armed with simple teeth, straight or variously recurved, 3–4 mm long; apical spine conical, 20–30 mm long. **Inflorescence** paniculate, 4–8 m tall, branched, profusely bulbiferous. **Flowers** erect, basal part light green, tepals golden-yellow, up to 80 mm long. **Stamens** epipetalous; filaments 90 mm long; anthers golden-yellow, 16 mm long. **Flowering time** Jan.–Mar. **Fruit** ovoid-angular capsules, 22–30 × 15–18 mm. **Seeds** hemispherical, 5 × 4 mm, black. Subtropical Thicket; Albany Thicket (Port Elizabeth).

CHLOROPHYTUM Ker Gawl.

Species ± 165, Africa, Madagascar, Asia; 36 in sthn Afr., widespread.

Adapted from Obermeyer (1962).

1a Seeds small, globose, irregularly compressed with many folds
2a Leaves subdistichous; scape terete, bracteate; capsule cylindrical, beaked or apiculate, smooth or with some transverse ridges; flowers 1- or 2-nate

acutum (C.H.Wright) Nordal

Perennial herb, up to 0.8 m high; rhizome small, covered with fibres of old leaf bases. **Leaves** linear-lanceolate, up to 500 × 20 mm, base clasping, apex tapering. **Inflorescences** subsimple, lax racemes. **Flowers**: pedicels articulated near middle; perianth white, segments with broad, 5-ribbed, green keel. **Flowering time** Dec. **Fruit** a capsule, 15 mm long; 3-grooved with transverse wrinkles. Southern Drakensberg; Sub-Escarpment Grassland (Kokstad, Mount Currie).

2b Leaves distichous, ± 8; scape usually naked; capsule rounded, obtuse, with transverse ridges; flowers usually clustered

angulicaule (Baker) Kativu

Robust, perennial herb, 0.2–1.8 m high; rhizome with irregular woody knobs, roots, sturdy. **Leaves** linear to linear-lanceolate, up to 750 × 25 mm; tapering in upper half, base clasping, apex acuminate, margins raised or flat. **Inflorescences** divaricately branched racemes; floral bracts small, deltoid, dark, apiculate, clustered. **Scape** flattened, often narrowly winged. **Flowers**: pedicels articulated near base; 3- or 4-nate, white; perianth segments dark keeled, tips ciliate; filaments smooth, shorter than anthers; style not exserted from closed flower. **Flowering time** June–Apr. **Fruit** a capsule, 6 mm long. Grassland, recently burned areas, loam to loamy-clay soils, near wetlands; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Mkambati Nature Reserve SW to Alice and Keiskamma River Mouth).

cooperi (Baker) Nordal

Small, perennial herb, 0.1–0.4 m high; rhizome horizontal with woody knobs, roots often tuberous at tips. **Leaves** linear to lanceolate, up to 300 × 10 mm, base clasping, apex obtuse, apiculate, margins raised or flat. **Inflorescences** simple racemes; flowers congested near apex; floral bracts membranous, greenish. **Scape** flattened, fairly stout,

naked. **Flowers**: pedicels articulated below middle; 1–3-nate; perianth segments white with purple streaks; filaments smooth or papillate in upper half, longer than anthers. **Flowering time** July–Mar. **Fruit** a globose capsule, 8 mm in diam. Grassland, recently burned; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Albany Thicket (Mount Currie S to Mkambati Hospital southwards, from Alice E to Idutywa and from Bushman's River E to Southwell).

fasciculatum (Baker) Kativu

Gregarious, perennial herb, up to 0.6 m high; rhizome horizontal, woody, knobby, covered with fibres from old leaf bases. **Leaves** linear, 50–400 × 1–5 mm (outer leaves very small), flat or folded, soft, base vaginate, dilated. **Inflorescences** simple racemes, overtopping leaves; flowers laxly arranged; floral bracts glumaceous, subulate, closely folded, amplexicaul, whitish. **Scape** terete, ribbed. **Flowers**: pedicels articulated below middle; perianth segments white with brown median line, ± 14 mm long; filaments rough in upper half. **Flowering time** Oct.–Mar. **Fruit** an oblong capsule, 9 mm long. Moist surroundings in grassland or karoo; Upper Karoo, Dry Highveld Grassland (Oviston Nature Reserve, Bethulie, Aliwal North District).

saundersiae (Baker) Nordal

Weeping anthericum

Gregarious, perennial herb, up to 0.4 m high; rhizome creeping, small, knobby, covered with sparse, short fibres from old leaf bases. **Leaves** erect, linear, 300 × 10 mm, soft, flat, flaccid, base clasping, tapering to subulate apex. **Inflorescences** divaricately branched racemes, lowest branch often patent; flowers congested; floral bracts small, ovate to subulate, dark. **Scape** flat, winged, bare. **Flowers**: pedicels articulated near base; perianth segments white, ± 10 mm long; filaments rough. **Flowering time** Oct.–Mar. **Fruit** a globose capsule, 6 mm long. Low grassland, river mouths, periodically flooded; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Stormberg and Queenstown E to Port Edward and Port St Johns).

1b Seeds larger, flat with pointed hilum
3a Inflorescence patently branched

[E]**capense** (L.) Voss

Glaucous, perennial herb, up to 1 m high; rhizome small, vertical, roots long, fleshy. **Leaves** in an elongated rosette, linear-lanceolate, up to 450 × 25 mm, base clasped firmly around rhizome and other leaves, gradually narrowing towards apex. **Inflorescences** tall, branched racemes, lateral branches ascending; flowers laxly arranged; floral bracts small, deltoid. **Scape** covered with white bloom, compressed, firm, bracts leaf-like. **Flowers**: pedicels articulated above middle; perianth segments white with green stripes, ± 10 mm long; filaments glabrous. **Flowering time** Oct.–May. **Fruit** a broadly ovoid capsule, 8 mm long, apex deeply emarginate. Dry shady vegetation on riverbanks, close to sea; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Indigenous Forests, Albany Thicket (Mpofu Game Reserve E to King William's Town, from Baviaanskloof E to Suurberg in Greater Addo Elephant National Park, Uitenhage and Fish River in Albany District).

crispum (Thunb.) Baker

Small, perennial, succulent herb, up to 0.5 m high; rhizome vertical, roots many, unevenly swollen. **Leaves** in flat rosette, linear-lanceolate, up to 10 × 15 mm, base cuneate, apex acuminate, margins crisped, fimbriate. **Inflorescences**: racemes up to 0.5 m long;

flowers 1–15-nate; floral bracts deltoid. **Scape** terete. **Flowers**: pedicels articulated at middle; perianth segments, white, green-keeled, ± 8 mm long; filaments papillate. **Flowering time** Sept.–May. **Fruit** a capsule, 8 mm long, apex emarginate; faint transverse ridges. Sandy hills, flats, riverbanks, loamy, calcrete and stony soils; Eastern Fynbos-Renosterveld, Albany Thicket, Lower Karoo (Misgund E to Addo, Uitenhage, Port Elizabeth and Grahamstown).

krookianum Zahlbr.

Large aloe-like plant, up to 2.74 m high when in flower; rhizome small, roots typical. **Leaves** in basal rosette, erect or upper half reclining, lanceolate, half folded, up to 1.4 × 0.07 m, base clasping, attenuate in upper half, margins membranous, fimbriate. **Inflorescences** tall racemes, 4–8-branched, up to 2 m high; floral bracts small, deltoid, scarious, caducous. **Scape** woody, terete. **Flowers**: pedicels articulated at middle; perianth segments white, delicate, fading red-streaked, ± 16 mm long; filaments glabrous. **Flowering time** Nov.–Apr. **Fruit** an oblong capsule, ± 12 mm long, apex retuse. Gravelly soil, grassland; Indian Ocean Coastal Belt (Port St Johns, ISinuka).

3b Inflorescence simple or with 1 or 2 long, basal ascending branches

bowkeri Baker

Gregarious, glabrous perennial, up to 1 m high; rhizome small, woody, roots typical. **Leaves** rosulate, linear to lanceolate semi-folded, up to 600 × 60 mm, base clasping, apex attenuate. **Inflorescences**: racemes with flowers congested, up to 1 m high; floral bracts larger than flowers, subulate. **Scape** terete, firm. **Flowers**: 2–4-nate; pedicels articulated near base; perianth segments ± 10 mm long; filaments smooth. **Flowering time** Nov.–Mar. **Fruit** a smooth capsule, oblong, 11 × 7 mm. Damp situations, grassland; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Hogsback, Stutterheim, Komga, Kentani and East London).

comosum (Thunb.) Jacques

Green hen and chickens; *hen-met-kuikens* (A); *ujejane* (X); *umhlambezo* (Z)

Perennial, up to 0.8 m high; rhizome small, vertical, roots many, long, swollen near tips. **Leaves** in loose rosette, lanceolate, soft, flat, up to 300 × 20 mm, apex and base tapering, margins undulate. **Inflorescences** longer than leaves, simple, long, lax racemes; flowers in spiral, axillary fascicles; floral bracts apically enlarged forming leafy tuft. **Scape** terete. **Flowers**: pedicels articulated near middle; perianth white, yellow-centered, segments narrow, ± 10 mm long; filaments glabrous. **Flowering time** Nov.–Mar. **Fruit** a globose capsule, 5 mm in diam., apex emarginate. Undergrowth in eastern forest areas, riverine forests, deep shade, leaf litter and loamy soil; Indigenous Forests (Queenstown E to Port St Johns southwards, from Katberg to Kentani and from Humansdorp to Port Elizabeth, Grahamstown and East London).

modestum Baker

Umathunga wehlathi omncane (Z)

Small, perennial herb, up to 0.3 m high; rhizome compact, vertical; roots swollen. **Leaves** linear-lanceolate, thin, soft, up to 230 mm long, base tapered into long 'petiole', apex acute. **Inflorescences**: racemes simple, exserted outside leaf rosettes, few-flowered; upper floral bracts subulate. **Scape** arcuate at base. **Flowers**: pedicels articulated below middle; perianth segments, ± 10 mm long; filaments glabrous. **Flowering time** Nov.–Mar. **Fruit** a smooth capsule, obcordate in outline, 10 mm long, 8 mm wide at emargi-

nate apex. Warm eastern coastal area, forest and coastal bush; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Indigenous Forests, Albany Thicket (Lusikisiki and Port St Johns).

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ALISMATACEAE

(Order Alismatales)

Compiled by C.J. Cilliers

*ALISMA L.

Species 9, in the northern hemisphere, by recent introductions almost cosmopolitan; 1 in sthn Afr., sporadic distribution, G, FS, KZN, EC.

plantago-aquatica L.

Water plantain

Annual, occasionally perennial, hydrophyte (hyperhydate), 0.3–1.0 m high. **Leaves** erect, blade variable, linear-lanceolate to elliptic, base tapering to heart-shaped, apex pointed. **Inflorescence** compound, consisting of successive whorls of usually > 3 branches. **Flowers** bisexual. **Petals** white to purplish pink, yellow spot near base. **Stamens** 6, in pairs opposite petals. **Carpels** 10–20 free, borne on a flattened receptacle. **Flowering time** Nov.–Mar. **Fruit** laterally compressed nutlets, dorsally ridged. Banks of lakes, pools, temporary ponds and marshes; Albany Thicket (Kenton on Sea).

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ALLIACEAE

(Order Asparagales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

1a Rhizomatous herbs; seeds large (4–11 mm long); perianth with a corona ..... **Tulbaghia**
1b Bulbous herbs; seeds small (< 4 mm long); perianth without corona:
2a Perianth segments connate; spathes distinctly overlapping at their bases; > 14 ovules per locule; without onion-smell ..... ***Nothoscordum**
2b Perianth segments free or almost free; spathes not overlapping at their bases; 2–14 ovules per locule; with onion-smell..... **Allium**

ALLIUM L.

Wild onion

Species ± 550, mainly northern hemisphere, 31 in Africa; 1 in sthn Afr., M, FS, NC, WC, EC, although there is some doubt whether it is of true sthn Afr. origin.

E?**dregeanum** Kunth

Ajuin, *wildeui* (A)

Perennial geophyte, 0.3–1.2 m high. **Leaves** 3–5 per individual plant, linear, 204–305 × 4 mm, margins distinct, entire; lamina sometimes folded, scattered along scape. **Peduncle** 457–600 mm high. **Inflorescence** globose, densely-flowered umbel, usually without bulbils. **Pedicels** ± 13 mm long. **Perianth** campanulate, 5 mm long, white tinged with pink; segments imbricate, ovate, acute, 3-nerved on keel. **Stamens** inserted. **Ovary**: style inserted. Clay soil; Upper Karoo, Lower Karoo, Albany Thicket, Indigenous Forests (Bethulie District S to Murraysburg, Grahamstown and Alexandria Forest).

*NOTHOSCORDUM Kunth

Species 18, mainly in America; 1 introduced in sthn Afr., G, M, FS, KZN, NC, WC, EC.

borbonicum Kunth

Perennial, geophyte, up to 0.45 m high; parent bulbs produce many bulblets from base. **Flowers** open midafternoon, lasting until late evening. **Filaments** linear, ± contiguous in lower half. **Ovary** obovoid. Postulated that it originated as a natural hybrid between two wild species, *N. entrerianum* and *N. gracile*, in the area of Buenos Aires, Argentina; troublesome weed, adapted to variety of conditions, naturalised in gardens, parks and along roads; Upper Karoo, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North S to Graaff-Reinet, Uitenhage, Grahamstown and Humansdorp districts).

TULBAGHIA L.

Wild garlic

Species ± 20, Africa; mostly sthn Afr., widespread; 'onion-smelling' sulphur compounds sometimes present; often grown as ornamentals.

1a Corona lobes 3, free to base

E**cominsii** Vosa

Perennial herb, 0.09–0.20 m high; rootstock a corm with one growing point (rarely 2), 10–15 × 10 mm. **Leaves** glaucous, purple at base, 100–200? × 0.8 mm. **Scape** 90–200 mm long. **Umbel** with 3–10 flowers; pedicels purplish. **Perianth** pure white or rarely pink; lobes oblong-lanceolate; edges inflexed. **Corona** pure white or pink; lobes deltoid, ± half as long as perianth lobes; tip entire or bifid. **Anthers** in 2 whorls.

Ovary ± 1.5 mm long, ovoid; style 1 mm long; stigma capitate. Grassland; Sub-Escarpment Savanna (King William's Town District).

violacea Harv.

Perennial herb, 0.20–0.45 m high; rootstock rhizomatous. **Leaves** dark green, 6–10 per individual plant, 150–300 × 4–8 mm. **Scape** 300–650 mm long. **Spathe valves** 15–25 × 0.8–1.0 mm. **Umbel** with 6–15 flowers; pedicels ± 20 mm long. **Perianth** light purple; tube 10–13 × 3 mm, cylindrical; lobes with dark purple midribs, oblong, in one whorl. **Corona** ivory-white, may be tinged with purple, set opposite perianth lobes. **Anthers** with 2 whorls, upper whorl 1.0–1.5 mm long. **Ovary** ± spherical; style 0.7–1.0 mm long; stigma subcapitate. **Flowering time** all year. Stony soil and loamy grassland; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Rainshadow Valley Karoo, Albany Thicket (Umtamvuna S to King William's Town, Kentani, Steytlerville, Port Elizabeth and East London).

Two varieties recognised in EC: [E]**T. violacea** Harv. var. **maritima** (Vosa) Vosa = *T. cepacea* L.f. var. *maritima* Vosa; **T. violacea** Harv. var. **violacea** = *T. cepacea* L.f.

1b Corona lobes 3 (shallowly or deeply bisected), connate at base
2a Corona lobes free almost to base

capensis L.

Perennial herb, 0.12–0.35 m high; rootstock a small bulb. **Leaves** 200–350 × 8–10 mm, linear. **Scape** 150–300 mm long. **Spathe valves** 20 × 7 mm, lanceolate, scarious. **Umbel** with 4–15 flowers; pedicels up to 25 mm long. **Perianth** olive-green; tube 7–8 mm long, campanulate; lobes in 2 whorls, 3 × 2 mm, oblong, tips obtuse, 0.5 mm apart. **Corona** light brown, connate at base. **Anthers** in 2 whorls, the upper inserted at base of coronal lobes, the lower inserted at attachment of lower perianth lobe. **Ovary** ellipsoid, 1.5–2.0 mm long; style 1 mm long; stigma capitate. **Flowering time** Aug., Apr. Eastern Fynbos-Renosterveld (Louterwater and Assegaaibosberg).

[E]**galpinii** Schltr.

Perennial herb, 0.15 m high; rootstock a bulb on a rhizomatous base. **Leaves** filiform, 10–15 × 1 mm, glaucous-green. **Scape** 100–150 mm long. **Spathe valves** acute, scarious. **Umbel** usually with 2 flowers; pedicels 50–120 mm long. **Perianth** green; tube tinged with purple, 5 mm long, campanulate; lobes linear, acute, channelled, usually not opening flat. **Corona** 4 mm long. **Anthers** in 2 whorls; the upper ± at same level of perianth lobes; the lower in perianth tube, above stigma. **Ovary** ovoid, 2.0–2.5 mm long; style 1 mm long; stigma capitate. **Flowering time** Jan.–Oct. In grassland and well-drained soil; Sub-Escarpment Grassland, Upper Karoo, Sub-Escarpment Savanna, Albany Thicket (Queenstown District S to Cradock, Alice and Greater Addo Elephant National Park).

2b Corona lobes united for at least half their length

[E]×**aliceae** Vosa

Perennial herb, 0.20–0.35 m high, rootstock a conical bulb. **Leaves** 6–10 per individual plant, 150–350 × 6–10 mm, radical, obtuse. **Scape** 200–350 mm long. **Spathe valves** scarious. **Umbel** with 5–12 flowers; pedicels 25–35 mm long. **Perianth** purple-green; tube subconic, 6–8 mm long; lobes pale rose, equal to tube length. **Corona** yellow-orange; lobes truncate or crenate; stigma capitate. Cultivated, grass verge in town (Fort Beaufort, Alice). The putative parents are considered to be *T. violacea* Harv. and *T. verdoorniae* Vosa & Burb.

acutiloba Harv.

Wild garlic; *wildeknoffel* (A); *lisela* (S); *motsutsunyane*, *sefothafotha* (SS); *ishaladi lezinyoka* (Z)

Perennial herb, 0.12–0.20 m high; rootstock a bulb, 20–30 × 10–20 mm. **Leaves** 50–250 × 30–80 mm. **Scape** 150–300 mm long. **Spathe valves** 10–25 × 40–60 mm. **Umbel** with 3–5 flowers; pedicels 10–40 mm long. **Perianth** greenish; tube 8 × 4 mm, ± cylindrical; lobes adnate to corona, 4–5 × 1.0–1.5 mm, usually recurved. **Corona** fleshy, orange, 1.5–2.0 mm long. **Anthers** in 2 whorls, upper in throat of corona, lower at level of lower perianth lobes. **Ovary** ovoid; stigma capitate. **Flowering time** July–Dec. Grassland and stony soil; Upper Karoo, Mesic Highveld Grassland, Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Aliwal North E to Zastron and Maclear District southwards, from Thembuland to Ntsubane Forest and Grahamstown).

cernua Avé-Lall.

Moelala (SS); *ivimbampunzi* (X); *isikwa* (Z)

Perennial herb, ± 0.25 m high; rootstock a bulb. **Leaves** 250–400 × 8–25 mm, linear, keeled, tinged with purple-red at base. **Scape** 350–200 mm long. **Spathe valves** lanceolate, scarious. **Umbel** with 5–20 flowers. **Perianth** light green; tube ± triangular, 7–8 × 4 mm; lobes 5 × 2.0–2.5 mm, 1 mm apart, reflexed. **Corona** yellow or purple-brown, urceolate, 4 × 5 mm, triangular. **Anthers** 1 mm long; upper whorl in corona throat, not exserted. **Ovary** ovoid, 4 mm long; style 2 mm long; stigma capitate. **Flowering time** Sept.–Apr. Grassland and among shrubs; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Ramatseliso's Gate E to Ixopo District southwards, from Queenstown to Amatole Mts, Kei River Mouth, Suurberg, Port Elizabeth and Grahamstown).

leucantha Baker

Wild garlic; *fonteinknoffel* (A); *sefothafotha* (SS)

Perennial herb, 0.10–0.25 m; rootstock a corm, fasciculate. **Leaves** glaucous-green, linear, 150–300 × 1.0–1.5 mm. **Scape** 10–30 mm long. **Spathe valves** scarious, 10–20 × 3.6 mm. **Umbel** with 4–10 flowers; pedicels 10–20 mm long. **Perianth** light green; tube 4–5 × 2–3 mm, cylindrical; lobes with white edges, whorls at right angle to perianth tube. **Corona** orange-brown, ± cylindrical. **Anthers** in 2 alternate whorls; upper at mouth of corona; lower at level of perianth segments. **Ovary** obcordate; style 1–2 mm long, stigma capitate. **Flowering time** Feb.–Nov. Rocky grassland; Upper Karoo, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests (Albert District SE to Qumbu and Weza State Forest, southwards from Engcobo to Port Edward District).

ludwigiana Harv.

Ingotjwa (S); *umwelela* (Z)

Perennial herb, 0.25–0.90 m high; rootstock a corm. **Leaves** glaucous-green, with purple spots at base, 350 × 15–25 mm, triangular, lorate. **Scape** 350–500 mm, purplish towards base. **Spathe valves** scarious. **Umbel** with 4–12 flowers; pedicels 15–35 mm long. **Perianth** light green; tube 7 × 3.5 mm, ± triangular, oblong-obtuse, purple at apex. **Corona** bright yellow, urceolate; lobes shallowly emarginate. **Anthers** in 2 whorls; upper 1 mm from rim of corona, lower 2 mm below. **Ovary** green, ± ovate; style 1 mm long, apically depressed; stigma capitate. **Flowering time** Feb.–Dec. Stony

grassland; Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Umtamvuna Nature Reserve S to Thembuland, Cathcart, Kentani, Port Elizabeth, Grahamstown and East London).

montana Vosa

Perennial herb, 0.3–0.4 m high; rootstock a moniliform rhizome, 30–50 × 3–4 mm. **Leaves** 120–250 mm long, keeled, adaxial surface dark green, abaxial surface glaucous. **Scape** 120–250 mm long. **Umbel** with 3–8 flowers. **Spathe valves** scarious. **Perianth** light green; tube cylindrical, 3–4 mm long; lobes with a darker central vein, lanceolate-acute, 4–5 mm long, reflexed. **Corona** slightly fleshy, 5–6 mm long, bright orange, with 6 lobes. **Anthers** with 2 whorls, upper whorl at mouth of corona, not exserted. **Ovary** ovoid; style ± 1 mm long; stigma capitate. **Flowering time** July–Dec. Grassland; Sub-Escarpment Grassland (Matatiele District).

natalensis Baker

Sweet wild garlic; *iswele lezinyoka* (Z)

Perennial herb, 0.15–0.36 m high; rootstock a corm. **Leaves** glaucous-green, 150–250 mm high, linear. **Scape** 100–400 mm long. **Umbel** with 3–12 flowers; pedicels 20–25 mm long. **Spathe valves** 15–25 × 5–8 mm, lanceolate, scarious. **Perianth** white or whitish green; tube campanulate, 6–7 mm long; lobes 5–7 × 4–5 mm, oblong, tinged with purple at tips and sides, ± spathulate. **Corona** yellow or orange, 5–6 mm long, subcampanulate; lobes sharply cleft. **Anthers** 1.5 mm long, in 2 whorls, upper at mouth of corona, lower at level of lower perianth lobes. **Ovary** ± 3 mm long, heart-shaped, elliptical; stigma capitate. **Flowering time** Sept.–Nov. Grassland; Sub-Escarpment Savanna (Libode District).

nutans Vosa

Perennial herb, ± 0.3 m high; rootstock a corm. **Leaves** bright green with purplish base, 120–180 × 3–5 mm, keeled. **Umbel** 3–8 flowers; pedicels 30–80 mm long. **Spathe valves** scarious. **Perianth** light green; tube ± 8 mm long; lobes 8–10 mm long, in 2 whorls, inner whorl fused to corona for most of its length, reflexed, oblong-obtuse. **Corona** fleshy, brick-red to dull purple, 8 mm long; lobes shallowly cleft, cylindrical. **Anthers** in 2 whorls, upper at mouth of corona, lower above level of lower perianth lobes. **Ovary** ovoid, ± 3 mm long; style 2.5 mm long; stigma capitate. **Flowering time** Jan., Aug. Stony soil; Albany Thicket (Kommadagga and Port Elizabeth).

[E]**verdoorniae** Vosa & Burb.

Perennial herb, 0.15–0.30 m high; rootstock a branching rhizomatous corm. **Leaves** light green, glaucous, 100–300 × 6–8 mm. **Umbel** with 5–8 flowers; pedicels 25–30 mm long. **Spathe valves** lanceolate, scarious. **Perianth** purple; tube 6–8 mm long; lobe ± spathulate, 6–7 mm long. **Corona** orange, 5 mm long, crenate at margins. **Anthers** in 2 whorls, upper at rim of corona, lower ± 4 mm below. **Ovary** ovoid, 4 mm long; style capitate. **Flowering time** Dec. Drainage lines, streambanks; Sub-Escarpment Savanna (Butterworth District).

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AMARYLLIDACEAE

(Order Asparagales)

Compiled by D.A. Snijman & J.C. McMaster

1a Scape hollow or rarely solid; fruit dehiscent and papery; seeds dry, black and flattened ..... **Cyrtanthus**
1b Scape solid; fruit dehiscent and papery or indehiscent and membranous to fleshy; seeds moist, cream-coloured, pink, reddish or green, ovoid or subglobose and slightly angled by compression; embryo usually green:
2a Plants rhizomatous or bulbous; tunics not producing extensible threads when torn; mature fruit mostly pulpy and berry-like, rarely membranous:
3a Flower solitary, held at ground level with ovary subterranean:
4a Leaves few to many, smooth or hairy, often with conspicuous basal sheaths around foliage leaves; stamens uniseriate..... **Gethyllis**
4b Leaves 1–few, smooth, basal sheaths not conspicuous; stamens biseriate ..... **Apodolirion**
3b Flowers many, held well above ground level:
5a Plants with large, fleshy bulbs; leaves sword- to tongue-shaped, succulent and often hairy; spathe bracts surrounding flowers conspicuous..... **Haemanthus**
5b Plants with much-reduced bulbs or rhizomes; leaves various; spathe bracts surrounding flowers conspicuous or inconspicuous:
6a Leaves elliptic with a petiole-like base and prominent midrib, thin-textured; scape elliptical in section ..... **Scadoxus**
6b Leaves narrowly sword-shaped, leathery; scape strongly flattened and sharp-edged in section..... **Clivia**
2b Plants bulbous; tunics producing extensible threads when torn; mature fruit dehiscent or indehiscent, dry, papery or membranous:
7a Leaf margins hyaline, ± fringed with minute, branched cilia; pedicels usually shorter than flowers at anthesis; filaments free to base; fruit indehiscent, often beaked; seeds thinly cork-covered:
8a Leaves annual, closely abutting each other to form an erect fan; leaf apex subacute to obtuse; fruiting head detaching from scape apex; fruit trigonous, prominently 3-ribbed..... **Boophone**
8b Leaves perennial, suberect or prostrate; apex of all but youngest leaves truncate; fruiting head not detaching from scape apex; fruit irregularly-shaped, smooth:
9a Leaves evenly spreading or in a vertical distichous pattern, suberect to recurved; blades channelled, often sheathing to form a false stem; flowers zygomorphic or rarely actinomorphic; perianth tube mostly curved ..... **Crinum**
9b Leaves biflabellate, arching or spreading on the ground; blades flat; flowers ± actinomorphic; perianth tube straight ..... **Ammocharis**
7b Leaf margins smooth, softly pubescent or raised and fringed with minute branched, red cilia; pedicels rarely shorter than flowers at anthesis; filaments connate at base, or if free, then fused to style base; fruit dehiscent, beakless; seeds cutinous, not corky:
10a Leaves with a prominent midrib; perianth > 80 mm long; seeds slightly angled by compression, pink to colourless..... **Amaryllis**
10b Leaves without a midrib; perianth < 75 mm long; seeds ovoid, usually reddish green:

11a Flowers actinomorphic ..... **Strumaria**
11b Flowers zygomorphic:
12a Leaves narrow, usually < 25 mm wide, subsucculent; pedicels slender, rarely longer than flowers; tepal margins often undulate; capsules subglobose, membranous, without conspicuous ribs ..... **Nerine**
12b Leaves broad, usually > 25 mm wide, leathery; pedicels stout, usually much longer than flowers; tepal margins rarely crisped; capsules trigonous to fusiform, prominently ribbed ..... **Brunsvigia**

AMARYLLIS L.

Belladonna lily, March lily; *Maartblom* (A)

Species 2, endemic to winter rainfall region of sthn Afr., NC, WC, EC.

belladonna L.

Perennial geophyte, up to 0.9 m high. **Leaves** 5–11, dry at flowering, spreading to suberect, lanceolate, 15–75 mm wide, channelled, hairless, midrib prominent. **Flowers** 6–12, in a ± 1-sided or evenly spreading cluster, trumpet-shaped, white to pink, usually pale lemon at base, fragrant, segments 80–100 mm long; stamens and style declinate. **Flowering time** Feb.–Apr. Seasonally moist sites in loamy soils; Eastern Fynbos-Renosterveld (WC to Coldstream).

AMMOCHARIS Herb.

Berglelie, *seeroogblom* (A)

Species ± 8, sub-Saharan Africa; 4 in sthn Afr., N, B, LIM, G, M, S, FS, KZN, L, NC, WC, EC.

coranica (Ker Gawl.) Herb.

Perennial geophyte, up to 0.35 m high. **Leaves** ± 15, flat, ± curved sideways, strap-shaped, 5–75 mm wide, shortly fringed, apex truncate. **Flowers** 3–56, in an evenly spreading, 150–200 mm wide cluster, trumpet-shaped, pale to deep pink, sweetly scented; perianth tube 8–25 mm long, segments 28–55 mm long; stamens evenly spreading, ± as long as style. **Flowering time** Nov.–Feb. Seasonally damp flats; Upper Karoo, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Aliwal North S, from Buffelsfontein to Queenstown District, Mountain Zebra National Park to Somerset East and from Bedford to the Greater Addo Elephant National Park, Port Elizabeth and Grahamstown).

APODOLIRION Baker

Ground lily

Species ± 6, sthn Afr., M, S, FS, KZN, WC, EC.

Leaves spirally twisted

[E]**bolusii** Baker

Perennial geophyte, up to 0.1 m high. **Leaves** 3, green at flowering, suberect, narrowly strap-shaped, ± 4 mm wide, firm, spirally-twisted. **Flower** solitary, funnel-shaped, whitish; perianth segments ± 40 mm long; stamens in 2 series, inserted on lower half of segments; ovary subterranean. **Flowering time** Dec. **Fruit** unknown. Damp places at high altitudes; Upper Karoo (Cave Mtn, Graaff-Reinet).

[E]**macowanii** Baker

Perennial geophyte, up to ± 70 mm high. **Leaves** 2–4, occasionally green at flowering, suberect, strap-shaped, ± 5 mm wide, firm, spirally-twisted, margins slightly raised,

rough. **Flower** solitary, funnel-shaped, pure white, fragrant; perianth segments ± 35 mm long; outer stamens inserted in throat, inner stamens inserted ± 7.5 mm beyond throat; ovary subterranean. **Flowering time** Dec.–Apr. **Fruit** an elongated, orange-yellow berry. Lowland sandy flats; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth to near Grahamstown and Jeffreys Bay).

Leaves straight to slightly falcate

[E]amyanum D.Müll.-Doblies

Perennial geophyte, up to 0.1 m high. **Leaves** 2, green at flowering, prostrate, linear, ± 4 mm wide. **Flower** solitary, funnel-shaped, delicate pink, deeper pink on tube, sweetly scented; perianth segments 18–30 mm long; outer stamens inserted below throat, inner stamens inserted ± 2 mm above throat, filaments free for 1.0–1.5 mm; ovary subterranean. **Flowering time** Aug., Sept. **Fruit** a subsucculent, ovoid, exserted berry. Quartz outcrops on thicket margins; Albany Thicket (near Grahamstown to Kenton on Sea).

buchananii Baker

Perennial geophyte, up to 0.2 m high. **Leaves** 1 or 2, dry at flowering, suberect, linear, 2.5–3.0 mm wide, straight or very slightly falcate. **Flower** solitary, funnel-shaped, pinkish outside, whitish within; perianth segments 25–40 mm long; outer stamens inserted below throat, inner stamens inserted ± 2.5 mm above throat, filaments free for 5–7 mm. **Flowering time** Aug.–Oct. **Fruit** thinly membranous, ± club-shaped, ± subterranean. In grassland; Sub-Escarpment Grassland (widespread from M and KZN to near Molteno).

lanceolatum (Thunb.) Baker

Perennial geophyte, up to ± 30 mm high. **Leaf** 1, dry at flowering, ± prostrate, lanceolate, 4–10 mm wide. **Flower** solitary, funnel-shaped, pure white, fragrant; perianth segments 25–45 mm long; outer stamens inserted in throat, inner stamens inserted on lower $^1/_3$ of segments, filaments free for 1.0–2.5 mm; ovary subterranean. **Flowering time** Dec.–Feb. **Fruit** an ovoid, succulent, exserted, yellow berry. S-facing slopes amongst rocks; Eastern Fynbos-Renosterveld (Ladismith to Willowmore).

BOOPHONE Herb.

Gifbol, *kopseerblom* (A); *incwadi*, *iswadi* (X)

Species 2, sub-Saharan Africa; both in sthn Afr., widespread.

disticha (L.f.) Herb.

Perennial geophyte, 0.2–0.5 m high; bulb usually exposed, tunics parchment-like. **Leaves** 12–20, dry at flowering, in an upright fan, lanceolate, 10–40 mm wide, channelled, grey-green, edges ± undulate. **Flowers** 50–100 or more, in a dense, brush-like cluster, pink to red, fragrant; perianth tube 5–10 mm long, segments recurved, 20–30 mm long; pedicels lengthening considerably in fruit. **Flowering time** Sept.–Mar. Rocky slopes and flats; in all bioregions, except Dry Highveld Grassland, Mesic Highveld Grassland, Indian Ocean Coastal Belt and Indigenous Forests (widespread; Bizana S, from Middelburg to Elliot, Aberdeen to Kentani, Willowmore to East London, and to Humansdorp and Skoenmakerskop).

BRUNSVIGIA Heist.

Candelabra lily, March lily; *Maartlelie*, *kandelaarblom* (A); *iKunzi* (X)

Species ± 20, sthn Afr., widespread.

Flowers red; tepals closely overlapping, rolling back strongly from apex, 3 upper more so than 3 lower; pedicels curved near ovary during flowering

josephinae (Redouté) Ker Gawl.

Perennial geophyte, up to ± 0.65 m high; bulbs ± exposed, tunics parchment-like. **Leaves** 8–20, dry at flowering, recurved, oblong, up to 200 mm wide, greyish, smooth. **Flowers** 30–40, in a widely spreading head; perianth tube up to 15 mm long, segments 45–80 mm long, dark red, orange-yellow basally; pedicels stout, straightening when fruiting. **Flowering time** Feb.–Apr. **Fruit** a ± cylindrical capsule. Rocky slopes and clay flats; Eastern Fynbos-Renosterveld (Nieuwoudtville to Malgas and from Willowmore to near Port Elizabeth).

litoralis R.A.Dyer

Perennial geophyte, up to ± 0.6 m high; bulb deep-seated, tunics parchment-like. **Leaves** ± 18, dry at flowering, upright, up to 75 mm wide, half twisted towards apex, greyish, smooth. **Flowers** ± 20(–40), in a widely spreading head; perianth tube 15–25 mm long, segments 45–80 mm long, red, streaked with yellow; pedicels stout, straightening when fruiting. **Flowering time** Feb.–Apr. **Fruit** a ± cylindrical capsule. Coastal sands; Eastern Fynbos-Renosterveld (Great Brak River and Jeffreys Bay to Port Elizabeth).

Flowers pink or red; segments widely flared from the base; pedicels straight during flowering (except in B. grandiflora*)*

grandiflora Lindl.

Umqele-wenkunxi, *umqeme-wenkuzi* (Z)

Perennial geophyte, 0.6–0.8 m high; bulb neck exposed, tunics parchment-like. **Leaves** ± 9–15, green at flowering, suberect, narrowly tongue-shaped, 30–100 mm wide, pale to grey-green, smooth. **Flowers** ± 30, suberect at first, spreading later; perianth tube ± 5 mm long, segments 40–70 mm long, ± evenly spreading, pink with a darker pink median stripe; pedicels initially curved near ovary. **Flowering time** Jan.–Apr. **Fruit** an ovoid capsule. Moist loamy soils; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (KZN uplands and coast to Bosberg, Suurberg Mts, Alexandria and East London).

[E]**gregaria** R.A.Dyer

Perennial geophyte, 0.2–0.4 m high; bulb subterranean, tunics brittle. **Leaves** 4–8, present soon after flowering, prostrate, tongue-shaped, up to 60–100 mm wide, upper surface smooth (or rough when young), margins red or pale, scabrous. **Flowers** 30–50, in a spreading cluster; perianth tube 4–5 mm long, segments 25–40 mm long, ± evenly spreading or flared upwards, pale to dark pink. **Flowering time** Jan.–Apr. **Fruit** a 3-angled, prominently ribbed, heart-shaped capsule. Sand or clay, flats or slopes; Lower Karoo, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Pearston to King William's Town southwards, from Willowmore to Port Elizabeth, Grahamstown and Port Alfred, and from Humansdorp to Cape St Francis and Jeffreys Bay).

radulosa Herb.

Perennial geophyte, 0.4–0.8 m high; bulb subterranean, tunics brittle, neck occasionally bristly. **Leaves** 4–6, dry or green at flowering, prostrate, 100–200 mm wide, tongue-

shaped, both surfaces rough, margins scabrous. **Flowers** 30–60, in a widely spreading cluster; perianth tube 2.5–5.0 mm long, segments 40–65 mm long, ± evenly spreading, red to pale pink. **Flowering time** Jan.–Mar. **Fruit** an acutely 3-angled capsule. Grassland near rock outcrops; Dry Highveld Grassland, Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (widespread from B; Aliwal North to Barkly East S, from Middelburg to Queenstown, Graaff-Reinet to near East London and to Peddie).

striata (Jacq.) Aiton

Perennial geophyte, 0.15–0.35 m high; bulb subterranean, tunics brittle. **Leaves** 4–6, dry at flowering, prostrate, 30–70 mm wide, elliptical, upper surface minutely papillate, margins red. **Flowers** 8–30, in a widely spreading cluster; perianth tube up to 4 mm long, segments 20–30 mm long, usually flared upwards with lowermost remaining basal, pale to reddish pink. **Flowering time** Mar., Apr. **Fruit** an apically rounded, thinly ribbed capsule, tapering basally. Heavy, often stony soils; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Steytlerville to Port Elizabeth and from Slang River to Humansdorp).

CLIVIA Lindl.

Bush lily; *boslelie* (A)

Species ± 6, sthn Afr., M, S, KZN, NC, EC.

miniata (Lindl.) Regel

Umayime (Z)

Rhizomatous perennial, up to 0.5–1.0 m high. **Leaves** strap-shaped, suberect to arching, 35–50(–70) mm wide, margins smooth, tip obtuse-acute. **Flowers** (4–)10–15, in a spreading cluster, trumpet-shaped, orange to reddish orange, throat yellowish or greenish; perianth 50–90 mm long, on firm, radiating pedicels. **Flowering time** Aug.–Nov. **Fruit** an orange to red berry; seeds turgid, ± globose, ± 15 mm in diam. Rocky screes or shallow soils in forests; Indigenous Forests (M, S and KZN coast S; from Port St Johns to Kentani District and near Kei River Mouth).

[E]**nobilis** Lindl.

Rhizomatous perennial, up to 0.5–1.1 m high. **Leaves** suberect, strap-shaped, 25–45 mm wide, leathery, margins usually serrated, apex usually abruptly rounded and ± notched. **Flowers** ± 30–40, in a dense cluster, ± tubular, pendulous, on lax, green pedicels; perianth 20–30 mm long, pale to dark orange or orange-red, tipped pale to dark green. **Flowering time** July–Dec. **Fruit** a reddish berry; seeds turgid, ± globose, ± 9 mm in diam. Wooded kloofs, riverbanks, forest margins and coastal dunes; Indigenous Forests (near Mbashe River SW to Butterworth, from Suurberg Mts to just N of Sundays River Mouth, Grahamstown and East London).

robusta B.G.Murray, Ryan, De Lange, Hammett, Truter & Swanevelder

Rhizomatous perennial, 0.5–1.6 m high. **Leaves** arching to suberect, strap-shaped, 40–70(–90) mm wide, margins smooth to ± minutely serrated towards apex, tip ± obtuse. **Flowers** 15–40(–45), in a lax cluster, tubular, slightly curved, pendulous, on suberect pedicels; perianth 30–55 mm long, pale to dark orange-red, rarely yellow. **Flowering time** Mar.–Aug. **Fruit** an orange-red berry; seeds turgid, ± globose, 10–18(–20) mm diam. Seepage areas, streambanks and swamp forest; Indigenous Forests (sthn. KZN to just S of Port St Johns).

CRINUM L.

Species ± 65, pantropical, ± 40 species in sub-Saharan Africa; ± 20 in sthn Afr., widespread.

[E]campanulatum Herb.

Vleilelie (A)

Aquatic, perennial geophyte, up to 0.2–0.6 m high. **Leaves** basally tufted, linear, 14–25 mm wide, minutely fringed with cartilaginous hairs. **Flowers** 4–7, in a lax cluster, ± actinomorphic, ± bell-shaped; perianth tube ± 50 mm long, widening abruptly to a broad cup, segments 40–50 mm long, rose-pink usually greenish at base. **Flowering time** Sept., Oct. **Fruit** subglobose, lacking a beak. In seasonal pans and vleis; Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna, Albany Thicket (Port Elizabeth to near Grahamstown, Alexandria and East London).

[E]lineare L.f.

Perennial geophyte, 0.2–0.7 m high. **Leaves** arching from base, linear, 5–25 mm wide, channelled, firm, grass-green, margins smooth or with minute, widely spaced teeth. **Flowers** 4–14, in a lax cluster, zygomorphic, widely trumpet-shaped; perianth tube curved, ± 30 mm long, segments 30–100 mm long, white with a deep pink keel, turning pink when mature. **Flowering time** Jan.–Mar. **Fruit** subglobose, shortly beaked. Coastal sands; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth to Peddie District).

macowanii Baker

Perennial geophyte, up to 0.5–1.2 m high. **Leaves** spreading or arched from a short, stem-like base, 20–160 mm wide, channelled, flaccid, grey-green, margins ± undulate, with short cartilaginous hairs. **Flowers** 8–25, in a lax cluster, zygomorphic, widely trumpet-shaped; perianth tube curved, 30–110 mm long, segments 70–110 mm long, white with a deep pink keel, turning brown when old. **Flowering time** Oct.–Jan. **Fruit** subglobose, shortly beaked. Stony slopes or sandy flats; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Queenstown to Mthatha S, from Somerset East to Kei River Mouth, Fish River at Dikkop Flats to Grahamstown and Bathurst Valley).

moorei Hook.f.

Perennial geophyte, up to 0.3–1.6 m high. **Leaves** sheathing at base, forming a false stem up to 1.2 m tall, blades 60–120 mm wide, pale green, midrib prominent, margins smooth. **Flowers** 5–10, in a lax cluster, zygomorphic, widely funnel-shaped; perianth tube curved, 80–100 mm long, segments 80–100 mm long, white to delicate pink, without a dark keel, heavily scented. **Flowering time** Nov.–Mar. **Fruit** subglobose, lacking a beak. Damp and marshy places in shade; Indigenous Forests (northern KZN S along coast to Mngazi River, Kei River Mouth, Haga Haga and East London).

CYRTANTHUS Aiton

Species ± 50, sub-Saharan Africa, all except 2 spp. in sthn Afr., N, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Perianth tube narrow at base, flaring widely to throat, upper part of perianth tube ± campanulate
2a Perianth segments spreading evenly from tube; stamens and style prominent or rarely included in tube, ± straight and spreading symmetrically; stigma minutely 3-lobed

elatus (Jacq.) Traub
George lily

Perennial geophyte, 0.2–0.6 m high. **Leaves** green at flowering, strap-shaped, 10–25 mm wide, slightly channelled. **Flowers** 2–9, suberect to spreading; perianth widely funnel-shaped, 70–100 mm long, bright red, rarely pink or white, segments 25–35 mm wide; style slightly curved; stigma inconspicuous. **Flowering time** Nov.–Mar., often after fire. Forest margins and moist high slopes; Eastern Fynbos-Renosterveld, Indigenous Forests (WC to Humansdorp District).

[E]montanus R.A.Dyer
Perennial geophyte, up to ± 0.25 m high, producing bulbils. **Leaves** green at flowering, strap-shaped, 10–20 mm wide. **Flowers** 5–10, erect; perianth widely funnel-shaped, 50–60 mm long, coral-red, segments 5–8 mm wide; stamens prominent and spreading; style straight; stigma inconspicuous. **Flowering time** Jan.–Mar. In rock crevices on upper slopes; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

[E]wellandii Snijman
Perennial geophyte, 0.2–0.4 m high. **Leaves** green or dry at flowering, linear, ± 3 mm wide. **Flowers** 4–7, spreading; perianth funnel-shaped, 35–40 mm long, light to bright red; stamens short; style included in tube below stamens; stigma broadly 3-lobed. **Flowering time** Feb. Stony slopes in grassy renosterveld; Eastern Fynbos-Renosterveld (Humansdorp District).

2b Lower perianth segments extending beyond upper segments; stamens and style prominent, bent down towards lower segments; stigma of 3 long branches
3a Flowers red to pink or salmon-coloured, marked with dark stripes leading into throat from between perianth segments

[E]flammosus Snijman & Van Jaarsv.
Perennial geophyte, up to ± 0.25 m high; bulb partially exposed. **Leaves** green at flowering, lanceolate, 15–20 mm wide, thick, greyish green, narrowed at base. **Flower** 1(2), erect, on a short, stout pedicel; perianth widely funnel-shaped, 80–100 mm long, scarlet, usually with a green eye; style curved against lower segments; stigma 3-branched. **Flowering time** Mar. Shaded rock crevices on cliffs; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

[E]macmasteri Snijman
Perennial geophyte, 0.20–0.25 m high. **Leaves** often dry at flowering, strap-shaped, 6–7 mm wide, ± grey-green, distinctly keeled, margins and midrib minutely papillate towards base. **Flowers** 3–6, spreading or slightly drooping to one side; perianth funnel-shaped, 37–42 mm long, scarlet, throat whitish pink with 6 scarlet stripes; style pressed against lower segment; stigma 3-branched. **Flowering time** Jan.–Mar. Steep slopes amongst sandstone and dolerite outcrops; Sub-Escarpment Savanna (along Great Kei River, Bolo and Nqancule rivers).

sanguineus (Lindl.) Walp.

Kei lily

Perennial geophyte, 0.3–0.4 m high. **Leaves** green at flowering, linear-lanceolate, 10–20 mm wide, soft, pale green, keeled. **Flowers** 1 or 2(–4), laxly spreading; perianth widely funnel-shaped, 75–105 mm long, scarlet or rarely salmon-pink, throat paler with 6 dark lines; style pressed against lower segment; stigma 3-branched. **Flowering time** Jan.–Mar. Shaded rocky slopes and streambanks; Sub-Escarpment Savanna, Indigenous Forests, Albany Thicket (widespread from N; Flagstaff in Pondoland, S, from Hogsback to Kei River Mouth, Baviaanskloof Mts and Elands River Catchment Basin to Bathurst District and to East London).

3b Flowers pink, cream-coloured or white, with red, pink or green median stripes on backs of tepals

[E]helictus Lehm.

Perennial geophyte, 0.1–0.2 m high, poorly understood. **Leaves** green at flowering, linear, 1–2 mm wide, ± spirally twisted, shiny, green. **Flowers** 1 or 2, spreading; perianth funnel-shaped, 30–50 mm long, white, segments backed with pinkish brown midribs; style curved towards lower segment; stigma 3-branched. **Flowering time** Oct.–Feb. Dry flats; Sub-Escarpment Grassland, Albany Thicket, Sub-Escarpment Savanna (near Queenstown and Cathcart S, from Graaff-Reinet to Kei River Mouth, and from Suurberg Mts to Uitenhage, Greenfields W of Port Elizabeth, Alexandria and East London).

[E]loddigesianus (Herb.) R.A.Dyer

Perennial geophyte, 80–300 mm high. **Leaves** occasionally dry at flowering, narrowly strap-shaped, 2–8 mm wide. **Flowers** 1–5, suberect; perianth funnel-shaped, 35–70 mm long, cream-coloured, segments backed with yellow, green or rarely reddish midribs; stamens short and incurved; style curved against lower segment; stigma 3-branched. **Flowering time** (Oct.–)Jan.–Mar., after rain. In grass on hills and coastal dunes; Eastern Fynbos-Renosterveld, Albany Thicket (Humansdorp District to East London, and to Cape St Francis, Jeffreys Bay and Skoenmakerskop).

[E]smithiae Watt ex Harv.

Perennial geophyte, 0.15–0.30 m high. **Leaves** green at flowering, strap-shaped, 4–8 mm wide, ± spirally twisted, ± thick, grey-green. **Flowers** (1)2 or 3(–5), spreading; perianth funnel-shaped, 60–90 mm long, white to pink, segments backed with green, yellow or deep pink median stripes; style curved towards lower segment; stigma 3-branched. **Flowering time** Oct.–Jan. On dry flats; Lower Karoo, Albany Thicket, Sub-Escarpment Savanna (near Aberdeen through to Cookhouse, Fort Brown, King William's Town District and S to Addo).

1b Perianth ± tubular, narrowly funnel- or urn-shaped; stamens and style ± short and inconspicuous, evenly disposed in perianth tube or curved against upper segments
4a Perianth segments round, as long as wide, ± rolled back

mackenii Hook.f.

Ifafa lily

Perennial geophyte, 0.18–0.53 m high. **Leaves** green or dry at flowering, narrowly lanceolate, 7–18 mm wide, slightly channelled. **Flowers** 3–8(9), spreading; perianth tubular, dilated slightly to throat, 35–55 mm long, white to yellow, often tinged apricot-pink, spicy- to sweet-scented; stamens included in throat; stigma 3-branched.

Flowering time June–Nov. Shaded streambanks (subsp. *mackenii*) and seasonally wet grassland (subsp. *cooperi*); Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna (S coast KZN to near Matatiele S, from Maclear to Port St Johns, Somerset East to Haga Haga and to East London).

macowanii Baker

Perennial geophyte, 0.15–0.30 m high. **Leaves** green at flowering, linear-lanceolate, 3–15 mm wide, ± V-shaped. **Flowers** 6–10, ± curved downwards; perianth ± tubular, dilated slightly to throat, 30–40 mm long, scarlet, unscented; stamens included in throat; stigma 3-branched. **Flowering time** Dec., Jan. Steep S-facing rocky slopes and gorges; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna (Drakensberg Mts southwards, from Queenstown to Baziya Forest, Aberdeen to Koudeveld Mts, Graaff-Reinet, Somerset East, Bosberg and Komga).

[E]**suaveolens** Schönland

Brandlelie (A)

Perennial geophyte, 0.15–0.20 m high. **Leaves** green at flowering, narrowly strap-shaped, ± 5 mm wide, greyish, firm, veins and margins rough. **Flowers** 3–7, spreading; perianth ± tubular, dilated slightly to throat, 25–37 mm long, brick-red, rarely orange or yellow, ± clove-scented, firm-textured; stamens included just below throat; stigma 3-branched. **Flowering time** Oct., Nov. Open grassland, rarely amongst rocks, in mist-belt; Dry Highveld Grassland, Drakensberg Grassland (Mountain Zebra National Park, Amatole Mts, Stutterheim).

4b Perianth segments, longer than wide, spreading to straight
5a Large plants; bulbs > 60 mm in diam.;
leaves > 20 mm wide, twisted;
flowers pendulous

obliquus (L.f.) Aiton

Knysna lily; *justifina*, *umathunga* (Z)

Perennial geophyte, 0.2–0.6 m high. **Leaves** green at flowering, strap-shaped, 30–60 mm wide, twisted towards apex, pale green. **Flowers** 6–12, pendulous; perianth narrowly funnel-shaped with a relatively wide throat and slightly spreading, overlapping segments, 70–85 mm long, fleshy, yellow to orange, green-tipped; stamens ± 1-sided; stigma minutely trifid. **Flowering time** Aug.–Feb. Near rock outcrops; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (sthn KZN to Knysna; in EC, Queenstown E to Komga and Kentani District, southwards from Humansdorp to Port Elizabeth, Grahamstown and East London).

5b Less robust plants; bulbs < 60 mm in diam.; leaves < 15 mm wide, if wider,
then not twisted; flowers erect, spreading to pendulous
6a Flowers yellow to orange, rarely greenish

attenuatus R.A.Dyer

Perennial geophyte, 0.4–0.5 m high. **Leaves** green at flowering, ± linear, 0.5–10 mm wide, keeled. **Flowers** 4–9, suberect; perianth narrowly tubular, slightly widening to throat, 60–70 mm long, yellow to orange, rarely greenish, tube much longer than segments; stamens visible in throat; stigma 3-lobed. **Flowering time** (Sept.–)Dec. Along watercourses in loamy soil; Drakensberg Grassland (Maluti and Drakensberg mts to Barkly East District).

breviflorus Harv.

Perennial geophyte, 75–200 mm high, hugely variable. **Leaves** green or absent at flowering, linear to strap-shaped, 1–38 mm wide. **Flowers** 1–17, ± erect; perianth narrowly or widely funnel-shaped, 20–30 mm long, yellow, tube shorter than to as long as segments; stamens exserted from tube; stigma 3-lobed. **Flowering time** all year, mostly after spring fires. Vleis, streambanks and marshland; Drakensberg Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (widespread from N through Lady Grey to Kokstad District, southwards from Maclear to Mkambati Nature Reserve and Amatole Mts to East London).

flanaganii Baker

Yellow dobo lily

Perennial geophyte, up to ± 0.2 m high. **Leaves** green at flowering, strap-shaped, 10–25 mm wide, plane, ± thick-textured. **Flowers** 4–7, suberect; perianth tubular, expanding gradually to throat, 55–70 mm long, yellow, tube 2 or more times longer than segments; inner stamens visible in throat; stigma 3-lobed. **Flowering time** Oct.–Jan. On upland wet, rocky cliffs or banks; Drakensberg Grassland (Witsieshoek S to Barkly East).

[E]flavus P.E.Barnes

Perennial geophyte, ± 0.25 m high. **Leaves** green at flowering, linear, ± 1.5 mm wide. **Flowers** 2 or 3(–5), suberect; perianth inflated shortly above base into a broad tube, ± 20 mm long, yellow, tube longer than segments; stamens hidden in tube; stigma 3-lobed. **Flowering time** Aug.–Oct. Seasonally wet grassland; Albany Thicket (Trappes Valley, Bathurst).

6b Flowers red to coral-red, rarely pink or white
7a Perianth distinctly bilabiate

inaequalis O'Brien

Rooisandpypie (A)

Perennial geophyte, up to 0.3 m high. **Leaves** green at flowering, linear, 3–20 mm wide, channelled, midrib slightly thickened. **Flowers** 4–9, suberect to spreading; perianth 50–90 mm long, bright coral-red, tube expanding evenly from base, 3 upper segments hooded, 2 lateral spreading and lower decurved; 3 upper stamens arched against upper lip, 3 lower spreading; style slightly curved; stigma minutely tricuspidate. **Flowering time** Jan. Rocky slopes on sandstone or quartzite ledges; Eastern Fynbos-Renosterveld (Klein Swartberg Mts to Kouga Mts).

[E]labiatus R.A.Dyer

Perennial geophyte, up to ± 0.3 m high, forming bulbils. **Leaves** green at flowering, strap-shaped, 10–20 mm wide, greyish green, plane. **Flowers** ± 8, suberect; perianth tubular, ribbed, 55–60 mm long, coral-red, tube often greenish, 4 upper segments overlapping and forming a hood, 2 lower spreading downwards; 4 upper stamens arcuate, 2 lower spreading-deflexed; style strongly arched; stigma subcapitate. **Flowering time** Jan. Sandstone cliff faces in shade; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

7b Perianth not bilabiate

angustifolius (L.f.) Aiton

Perennial geophyte, 0.2–0.6 m high. **Leaves** green or dry at flowering, strap-shaped, 7–15 mm wide, channelled, somewhat fleshy. **Flowers** 4–10, pendulous; perianth

tubular, slightly widened towards throat, 30–70 mm long, red with orange inside, firm; stamens exserted; style longer than perianth; stigma 3-branched. **Flowering time** Oct.–Feb., occasionally in winter after fire. In seasonal streams and vleis on slopes and flats; Eastern Fynbos-Renosterveld (WC east to Port Elizabeth).

brachyscyphus Baker

Perennial geophyte, up to 0.38 m high. **Leaves** green or rarely dry at flowering, linear, 3–7 mm wide, keeled, bright green. **Flowers** 6–12, spreading ± to 1 side; perianth narrowly funnel-shaped, 25–30 mm long, bright red, tube ± as long as segments; inner stamens shortly exserted, outer stamens included; stigma 3-lobed. **Flowering time** Sept.–Nov.(–Apr.). Shaded streamsides usually amongst rocks; Indigenous Forests (sthn. KZN to King William's Town and East London districts).

collinus Ker Gawl.

Perennial geophyte, up to ± 0.3 m high. **Leaves** dry or green at flowering, narrowly strap-shaped, 3–5 mm wide, greyish green, not keeled. **Flowers** 4–11, spreading, bright red; perianth ± tubular, tube occasionally dilated towards throat, 35–45 mm long; stamens inserted in or slightly below throat; style shorter than perianth; stigma 3-lobed. **Flowering time** Dec.–May. Rocky mountain slopes on sandstone; Eastern Fynbos-Renosterveld (Riviersonderend Mts E to Suurberg Mts).

contractus N.E.Br.

Fire lily; *vuurlelie* (A)

Perennial geophyte, 0.2–0.4 m high. **Leaves** dry at flowering, linear, 8–12 mm wide. **Flowers** 4–10, drooping, scarlet to carmine; perianth narrowly tubular near base, somewhat inflated above, ± 65–75 mm long, segments distinctly apiculate at tips; stamens and style shortly exserted from throat; stigma minutely 3-lobed. **Flowering time** Sept.–Nov. Rocky or sandy slopes in grassland; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (from N to near Graaff-Reinet, Cradock, Stutterheim and East London).

huttonii Baker

Rooiberglelie (A)

Perennial geophyte, 0.5–0.6 m high. **Leaves** green at flowering, strap-shaped, 25–40 mm wide, thin-textured. **Flowers** 12–20, surrounded by 2 erect, broad, dark brownish to purple bracts, ± 1-sided, drooping, flame-red; perianth ± tubular, tube widening gradually to throat, 35–45 mm long; stamens visible in throat; stigma 3-branched. **Flowering time** Nov.–Jan. Shaded streamsides amongst rocks and damp cliffs on high mts; Indigenous Forests (from N to Amatole Mts and Katberg).

[E]**parviflorus** Baker

Perennial geophyte, up to ± 0.35 m high. **Leaves** green at flowering, linear, 1–5 mm wide, keeled. **Flowers** 6–14, spreading to ± recurved; perianth ± tubular, widening slightly to throat, 25–40 mm long, scarlet, tube slightly fluted, distinctly longer than segments; outer stamens hidden in tube, inner stamens visible in throat; stigma 3-lobed. **Flowering time** Dec., Jan. Grassy hills in stony soil; Eastern Fynbos-Renosterveld (near Grahamstown).

[E]**spiralis** Burch. ex Ker Gawl.

Varkstertlelie (A)

Perennial geophyte, up to ± 0.3 m high. **Leaves** usually dry at flowering, strap-shaped, ± 10 mm wide, spirally twisted, firm, greyish green. **Flowers** 3–7, nodding; perianth narrowly trumpet-shaped, 40–70 mm long, firm, flame-red, with gold-coloured flecks, tube dilated from near base, segment sinuses thickened; stamens shortly exserted; stigma 3-lobed. **Flowering time** Dec.–Feb. Flats and lower slopes in ± dry habitats; Albany Thicket (Uitenhage to Coega near Port Elizabeth).

[E]**staadensis** Schönland

Perennial geophyte, up to ± 400 mm high. **Leaves** green at flowering, linear, ± 2 mm wide. **Flowers** 2–6, spreading to nodding; perianth bright to medium red, tube narrow and curved at base, abruptly inflated and urn-shaped above, 35–50 mm long; stamens shortly exserted; stigma 3-lobed. **Flowering time** Jan.–Mar. On moist slopes; Eastern Fynbos-Renosterveld (Van Stadens Mts, near Port Elizabeth).

tuckii Baker

Fire lily; *brandlelie* (A)

Perennial geophyte, 0.30–0.45 m high. **Leaves** dry or occasionally green at flowering, linear, 6–9 mm wide, ± keeled. **Flowers** 4–15, nodding, ± 1-sided; perianth tubular, widening slightly to throat, 35–70 mm long, orange to red, occasionally green-tipped; stamens and style shortly exserted from throat; stigma 3-lobed. **Flowering time** (June) Sept.–Nov. (Apr.), after fire. Seasonally damp places in grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (from N across Amatole Mts to Bosberg, Stutterheim and King William's Town).

ventricosus Willd.

Fire lily; *brandlelie* (A)

Perennial geophyte, 0.10–0.25 m high. **Leaves** dry at flowering, linear, 2–7 mm wide, without a keel. **Flowers** 2–10, ± nodding; perianth tubular to narrowly trumpet-shaped, 40–50 mm long, bright shiny red, occasionally segments shell-pink; stamens inserted in lower $^1/_3$ of tube, filaments and style arched downwards from upper segment distally; stigma undivided. **Flowering time** Dec.–May, after fire. S-facing sandstone slopes; Eastern Fynbos-Renosterveld (WC east to Kouga Mts).

Species excluded – Probably conspecific with one of the above: **C. clavatus** (L'Hér.) R.A.Dyer, **C. speciosus** R.A.Dyer, **C. epiphyticus** J.M.Wood, **C. obrienii** Baker, **C. rectiflorus** Baker, **C. rotundilobus** N.E.Br., **sp. 1** in Goldblatt & Manning (2000).

GETHYLLIS L.

Koekemakranka, *kukumakranka* (A)

Species ± 32, semi-arid areas of sthn Afr., N, B, NW, FS, NC, WC, EC.

longistyla Bolus

Perennial geophyte, 70–100 mm high. **Leaves** dry at flowering, ± curved towards apex, covered with clusters of stiff, white, longitudinally orientated hairs, affixed to blade at middle, margins with clusters of transversally orientated hairs. **Flower** solitary, salver-shaped, pink; perianth segments ± 35 mm long; anthers 6; ovary subterranean; style ± deflexed sideways; stigma broad. **Flowering time** Nov., Dec. In pebbly soil and rock crevices; Upper Karoo (WC to Agter Sneeuberg Mts near Murraysburg and Sneeuberg Mts near Nieu-Bethesda).

spiralis (Thunb.) Thunb.

Perennial geophyte, 50–150 mm high. **Leaves** dry at flowering, linear, 1 mm wide, suberect, channelled, spiralled, smooth or rarely fringed, basal sheath occasionally surrounded by first foliage leaf. **Flower** solitary, salver-shaped, white inside, pale pink outside; perianth segments 25–35 mm long; anthers 6; ovary subterranean; style curved sideways; stigma broad. **Flowering time** Nov.–Jan. On flats, between shrubs; Albany Thicket (WC east through Little Karoo to Langkloof).

transkarooica D.Müll.-Doblies

Perennial geophyte, 50–150 mm high. **Leaves** dry at flowering, linear, 1–2 mm wide, usually coiled towards apex, mostly smooth, basal sheath not prominent. **Flower** solitary, solid rose-pink; perianth segments 15–30 mm long; anthers 6, distinctly tailed; ovary subterranean; style curved laterally; stigma broad. **Flowering time** Nov., Dec. Slopes or flats in sand or clay; Upper Karoo (Great Karoo and FS to Heydon, Teviot Station, Molteno District and Mountain Zebra National Park).

HAEMANTHUS L.

Paintbrush; *poeierkwas* (A)

Species 22, endemic to sthn Afr., N, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Flowers red; bracts surrounding flowers reddish and upright

coccineus L.

Perennial geophyte, 0.2–0.4 m high. **Leaves** dry at flowering, suberect to prostrate, ± tongue-shaped, (25–)85–150(–210) mm wide, fleshy, smooth or hairy, barred maroon or dark green underneath. **Flowers** many, in a dense cluster, surrounded by several, erect, bright red, stiff, fleshy bracts; perianth 14–30 mm long. **Flowering time** Feb.–Apr. Coastal scrub and rocky slopes; Eastern Fynbos-Renosterveld (WC to Willowmore, Port Elizabeth and near to Grahamstown).

sanguineus Jacq.

Kei lily

Perennial geophyte, 0.15–0.25 m high. **Leaves** dry at flowering, pressed to ground, ± strap-shaped, 35–280 mm wide, leathery, often rough, with a minute, red or opaque, cartilaginous fringe. **Flowers** many, in a dense, ± compressed cluster, surrounded by several, erect to slightly spreading, red or rarely pink, leathery bracts; perianth 15–32 mm long. **Flowering time** Jan–Apr., after fire. Seasonally moist habitats on mountains and coastal flats; Eastern Fynbos-Renosterveld (WC to Willowmore, Humansdorp and Port Elizabeth).

1b Flowers white or shades of pink; bracts surrounding flowers greenish white or pale pink and membranous
2a Bulb tunics usually slightly exposed and greenish; bracts of inflorescence firm and erect

albiflos Jacq.

Perennial geophyte, 75–350 mm high. **Leaves** green at flowering, erect to prostrate, ± elliptic, 25–115 mm wide, smooth or hairy, fringed. **Flowers** many, in a dense, compact cluster held well above leaves, surrounding bracts slightly spreading, blunt, white with green veins; perianth 16–23 mm long, white. **Flowering time** Apr.–Aug. Coastal and riverine scrub; Albany Thicket, Indigenous Forests (coast of KZN to Queenstown, Katberg and Port St Johns, southwards to Willowmore, Port Elizabeth and East London).

deformis Hook.f.

Perennial geophyte, ± 0.1 m high. **Leaves** green at flowering, prostrate, broadly oblong, 70–250 mm wide, firm, hairy or smooth, fringed. **Flowers** many, in a compact, ± compressed cluster held close to leaves, surrounding bracts overlapping, blunt, white, occasionally green-veined; perianth ± 30 mm long, white. **Flowering time** May–Oct. Moist rocky banks and ledges; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (KZN to Mount Frere, near Tsitsa Falls and Gundrift).

2b Bulb tunics turning pink if exposed; bracts of inflorescence soft, membranous and spreading, soon withering

carneus Ker Gawl.

Perennial geophyte, 0.100–0.275 m high. **Leaves** green at flowering, ± prostrate, ± elliptic, 35–135 mm wide, softly hairy or smooth, fringed. **Flowers** many, in a loose cluster, surrounding bracts delicate pink; perianth 11–13 mm long, rose-pink; stamens $< {}^{1}/_{2}$ as long as segments. **Flowering time** Jan.–Mar. In grassland on upper slopes and in partial shade amongst rocks or shrubs at lower altitudes; Sub-Escarpment Grassland, Albany Thicket (FS, KZN south to Bosberg and near Grahamstown).

humilis Jacq.

Perennial geophyte, 50–350 mm high. **Leaves** emerging at flowering, ± spreading, rarely prostrate, ± elliptic, 13–150 mm wide, ± hairy, rarely only fringed. **Flowers** many, in a ± loose cluster, surrounding bracts pale pink; perianth 7–25 mm long, pale to rose-pink, rarely whitish; stamens at least as long as perianth. **Flowering time** Nov.–Feb. Amongst rocks; on cliffs and in grassland; Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Lower Karoo, Albany Thicket (from Thaba Chitja to Kokstad S, Middelburg District to Mthatha, Graaff-Reinet to Komga, and Port Elizabeth to East London).

montanus Baker

Perennial geophyte, 0.15–0.25 m high. **Leaves** emerging at flowering, ± suberect, strap-shaped, 15–50 mm wide, occasionally ± twisted, greyish green, entirely smooth, margins occasionally raised or opaque. **Flowers** many, in a ± loose cluster, surrounding bracts whitish pink; perianth 10–14 mm long, white. **Flowering time** Oct.–Dec. Poorly drained flats, vleis or riverbanks in grassland; Sub-Escarpment Grassland (widespread, from Queenstown to Idutywa, Bedford and Cathcart).

NERINE Herb.

Species ± 23, sthn Afr., widespread.

1a Scape ± compressed in cross section; inflorescences compact with large heads of > 20 flowers

[E]huttoniae Schönland

Perennial geophyte, up to ± 0.25 m high. **Leaves** green at flowering, strap-shaped, 15 mm wide, ± channelled. **Flowers** in a large, round cluster; perianth ± 32 mm long, pink, segments oblanceolate, ± 3.5 mm wide, edges slightly undulate, ± as long as stamens; filaments with small appendages at base. **Flowering time** Jan., Feb. Dry flats in alluvial soils and in full sun; Upper Karoo, Albany Thicket (Great Fish River Basin from Cradock to Committees Drift).

1b Scape ± round in cross section; inflorescences tall and slender with medium-sized heads of < 15 flowers
2a Pedicels and ovary smooth

bowdenii Watson

Perennial geophyte, 0.5–0.7 m high. **Leaves** green at flowering, strap-shaped, 15–30 mm wide, channelled, shiny green. **Flowers** in an elegant cluster; perianth 50–60(–75) mm long, pale pink with dark midveins, segments lanceolate, 7–8 mm wide, upper 3 recurved, edges crisped in upper half, slightly longer than stamens. **Flowering time** Feb.–Apr. Upland, moist, rocky slopes and cliffs; Sub-Escarpment Grassland (KZN, Drakensberg Mts S to Queenstown, Engcobo).

peersii W.F.Barker

Perennial geophyte, 0.3–0.5 m high. **Leaves** green at flowering, strap-shaped, 4–13 mm wide. **Flowers** in a loose head, 30–45 mm long, pale pink with a deep pink median stripe, perianth segments flared upwards, narrowly lanceolate, 3–6 mm wide, edges undulate in upper half, slightly longer than stamens, apex recurved and spirally twisted; pollen yellow (not whitish as in *N. humilis* (Jacq.) Herb. from WC). **Flowering time** Apr., May. Loamy soils on rocky S-facing slopes and river gorges; Eastern Fynbos-Renosterveld (Meiringskloof to Kamanassie Mts and Baviaanskloof Mts).

[E]undulata (L.) Herb.

Perennial geophyte, up to ± 0.30 m high, in clumps. **Leaves** often dry at flowering, lanceolate, 7–20 mm wide, channelled. **Flowers** in a compact cluster; perianth 14–25 mm long, pale pink, segments abruptly narrowed above throat, all flared upwards, narrowly lanceolate, 2–4 mm wide, edges conspicuously crisped throughout, longer than stamens. **Flowering time** Mar.–July. Open grassland, along streams and forest verges; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Indigenous Forests (Engcobo S, from Bosberg E to Amatole Mts and Kei River Mouth, and Suurberg Mts to East London).

2b Pedicels and ovary shortly pubescent

angustifolia (Baker) Baker

Berglelie (A)

Perennial geophyte, up to ± 0.55 m high. **Leaves** often dry at flowering, linear, 3–5 mm wide, ± terete, grooved. **Flowers** in an elegant head; perianth 30–50 mm long, pink, segments narrowly lanceolate, 4–5 mm wide, all flared upwards, ± crisped towards tips, ± shorter than to as long as stamens. **Flowering time** Feb.–Apr. Marshy depressions and streambanks; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (from N to EC: Barkly East to Naude's Neck S, Maclear to Lusikisiki District and Amatole Mts to Stutterheim).

appendiculata Baker

Perennial geophyte, 0.5–0.6 m high. **Leaves** often dry at flowering, linear, 1.5–4.0 mm wide, ± fleshy, channelled. **Flowers** in an elegant head; perianth 25–35 mm long, pink, segments narrowly lanceolate, 2–4 mm wide, all flared upwards, ± crisped towards tips, ± as long as stamens, base of filaments with small lacerated appendages. **Flowering time** Feb.–Apr. Streambanks or vleis; Sub-Escarpment Grassland, Upper Karoo, Sub-Escarpment Savanna, Drakensberg Grassland (FS, KZN to Matatiele and Bizana districts, from Middelburg to Queenstown and Libode District, across Amatole Mts to Grahamstown).

[E]**filamentosa** W.F.Barker

Perennial geophyte, up to ± 0.3 m high. **Leaves** often dry at flowering, terete, ± 1.5 mm wide. **Flowers** in ± open heads; perianth 20–25 mm long, pink, segments linear, ± 2 mm wide, distinctively rolled back from tips; stamens prominently exserted, ± twice as long as segments. **Flowering time** Mar., Apr. In shallow soil on dolerite or sandstone rocks; Sub-Escarpment Grassland (near Cathcart).

[E]**filifolia** Baker

iTswele lenyoka (X)

Perennial geophyte, up to ± 0.3 mm high. **Leaves** evergreen, filiform, ± 1 mm wide. **Flowers** in a neat cluster; perianth 25–40 mm long, pink, segments narrowly lanceolate, ± 3 mm wide, twisted and undulate in upper $^1/_3$, ± as long as stamens. **Flowering time** Mar.–May. On seasonally damp rock outcrops in grassland; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna (Queenstown E to Mthatha, across Amatole Mts to Stutterheim and Kei River, and to Grahamstown).

[E]**gibsonii** Douglas

Perennial geophyte, up to ± 0.3 m high. **Leaves** usually green at flowering, linear, ± 3 mm wide, channelled, ± twisted. **Flowers** in a compact cluster; perianth ± 30 mm long, white, flushed pink at tips, segments broadly lanceolate, ± 5 mm wide, hardly undulate, all but lowermost flared upwards, slightly longer than stamens; filaments with basal appendages. **Flowering time** Mar. Between rocks and in marshy depressions at high altitudes; Sub-Escarpment Grassland (Elliot and Xalanga districts).

[E]**masoniorum** L.Bolus

Perennial geophyte, up to ± 0.22 m high. **Leaves** evergreen, filiform, ± 1 mm wide. **Flowers** in a small cluster; perianth 13–15 mm long, pink, segments strongly recurved, narrowly lanceolate, 3–4 mm wide, crisped throughout, ± twice as long as stamens; filaments with basal appendages. **Flowering time** Feb., Mar. On dolerite outcrops exposed to mist; Sub-Escarpment Savanna (between Mqanduli and Libode).

pancratioides Baker

Perennial geophyte, up to ± 0.6 m high. **Leaves** evergreen, linear, ± 2 mm wide. **Flowers** in a compact cluster; perianth 16–24 mm long, white or very pale pink, segments only slightly upturned, 4–5 mm wide, hardly crisped, ± twice as long as stamens; filaments with basal appendages. **Flowering time** Feb., Mar. Wetlands in uplands and midlands; Sub-Escarpment Grassland (KZN to near Ntsikeni and Kokstad District).

SCADOXUS Raf.

Blood flower, snake lily

Species 9, tropical Africa; 3 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, WC, EC.

membranaceus (Baker) Friis & Nordal

Perennial geophyte, 0.3–0.5 m high. **Leaves** green at flowering, spreading, petiole-like base not sheathing, blade lanceolate, 30–130 mm wide. **Flowers** in a conical cluster, surrounding bracts suberect, broad, blunt, ± equal, waxy, red to green, exceeding flowers; perianth 20–25 mm long, greenish to pink; stamens and style slightly exserted. **Flowering time** Feb.–Apr. Coastal sand in riverine and coastal forests; Indigenous Forests (Mkambati Nature Reserve southwards along coast to Port St Johns, East London, Bushman's River and Port Elizabeth).

multiflorus (Martyn) Raf.

Perennial geophyte, 0.7–1.2 m high. **Leaves** dry or green at flowering, petiole-like base sheathing to form a false stem, blade lanceolate-ovate, 35–150 mm wide. **Flowers** in a ± globose cluster, surrounding bracts membranous, soon withering; perianth 30–40 mm long, scarlet, tube slender, segments widely spreading; stamens and style prominently exserted. **Flowering time** Oct.–Mar. Grassland and forest mosaic; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests (Mount Currie to Port St Johns, Kentani District).

puniceus (L.) Friis & Nordal

Impompo (Z)

Perennial geophyte, 0.5–0.7 m high. **Leaves** dry or green at flowering, petiole-like base sheathing to form a false stem, blade lanceolate-ovate, 50–150 mm wide. **Flowers** in a dense, conical-hemispherical cluster, surrounding bracts suberect, as long as or longer than flowers, green to red; perianth ± tubular, 20–35 mm long, yellow-green to red; stamens and style slightly exserted. **Flowering time** Sept.–Jan. Coastal grass and river valleys; Sub-Escarpment Grassland, Dry Highveld Grassland, Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Clydesdale southwards, from Queenstown to Baziya S, Somerset East to Kentani, Port Elizabeth to East London and to Witelsbos).

STRUMARIA Jacq.

Species ± 28, endemic to sthn Afr., N, FS, NC, WC, EC.

gemmata Ker Gawl.

Perennial geophyte, ± 0.1 m high. **Leaves** usually dry at flowering, ± recurved, elliptic to strap-shaped, 5–25 mm wide, softly hairy or rarely smooth. **Flowers** on long, spreading pedicels; perianth star-shaped, 8–16 mm in diam., pale lemon, margins ± crisped; stamens ± equalling segments, inserted on broad base of style. **Flowering time** Feb.–May. Stony slopes or flats; Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Queenstown and Andriesberg S, Graaff-Reinet, Willowmore, Baviaanskloof and Port Elizabeth).

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ANTHERICACEAE see AGAVACEAE

APONOGETONACEAE

(Order Alismatales)

Compiled by C.J. Cilliers

APONOGETON L.f.

Monogeneric, species 48, tropical to temperate regions of Asia, Africa, Madagascar and Australia; 7 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, WC, EC.

1a Flowers arranged in neat rows along 1 side of each spike
2a Flowers with 1 perianth segment

distachyos L.f.

Cape hawthorn, Cape asparagus, Cape pondweed, water onion; *waterblommetjie*, *wateruintjie*, *vleikos*, *watervygen* (A)

Perennial rhizomatous aquatic. **Rhizomes** up to 60 mm in diam. **Leaves** submerged and floating, floating leaves with petioles up to 1 m long; blades lanceolate to oblong, and apex pointed to rounded. **Inflorescence** of 2 spikes. **Flowers** arranged loosely in 2 rows on 1 side of each spike; perianth segment lanceolate to oblong, white to pinkish, petal-like, tinged with pink at base, highly scented. **Flowering time** peaks in Sept. **Seeds** with single coat, plumule small and partly covered by cotyledon. In sand on sandstone riverbed, also cultivated for *waterblommetjiebredie*, a local stew; Eastern Fynbos-Renosterveld (Joubertina on Kouga River E to Humansdorp).

2b Flowers with 2 or rarely 3 perianth segments

junceus Lehm.

Perennial, rhizomatous aquatic: rosulate, 0.05–0.50 m high. **Rhizomes** up to 30 mm in diam. **Leaves** submerged or aerial, 40–430 mm long, lanceolate to linear. **Inflorescence** of 2 spikes, up to 40 mm long, elongating up to 75 mm in fruit. **Flowers** arranged laxly in 2 rows on 1 side of spike, scentless; perianth segments 2, petal-like, ovate, white or pink, 1- or 3-veined. **Flowering time** Sept.–May. **Seeds** with a single coat, plumule not visible. Poorly drained grassland, marshy or vlei areas, growing in sand; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Aliwal North, Maclear District, Queenstown, between Indwe and Lady Frere, Port Elizabeth, Albany, Grahamstown, Stutterheim, Komga).

1b Flowers arranged in all directions along each spike

desertorum Zeyh. ex A.Spreng.

Perennial, rhizomatous aquatic, height depending on depth of water. **Rhizomes** up to 60 mm in diam. **Leaves** floating, oblong, cordate, veins each side of midrib; petioles up to 1 m long. **Inflorescence** of 2 spikes. **Flowers** spirally arranged and crowded; slightly scented, whitish. **Flowering time** Sept., Dec., Mar., Apr. **Seeds** 3–5 mm long, 1–2 mm in diam.; outer coat with net-like veins, inner coat brown, closely fitting, plumule not visible. Rooted in gravel; Sub-Escarpment Savanna, Albany Thicket (Komga S to Alexandria District, E to Grahamstown and Peddie).

natalensis Oliv.

Perennial rhizomatous aquatic, rosulate, 0.14–0.40 m high. **Rhizomes** elongate, up to 20 mm long, often with long rigid hairs, also developing stolons. **Leaves** submerged or floating, up to 300 mm long; blades narrowly lanceolate, up to 150 × 30 mm; 3 or 4 veins each side of midrib, apex pointed; blades narrowly obovate, tapering to rounded, 4 veins each side of midrib; floating leaves with petioles up to 0.9–3.0 m long. **Inflorescence** of 2 spikes, up to 55 mm long in flower, elongating up to 70 mm in fruit. **Flowers** spirally arranged crowded, scentless; perianth segments 2, petal-like, ovate to tongue-shaped, white, 3-veined. **Flowering time** Jan.–Mar., Sept. **Seeds** 2(4), with single coat, ± 6 mm long, plumule present. River valleys; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Manteku S, Humansdorp E to Grahamstown and Kowie District).

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ARACEAE

(= LEMNACEAE)

(Order Arales)

Compiled by Y. Singh & Z.L. Magwaza

1a Terrestrial herbs, sometimes hygrophilous ..... **Zantedeschia**
1b Aquatic herbs:
2a Roots absent ..... **Wolffia**
2b Roots present:
3a Plants with one, usually long root ..... **Lemna**
3b Plants with several roots:
4a Plants with usually short roots ..... **Spirodela**
4b Plants with feathery roots ..... ***Pistia**

LEMNA L.

Duckweed; *damslyk* (A)

Species 13, almost cosmopolitan; 3 in sthn Afr., N, B, LIM, NW, G, FS, KZN, WC, EC.

gibba L.

Perennial herb, hydrophyte. **Fronds** floating, flattened, ovate, 1–8 × 0.8–6.0 mm, up to 4 mm thick, adaxial surface green, usually red flecked, without distinct papillae, abaxial surface usually red, inflated; largest gas-filled chambers > 0.3 mm in diam. **Root** usually exceeding 30 mm long; sheath not winged; cap rounded. **Inflorescence** of 1 female and 2 male flowers enclosed in a membranous sheath. **Flowering time**

Dec.–Feb. **Seeds** 1–5 per fruit, 0.7–0.9 × 0.4–0.6 mm, with 8–16 longitudinal ribs. Wide range of aquatic habitats, from meso- to eutrophic water, can become problem plants in water high in organic matter; Eastern Fynbos-Renosterveld, Albany Thicket (Baviaanskloof to Grahamstown and Uitenhage).

minor L.

Perennial herb, hydrophyte. **Fronds** floating, flattened, 1–8 × 0.6–5.0 mm, up to 1 mm thick, adaxial surface green or tinged with red, without red flecks, with indistinct papillae along midvein; abaxial surface usually without colour or slightly reddish, flat; largest gas-filled chambers < 0.3 mm in diam. **Root** usually exceeding 30 mm long; sheath not winged, cap rounded. **Seed** 1 per fruit, 0.7–1.0 × 0.4–0.6 mm whitish, with 10–16 longitudinal ribs. In a wide range of aquatic habitats, from meso- to eutrophic water; Eastern Fynbos-Renosterveld (Enon District).

*PISTIA L.

Water lettuce; *waterslaai* (A)

Species 1, warm regions of the world, naturalised in sthn Afr., N, B, LIM, NW, G, KZN, EC.

stratiotes L.

Aquatic, free-floating, small, lettuce-like herb, 100–200 mm in diam., with hanging feathery roots. **Leaves** in a rosette, up to 150 mm long, soft, thick-ridged, covered densely in short hairs, keeping plants afloat. **Inflorescence** a spadix wrapped in a white spathe, solitary, at centre of plant, hidden among leaves, with a single female flower below, 2–8 male flowers above. **Flowering time** Dec.–June. Rivers and dams, forming dense mats; origin pantropical?, declared weed, under biological control in SA (Category 1); Sub-Escarpment Savanna, Albany Thicket (Butterworth, Gonubie).

SPIRODELA Schleid.

Species 3, ± cosmopolitan; 2 in sthn Afr., N, B, G, FS, KZN, WC, EC.

punctata (G.Mey.) C.H.Thomps.

Annual herb, hydrophyte; turions absent. **Fronds** lanceolate to ovate, 1.5–2.0× as long as wide, 1.5–8.0 × 1–5 mm, usually pointed at apex, with 3–7 veins; adaxial surface with papillae along midvein. **Roots** 2–7, perforate lobe covering the point of attachment of roots. **Inflorescence** of 1 female and 2 male flowers enclosed in a membranous sheath; flowers and fruit occasionally present. **Ovary** with 1–5 ovules. **Seeds** ovoid, 0.8–1.0 × 0.5–0.6 mm, with 10–15 longitudinal ribs. Almost cosmopolitan in warm regions; in lakes and pools; Eastern Fynbos-Renosterveld, Albany Thicket (Tsitsikamma to Grahamstown).

WOLFFIA Horkel ex Schleid.

Species 9, ± cosmopolitan, absent from colder areas; 2 in sthn Afr., B, G, FS, KZN, WC, EC.

arrhiza (L.) Horkel ex Wimm.

Perennial herb, hydrophyte. **Fronds** spherical to ellipsoid, 0.5–1.5 × 0.4–1.2 mm, upper surface shiny, bright green, with 1 basal, lateral, funnel-shaped budding pouch; stomata 10–100. **Roots** absent. **Flowering cavity** in upper surface of frond. **Inflorescence** of 1 female and 1 male flower, without a membranous sheath. **Ovary** with 1 locule.

Seeds 0.4–0.5 × 0.4 mm, globose. In water in warm regions; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Cedarville and Grahamstown).

ZANTEDESCHIA Spreng.

Arum lily, calla lily; *varkblom* (A)

Species 8, south-central and sthn Afr., LIM, NW, G, M, S, FS, KZN, L, WC, EC.

Plants evergreen; spathes white, funnel-shaped, upper part withers with age, exposing berries; flowering stem erect at fruiting; ripe berry orange, soft

aethiopica (L.) Spreng.

White arum lily; *varklelie*, *witvarkoor* (A); *mhalalitoe*, *mothebe* (SS); *intebe* (X, Z), *ihlukwe* (Z)

Perennial geophyte, up to 350–600(–1 200) mm high. **Leaves** evergreen or deciduous, broadly ovate, basal lobes rounded, 150–300 × 100–200 mm, usually without spots. **Inflorescence** a spadix wrapped in a spathe; spathe funnel-shaped, 90–150 × 60–120 mm, white, lightly scented, without a purple blotch at base inside; female flowers interspersed with staminodes. **Flowering time** Oct.–Mar. (May). Moist depressions and streambanks; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Queenstown to Port St Johns SW, from Toise River to Kentani, Grahamstown to Port Alfred, and to Bushy Park near Port Elizabeth and Humansdorp).

Plants deciduous; spathes white, cream-coloured or pale yellow, cylindrical, turns green with age, persistent around berries; flowering stem bending to ground at fruiting; ripe berries green, firm

albomaculata (Hook.) Baill.

Arrow-leaved arum, spotted-leaved arum; *kleinvarkoor*, *witvlekvarkoor* (A); *mohalalitoe* (SS); *intebe* (X, Z)

Perennial geophyte, 400–750 mm high. **Leaves** deciduous, triangular, arrow-shaped, basal lobes rounded or pointed, 150–400 × 100–250 mm; sparsely to densely spotted or not. **Inflorescence** a spadix wrapped in a spathe; spathe cylindrical, 40–100 × 30–80 mm, white, cream-coloured or pale yellow, seldom with a purple blotch at base inside; female flowers without staminodes. **Flowering time** Oct.–Apr. Rocky hillsides, forest margins, streambanks; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Barkly East, Kokstad and Bizana SW, from Dordrecht to Libode, and from Stockenström to Fort Beaufort and Willowvale District).

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ARECACEAE (Palmae)

(Order Arecales)

Compiled by C.L. Bredenkamp & A. Masombuka

Fruit globose, hard, apiculate, ± 30 mm in diam.; lower leaflets not reduced to spines ..... **Jubaeopsis**
Fruit fleshy, date-like; lower leaf pinnae modified into spines ..... **Phoenix**

[E]JUBAEOPSIS Becc.

Pondo coconut; *Pondokokospalm* (A); *iNkomba* (X)

Species 1, sthn Afr., EC, Pondoland area.

[E]caffra Becc.

Perennial, multi-stemmed tree, up to 5(8) m high. **Leaves** pinnate or feather-shaped, 3–4 m long, apex obtuse, without spines. **Flowers** ± 10 mm in diam., in zigzag-branched sprays or panicles, monoecious. **Male flowers**: petals 3, free, much larger than sepals; stamens 8–16, shorter than petals. **Female flowers**: on lower branches, 2- or 3-locular with a single ovule in each locule. **Fruit** globose, with fibrous coating and hard endocarp. Slopes of river valleys, riverbanks and -mouths; Indian Ocean Coastal Belt (uMzimkhulu Valley, Mtentu and Msikaba).

PHOENIX L.

Wild date palm; *wildedadelboom* (A); *isundu* (X, Z); *idama* (Z)

Species ± 17, Africa to Asia; 1 in sthn Afr., N, B, LIM, M, S, KZN, EC.

reclinata Jacq.

Perennial tree or shrub, 3–6(10) m high, often several stems. **Leaves** pinnate, 2–4 m long, lanceolate or ensiform, reduced to spines at base. **Flowers** regularly spaced, dioecious **Male flowers**: calyx cupular; petals 3; stamens 6, filaments connate at base. **Female flowers**: calyx as in male; petals short, truncate; staminodes 6. **Flowering time** Aug.–Oct. **Fruit** a fleshy, ovoid, edible berry. Riverine bush, dunes, riverbanks, -mouths; Indian Ocean Coastal Belt, Albany Thicket, Indigenous Forests (Port St Johns, Kentani, Grahamstown and East London).

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ASPARAGACEAE

(= BEHNIACEAE, LUZURIAGACEAE)

(Order Asparagales)

Compiled by R.R. Klopper & S.M. Burrows

Plants bisexual, suffrutices or scramblers, stems perennial or annual from a compact woody base; leaves much reduced, bract-like, with a spinous or soft spur; flowers bisexual, solitary, fascicled or racemose ..... **Asparagus**
Plants dioecious, scandent climbers or subshrubs from short rhizomes; leaves shortly petiolate, blades ovate with many parallel veins and many cross-veins, midrib prominent; flowers functionally female or functionally male, in axillary helicoid cymes..... **Behnia**

ASPARAGUS L.

(= *ELACHANTERA* F.Muell., *MYRSIPHYLLUM* Willd., *PROTASPARAGUS* Oberm.)

Katdoring, *wilde aspersie* (A)

Species ± 120, Africa, Asia, Europe, introduced in Australia; 81 in sthn Afr., widespread.

1a Tepals mostly fused in lower half (except A. scandens *and* A. ramosissimus*); cladodes usually broad and leaf-like and solitary in the axils, or linear to filiform and in fascicles; spines always absent (subgenus* Myrsiphyllum*)*
2a Cladodes solitary

asparagoides (L.) Druce

Cape smilax; *breëblaarklimop*, *krulkransie* (A)

Scrambler, up to 3 m high. **Rhizome** with many, radially arranged, fusiform tubers close to rhizome. **Stems** twisting, wiry. **Cladodes** ovate-acuminate, variable in size, many-nerved, but often with 3 pronounced veins on each side. **Flowers** solitary in axils; stamens with red anthers; pedicels articulated below perianth. **Flowering time** July–Sept. **Fruit** a red berry. Widespread in forest, coastal valley bushveld and inland wooded areas; Sub-Escarpment Grassland, Upper Karoo, Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Kokstad S, from Middelburg to Mthatha, Seymour to Kentani, Knysna to East London and St Francis Bay to Skoenmakerskop).

ovatus T.M.Salter

Scandent shrublet, up to 1.5 m high. **Rhizome** with many fusiform tubers far removed from rhizome. **Stems** twining. **Cladodes** ovate, often folded, variable in size, many-nerved, shiny. **Flowers** 1–3 in axils, nodding; stamens with flattened filaments, bearing small basal spur on each side; pedicels ± 10 mm long, articulated below perianth. **Flowering time** Jan. **Fruit** a red berry. Mostly along coastal belt; Albany Thicket (Grahamstown to East London).

volubilis Thunb.

Scandent shrublet, up to 1.5 m high; plant has strong garlic smell. **Rhizome** with swollen bulbous tubers closely attached to rhizome. **Stems** twisted, wiry, bearing short branches. **Cladodes** broadly linear, abruptly acute above and below, several-nerved without distinct midrib, pale green. **Flowers** solitary in axils, nodding; stamens with orange anthers; pedicels short, 4–5 mm long, articulated below perianth. **Flowering time** June–Oct. **Fruit** a berry. Coastal shrub or forest undergrowth; Eastern Fynbos-Renosterveld, Indigenous Forests, Albany Thicket (Greater Addo Elephant National Park, Port Elizabeth and East London to Coldstream).

2b Cladodes in fascicles; flowers similar to subgenus Protasparagus *(1b)*

declinatus L.

Soft, deciduous, scandent shrublet, up to 1 m high. **Rhizome** creeping with many fusiform tubers. **Stems** annual, thin. **Cladodes** linear-acuminate, arcuate. **Flowers** solitary; stamens with orange anthers and 2 basal spurs on filaments; pedicels ± 5–11 mm long, articulated below perianth. **Flowering time** May–Sept. **Fruit** a whitish and semi-transparent berry. Fynbos or coastal scrub, usually on rocky outcrops; Sub-Escarpment Grassland (N of Maclear).

ramosissimus Baker

Scandent shrublet, up to 2 m high. **Rhizome** producing fusiform tubers terminating in thin roots. **Stems** green, angled, with minutely papillate ridges. **Cladodes** usually 3 per fascicle, linear, flat above, keeled below, apiculate, 8–12 × 0.7 mm. **Flowers** solitary, pendulous; tepals spreading; stamens with yellow or red anthers; pedicels ± 10 mm long, articulated in lower half. **Flowering time** Nov.–Mar. **Fruit** a red berry. Moist, shady forests, kloofs and riverine vegetation; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Dry Highveld Grassland, Indigenous Forests (Matatiele and Kokstad S to Maclear and Indwe Districts and from Somerset East to King William's Town).

scandens Thunb.

Scandent shrublet, up to 2 m high. **Rhizome** covered with fusiform roots, tapering towards root tips. **Stems** twining, wiry. **Cladodes** in threes with solitary smaller one opposing a larger pair, on one plane on both sides of branchlets, narrow, slightly sigmoid, apiculate, 1-nerved, 8–17 mm long. **Flowers** 1–3 in axils, nodding; tepals spreading; stamens with green or yellow anthers; pedicels up to 10 mm long, articulated below attenuate elongated flower base (pericladium). **Flowering time** Aug.–Dec. **Fruit** an orange to red berry. Forest and bush, in shade; Eastern Fynbos-Renosterveld, Indigenous Forests (Keurbooms to Blaauwkrantz Rivers).

1b Tepals free; cladodes linear to needle-like, usually in fascicles, spines usually present (subgenus Protasparagus*)*
3a Flowers 1–3(–many) on an apical disc

burchellii Baker

Katdoring (A)

Erect to sprawling, spiny shrub, up to 1.5 m high. **Stems** and branches spreading, zigzagging horizontally or straight, pale. **Spines** recurved, ± 5 mm long. **Cladodes** 2 or 3 per fascicle, terete, small, 1–3 mm long. **Flowers** 1–3 on an apical disc; stamens with broadened filaments and yellow anthers; pedicels short, ± 2 mm long, articulated in lower half. **Flowering time** Feb.–May. **Fruit** a black berry. Karroid thornveld; Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Rainshadow Valley Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Graaff-Reinet to Cathcart S, from Steytlerville to Uitenhage, Port Elizabeth and Grahamstown).

capensis L. var. **capensis**

Thorny asparagus; *katdoring*, *wag-'n-bietjie*, *wilde aspersie* (A)

Erect, spiny shrub, up to 1 m high. **Stems** erect, somewhat zigzagging, spine-tipped. **Spines** in threes, central spine the longest, ± 30 mm long, lateral spines short or developed into branches. **Cladodes** ± 5 per compact fascicle, narrowly obovoid to linear, with acute mucronulate apices, hairy, 2–4 mm long. **Flowers** 1 or 2 on an apical disc, sessile, enveloped by 3-lobed, ciliate, membranous bract; stamens with yellow anthers. **Flowering time** mainly Apr.–Aug. **Fruit** a red berry. Rocky slopes and karroid areas; Upper Karoo, Drakensberg Grassland, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Middelburg S, from Cradock to Hogsback, Willowmore to Steytlerville and Port Elizabeth to Grahamstown).

denudatus (Kunth) Baker

Erect shrub, up to 1.5 m high. **Stems** with many curving, wide-spreading branches. **Spines** innocuous, applanate, near base of stem. **Cladodes** 2–4 per fascicle, placed far

apart on branches, filiform, 2–4 mm long, appearing after flowering (Jan.–July). **Flowers** 2–4 in apical umbels; stamens with yellow anthers; pedicels ± 4 mm long, articulated in lower half. **Flowering time** Nov.–Feb. **Fruit** a red berry. Rocky areas, wooded grassland; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo (Gariep Dam to Mount Frere S, from Steynsburg to Barkly East District and Graaff-Reinet to Hogsback and Cathcart).

intricatus (Oberm.) Fellingham & N.L.Mey.

Erect, compact shrub, up to 0.6 m high. **Stems** strongly zigzagging with short internodes, glabrous or minutely pubescent. **Spines** absent. **Cladodes** solitary, paired at stem apices, alternate, divaricate, spinous, ± 10 mm long. **Flowers** few to several in apical fascicles; pedicels ± 4 mm long, articulated near base. **Flowering time** uncertain, possibly Oct.–Jan. **Fruit** a berry. Dry rocky hills, mixed valley bushveld; Sub-Escarpment Savanna, Sub-Escarpment Grassland, Albany Thicket (Elliotdale area to Cathcart and Komga).

plumosus Baker

Evergreen creeper, feathery asparagus; *katdoring*, *katstert*, *platkatdoring* (A)

Scandent shrublet. **Stems** often stoloniferous, twining above, with branches, branchlets and cladodes spreading in one plane, attenuated to a point above as branches and branchlets decrease in size. **Spines** absent. **Cladodes** ± 12 per compressed fascicle, spreading on both sides of branches and branchlets, terete, glabrous, dark shiny green, held in horizontal plane. **Flowers** apical in centre of upper cladode fascicle; stamens with yellow anthers; pedicels 2–3 mm long, articulated near base. **Flowering time** Oct.–Dec. **Fruit** a red berry. Usually in shade in forest undergrowth, occasionally in open grassveld; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Drakensberg Grassland (Queenstown to Port Edward S, from Stutterheim to Kentani).

setaceus (Kunth) Jessop

Feathery asparagus

Erect or usually scandent, spiny shrub, up to 2 m high. **Stems** wiry, smooth, with many spreading, twining branches. **Spines** short, hard, few basally, absent above. **Cladodes** many in fascicles, filiform, soft, shiny, up to 15 mm long, arranged in horizontal plane. **Flowers** solitary on an apical disc; stamens with yellow anthers; pedicels short, articulated below middle. **Flowering time** Oct.–May. **Fruit** a black berry. Mainly in moist forest undergrowth; Upper Karoo to Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Dry Highveld Grassland, Albany Thicket (Gariep Dam area to Mount Frere S, from Ugie to Port St Johns, Somerset East to, Kentani and Uitenhage to Bushman's River).

[E]**spinescens** Steud. ex Roem. & Schult.

Erect, spiny shrub, up to 0.8 m high. **Stems** minutely pubescent, pale grey, with ascending branches. **Spines** sharp, apex orange, usually with cladode fascicle halfway. **Cladodes** in fascicles, terete, smooth, obtuse and apiculate above, ± 7 mm long. **Flowers** 2–4, apical, surrounded by cladode fascicle; stamens with yellow anthers; pedicels ± 3 mm long, articulated near base. **Flowering time** May. **Fruit** a black berry. Rocky valley bushveld and wooded grassland; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Queenstown S, from Perdepoort to Uitenhage, Port Elizabeth and Kirkwood area).

striatus (L.f.) Thunb.

Bergappel, *bobbejaanappel* (A)

Erect, stiff shrublet, up to 0.60 m high. **Stems** minutely striate, with short, ascending, straight or laxly zigzagging branches, sometimes with round brownish galls. **Spines** poorly developed. **Cladodes** solitary on abbreviated branchlets, linear, acute, striate, hard, 30–40 × 2–5 mm. **Flowers** few to many on an apical disc; pedicels ± 5 mm long, articulated in lower half. **Flowering time** Oct.–Dec. **Fruit** an orange to red berry. Rocky karroid areas; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket, Drakensberg Grassland, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Aliwal North S, from Middelburg to Queenstown, Graaff-Reinet to Alice, Steytlerville to Uitenhage, Port Elizabeth, Grahamstown and Port Alfred, and to Humansdorp).

suaveolens Burch.

Wild asparagus; *katbos*, *katdoring* (A)

Erect, spiny shrub, up to 1 m high. **Stems** erect, straight or slightly zigzagging, with short internodes and many-budded nodes, glabrous. **Spines** in twos or threes. **Cladodes** 1–6 per fascicle, subulate, 1–19 mm long. **Flowers** 1–3 on an apical disc; pedicels 1–10 mm long, articulate near base. **Flowering time** May–July. **Fruit** a black berry. Under bush clumps in bushveld, open rocky grassveld; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Drakensberg Grassland, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Aliwal North S, from Middelburg to Queenstown, Graaff-Reinet to Kei River Mouth and Willowmore to Port Elizabeth and Grahamstown).

[E]subulatus Thunb.

Katdoring (A)

Scandent or erect shrub, up to 2 m high. **Stems** minutely grooved, with short, widely divergent, zigzagging branches and branchlets. **Spines** appressed below. **Cladodes** 3–6 per fascicle, filiform, thin, ± 15 mm long. **Flowers** on an apical disc inside cladode fascicles, shorter than cladodes; pedicels 1–2 mm long, articulated near base. **Flowering time** Oct.–Jan. **Fruit** an orange berry. Dry rocky sites; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Lower Karoo, Eastern Fynbos-Renosterveld (Alice S, from Baviaanskloof Mts to Bathurst and to Humansdorp).

3b Flowers few in axils or several in racemes
4a Flowers few in axils, inside or beside cladode fascicles

africanus Lam.

Bush asparagus; *haakdoring*, *katdoring*, *wag-'n-bietjie* (A)

Erect, spiny shrub, up to 1 m high, or climber, up to 2 m high. **Stems** pubescent or glabrous, smooth, green. **Spines** small, straight or reflexed, reddish brown, present below branches, branchlets and cladode fascicles. **Cladodes** ± 12 per fascicle, filiform, slightly curved, apiculate, up to 10 mm long. **Flowers** up to 6 in axils; stamens with small yellow anthers; pedicels articulated in lower half. **Flowering time** Dec.–Feb. **Fruit** an orange berry. Usually moist places; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Kokstad S, from Queenstown to Port Edward, Cathcart to Kei River Mouth and Joubertina to Port Elizabeth and Fish River Valley near Peddie).

bechuanicus Baker

Erect, spiny shrub, up to 0.6 m high. **Stems** smooth, glabrous or minutely puberulous, branchlets often ending in obtuse bare tips. **Spines** exserted, 5 mm long, or suppressed. **Cladodes** 4–12 per fascicle, terete, apiculate, 4–6 mm long, surrounded at base by cluster of small, membranous, ciliate bracts. **Flowers** 1–several inside cladode fascicles; pedicels articulated in lower half. **Flowering time** Oct.–Mar. **Fruit** a red to orange berry. Usually in dry grassland; Upper Karoo, Dry Highveld Grassland (Middelburg area).

concinnus (Baker) Kies

Erect, spiny shrub, up to 1 m high. **Stems** clearly ribbed, minutely pubescent or glabrous, branches shallowly zigzagging. **Spines** recurved, up to 5 mm long on main stem, shorter on side branches. **Cladodes** 12–16 per fascicle, triangular in cross section, 4–9 mm long. **Flowers** 1 or 2 per fascicle, inside fascicles; pedicels recurved, 4–6 mm long, articulated in lower half. **Flowering time** Oct.–Dec. **Fruit** a red berry. Grassy hills; Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Maclear S to Andriesberg, Aberdeen area and Fort Beaufort turnoff on Bedford-Grahamstown Road).

cooperi Baker

Wild asparagus; *katbos*, *katbosdoring* (A)

Scandent, spiny shrub, up to 2 m high. **Stems** erect below, twining above. **Spines** short, sharp. **Cladodes** filiform, becoming very dense, 10–20 mm long, maturing later in season. **Flowers** few to many, inside cladode fascicles, sweetly scented; stamens with yellow anthers; pedicels 5–10 mm long, articulated near base. **Flowering time** Oct.–Dec. **Fruit** a red berry. Bush or exposed places, often in disturbed areas; Dry Highveld Grassland, Sub-Escarpment Grassland, Upper Karoo, Drakensberg Grassland, Albany Thicket (Aliwal North and Kokstad S, from Middelburg to Maclear, Cradock to Hogsback area, and Grahamstown to Alexandria).

[E]crassicladus Jessop

Scandent or sprawling, spiny shrub, up to 2 m high. **Stems** stout, glabrous with age, branches spreading, zigzagging, greyish, densely and minutely pubescent when young. **Spines** short, raised, recurved. **Cladodes** 1–few per fascicle, succulent, curved, apiculate, base discoid, up to 25 mm long. **Flowers** in fascicles on short branches; sessile or pedunculate. **Flowering time** Nov., Dec **Fruit** a berry. Dry bushveld and succulent shrub; Upper Karoo, Albany Thicket, Dry Highveld Grassland, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Somerset East area to Joubertina and Bathurst).

divaricatus (Oberm.) Fellingham & N.L.Mey.

Erect or scandent, spiny shrub, up to 2 m high. **Stems** erect, with long thin divergent, sympodioid branches. **Spines** small, retrorse, with triangular, appressed upper scale. **Cladodes** solitary, paired at stem apices, filiform, apiculate, 30–40 mm long. **Flowers** 6–20 in compact fascicle in upper node, flanked by two divergent cladodes; pedicels 5–6 mm long, articulated in lower half. **Flowering time** Oct.–Dec. **Fruit** a yellow berry. Dry bushveld areas, usually in rocky niches; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Maclear to Mthatha S, from Kentani to Kwelegha to Bathurst).

edulis (Oberm.) J.-P.Lebrun & Stork

Annual shrublet. **Stems** initially erect, scrambling with age, glabrous, slender, with branches at right angles, drooping downwards. **Spines** reflexed at base of stem, up to 10 mm long, minute or absent above. **Cladodes** in overlapping fascicles, small, soft,

apiculate, ± 5 mm long. **Flowers** 1–4, exserted and often apical, amongst cladode fascicles; pedicels ± 4 mm long in fruit. **Flowering time** Nov., Dec. **Fruit** a berry. Humid areas in open grassveld or in shade in scrub; Drakensberg Grassland (Hogsback Forest Reserve).

exuvialis Burch. forma **exuvialis**

Katbossie, *katdoring* (A)

Erect or scrambling shrub, up to 2 m high. **Stems** with white, membranous, peeling bark, branches widely zigzagging with short internodes. **Spines** minute or absent. **Cladodes** in fascicles, filiform, up to 30 mm long at maturity, absent or immature at anthesis. **Flowers** 2 at nodes on outside of immature cladode fascicles, divergent; pedicels 2–3 mm long, articulated near middle. **Flowering time** Oct.–Dec. **Fruit** a red to orange berry. Mainly dry, sandy areas and on surface limestone; Upper Karoo, Dry Highveld Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Venterstad and Burgersdorp areas S to Middelburg, from Aberdeen to Cradock and Jansenville to Port Elizabeth).

glaucus Kies

Katdoring (A)

Erect, spiny shrub, up to 0.5 m high. **Stems** erect, glabrous, with ascending branches. **Spines** secondary branches transformed into compound spines with many lateral spinules. **Cladodes** overlapping, filiform, apiculate, glaucous, 3–10 mm long, absent at anthesis. **Flowers** axillary, single or paired along short deciduous branchlets; pedicels articulated near middle. **Flowering time** Sept.–Nov. **Fruit** a nutlet. Usually in brackish, rocky areas; Dry Highveld Grassland (Molteno and Cradock area).

laricinus Burch.

Cluster-leaved asparagus; *bergkatbos*, *fynkatbos*, *katdoring*, *katnaels*, *langbeenkatdoring* (A)

Erect, spiny shrub, up to 2.5 m high. **Stems** shallowly zigzagging, ribbed, whitish and minutely hispidulous or glabrous when young, turning brown and smooth with age. **Spines** short, hard, straight or curved, present on stems, branches and below cladodes fascicles. **Cladodes** up to 60 per fascicle, filiform, up to 35 mm long at maturity. **Flowers** 1–8 on outside of cladode fascicles; stamens with red or orange anthers; pedicels articulated below middle. **Flowering time** Sept.–Jan. **Fruit** a red berry. Damp areas; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad, Port St Johns and Alice).

macowanii Baker

Zulu asparagus

Erect or scandent, spiny shrub, up to 2 m high. **Stems** smooth, with spreading branches. **Spines** short, recurved below, suppressed above. **Cladodes** ± 50 per fascicle, pale green, ± 15 mm long. **Flowers** many in fascicles on young branches; stamens with yellow anthers; pedicels ± 5 mm long, articulated in lower half. **Flowering time** Aug.–Nov. **Fruit** a berry. Moist, shady sites, often near rivers, forest edges and rocky outcrops; Sub-Escarpment Grassland, Dry Highveld Grassland, Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket (Ilinge S, from Somerset East to Komga and Kirkwood to Grahamstown).

microraphis (Kunth) Baker
Spiny shrub, up to 1.5 m high. **Stems** erect, ribbed, pale grey, with spreading branches. **Spines** exserted, thin, sharp, ± 4 mm long, reduced or absent above. **Cladodes** many per fascicle, glabrous or rarely with apical setae, cylindrical, apiculate, narrowed into obtuse basal disc, 2–4 mm long. **Flowers** solitary beside cladode fascicles, pendulous; pedicels articulated near base. **Flowering time** Oct.–Dec. **Fruit** a berry. Humid, rocky montane areas and mountain slopes; Sub-Escarpment Grassland, Drakensberg Grassland, Lower Karoo (Kokstad S, from Queenstown to Maclear, and to Aberdeen District).

mucronatus Jessop
Erect, spiny shrub, up to 1.5 m high. **Stems** glabrous at maturity, branches pubescent. **Spines** short, sharply recurved. **Cladodes** 1–4 per fascicle, filiform, somewhat curved, apex with long mucro, grey, ± 5 mm long. **Flowers** ± 2 in each cladode fascicle; stamens with yellow anthers; pedicels ± 7 mm long, articulated near base. **Flowering time** Oct.–Dec. **Fruit** a red berry. Stony flats in dry karroid regions; Upper Karoo, Lower Karoo, Sub-Escarpment Grassland, Albany Thicket (Middelburg District S, Aberdeen to Cradock and Cathcart districts, and to Port Elizabeth).

multiflorus Baker
Large, tangled, spiny shrub or climber. **Stems** hard, somewhat zigzagging, velvety-pubescent, minutely striate, pale green. **Spines** forming triangular, blunt knob at swollen nodes. **Cladodes** ± 7 per fascicle, terete, 10–12 mm long. **Flowers** inside cladode fascicles on short, reduced branchlets; pedicels articulated in lower half. **Flowering time** Dec., Jan. **Fruit** a berry. Wide range of habitats, from coastal bush to dry mountain fynbos; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Cradock to King William's Town S, from Suurberg to Port Alfred and to Humansdorp).

natalensis (Baker) J.-P.Lebrun & Stork
Climber, up to 2 m high. **Stems** woody, grey, striate when young, becoming smooth with age. **Spines** small, exserted, present below branches, branchlets and cladode- and flower fascicles. **Cladodes** 1–4 per fascicle, linear, apiculate, base narrowed into discoid foot, bright dark green, turning dark when dry, ± 20 × 2 mm. **Flowers** in fascicles in long, compound or simple racemes; stamens with yellow or pale orange anthers; pedicels articulated in lower half, stout, with large membranous frilled disk at articulation. **Flowering time** Oct.–Dec. **Fruit** a red berry. Dry bushveld; Drakensberg Grassland (Hogsback area).

[E]oxyacanthus Baker
Erect, woody shrub, up to 1 m high. **Stems** erect, with short internodes, minutely pubescent. **Spines** short, sharp, reflexed. **Cladodes** solitary, overlapping, linear, apiculate, 1-nerved, leathery, dark green, thickened below, 40–65 × 5 mm. **Flowers** fascicled or solitary in short, compact racemes; pedicels articulated below flower base. **Flowering time** Oct.–Jan. **Fruit** a berry. Dry slopes in scrub or on forest margins; Dry Highveld Grassland, Sub-Escarpment Savanna, Albany Thicket (Somerset East to Butterworth S, from Wolwefontein District to Port Alfred and East London).

recurvispinus (Oberm.) Fellingham & N.L.Mey.
Erect, spiny shrub, up to 1 m high. **Stems** hard, dark, straight, with many ascending branches. **Spines** sharp, hooked, flattened, swollen at base, 5–10 mm long. **Cladodes** 1–3 per fascicle, terete, apiculate, 5–10 mm long. **Flowers** paired, widely spaced,

alternating with cladode fascicles; stamens with yellow anthers; pedicels short, articulated below flower. **Flowering time** Nov. **Fruit** a nutlet. Sandy or shaley soil in karroid vegetation; Rainshadow Valley Karoo (Willowmore and Steytlerville areas).

retrofractus L.

Katdoring (A)

Scrambler or tangled shrub, up to 3 m high. **Stems** hard, with strong, bare internodes and swollen nodes, branches grey, ribs ciliate when young, zigzagging. **Spines** short, recurved basally, reduced or absent above. **Cladodes** in dense, terminal, feathery fascicles, filiform, curved, pale to bright yellow-green, 10–30 mm long. **Flowers** 2–7 inside cladode fascicle; stamens with orange anthers; pedicels 5–40 mm long, articulated in lower half. **Flowering time** Jan.–Apr. **Fruit** a red berry. Sandy or rocky areas; Upper Karoo, Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket (Middelburg area S, from Graaff-Reinet District to Cradock, and to Grahamstown).

rubicundus P.J.Bergius

Erect, spiny shrublet, up to 1.5 m high. **Stems** rigid, spreading, smooth, dark shiny brown. **Spines** patent-recurved, hard, sharp, up to 8 mm long, present below axils of branches and branchlets. **Cladodes** ± 10 per fascicle, terete, 7–10 mm long, subtended by fimbriate, membranous bracts. **Flowers** solitary or rarely paired beside cladode fascicles; stamens with red or brownish anthers; pedicels ± 5 mm long, articulated bellow middle. **Flowering time** mainly Mar.–June **Fruit** a red berry. Moist flats and hillsides; Eastern Fynbos-Renosterveld (Joubertina to Port Elizabeth).

stellatus Baker

Erect, spiny shrub, up to 2.5 m high. **Stems** erect, ribbed, minutely pubescent, pale to dark grey with age. **Spines** thin, sharp, recurved, ± 6 mm long, absent above. **Cladodes** in rounded fascicles on circular receptacle, obovoid, with some setae, apiculate, narrowed into flat basal disc, ± 1 mm long. **Flowers** solitary beside cladode fascicles, pendulous; pedicels articulated near base. **Flowering time** Dec. **Fruit** a berry. Rocky montane areas and mountain slopes; Mesic Highveld Grassland, Drakensberg Grassland (Lady Grey area to Naude's Neck and Molteno to Barkly East).

virgatus Baker

Broom asparagus; *katbosdoring*, *katstert*, *makkatdoring* (A)

Erect shrub, up to 1 m high. **Stems** straight, slender, glabrous, green, with fern-like spreading branches. **Spines** absent. **Cladodes** 1–3 per fascicle, filiform, maturing after flowering, 4–15 mm long. **Flowers** solitary along branches, pendulous; pedicels ± 7 mm long, articulated in lower half. **Flowering time** Sept.–Jan. **Fruit** an orange to red berry. In shade under trees, open wooded grassland and forest edges; Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests (Aliwal North, Naude's Neck and Kokstad area to Hogsback and Kei Mouth).

4b Flowers several in racemes

[E]**acocksii** Jessop

Erect, spiny shrub, up to 0.8 m high. **Stems** densely pubescent when young, glabrous with age. **Spines** short, broad, recurved, decreasing in size upwards, present below branches, branchlets and cladode fascicles. **Cladodes** up to 40 per fascicle, filiform, curved, apiculate, typically ± 5 mm long, but can be longer. **Flowers** in racemes, contem-

porary with cladodes, strongly scented; stamens with yellow anthers; pedicels articulated near base. **Flowering time** Jan.–Mar. **Fruit** a berry. Bushveld or savanna, occasionally in grassveld; Albany Thicket, Lower Karoo, Upper Karoo (Graaff-Reinet District to Cradock and to Port Elizabeth).

aethiopicus L.

Haakdoring (A)

Spiny climber, up to 3 m high. **Stems** pale, ribbed when young. **Spines** short, exserted, recurved. **Cladodes** 4–6 per fascicle, terete or ridged, apiculate, discoid at base, glaucous-green, 10–40 mm long. **Flowers** in many racemes, outer perianth segments minutely ciliate; stamens with orange or red anthers; ovary dark; pedicels short. **Flowering time** Dec.–Mar. **Fruit** a red berry. Mainly dry bush; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Middelburg District to Elliot and Coffee Bay S, from Graaff-Reinet District to Kentani District, Willowmore to Joubertina, Uitenhage, Port Elizabeth, Grahamstown and East London).

angusticladus (Jessop) J.-P.Lebrun & Stork

Climber, up to 3 m high. **Stems** mottled grey, smooth. **Spines** patent-recurved, longer and swollen near base of stem, up to 20 mm long, progressively smaller towards distal part of stem. **Cladodes** 1–3 per fascicle, narrowly linear, slightly curved, ± 40–50 mm long. **Flowers** in compound racemes, appearing before cladodes; stamens with red anthers; pedicels articulated near base. **Flowering time** Oct.–Jan. **Fruit** a red berry. Usually on edges of dry deciduous forest or woodland; Drakensberg Grassland, Indigenous Forests (Hogsback).

densiflorus (Kunth) Jessop

Erect, spreading or scrambling, spiny shrub, up to 1 m high. **Stems** striate with short branches, ± equally long, close together. **Spines** thin, straight, sharp. **Cladodes** 1–few per fascicle, flattened, with distinct midrib, 5–12 × 1–2 mm. **Flowers** in simple, short racemes; stamens with yellow or orange anthers; pedicels short, articulated near middle. **Flowering time** Nov.–Apr. **Fruit** a red berry. Mainly coastal, in variable habitats; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld, Indigenous Forests (Kokstad S, from Queenstown to Port Edward, Cradock to Kei River Mouth, and from Kareedouw to Port Elizabeth, Grahamstown and East London).

falcatus L.

Thorny creeper, yellowwood asparagus; *doringtou* (A)

Spiny climber, up to 6 m high. **Stems** smooth, usually pale. **Spines** short, recurved. **Cladodes** linear, straight or falcate, with distinct midrib, ± 60 × 3–5 mm. **Flowers** in simple or often compound racemes; pedicels ± 7 mm long, articulated below middle, articulation forming a wide frilly disc. **Flowering time** Aug.–Apr. **Fruit** a red berry. Moist areas, usually on forest margins and bush clumps; Indian Ocean Coastal Belt, Indigenous Forests (Port St Johns SW to Kei River Mouth).

filicladus (Oberm.) Fellingham & N.L.Mey.

Erect, spiny shrub, scrambling in shade, up to 0.6 m high. **Stems** pale grey, smooth, branches curved upwards. **Spines** short, sharp, recurved. **Cladodes** 15–25 per fascicle, curved, apiculate, pale green, 10–15 mm long. **Flowers** in racemes; stamens with

yellow anthers; pedicels ± 3 mm long, articulated just below middle. **Flowering time** uncertain, possibly around Nov., Dec. **Fruit** a berry. Grassveld and open savanna; Sub-Escarpment Grassland (Queenstown to Cathcart).

krebsianus (Kunth) Jessop

Erect or twining, spiny shrublet, up to 1 m high. **Stems** ribbed when young, becoming smooth with age, glabrous. **Spines** sharp, exserted, ± 10 mm long, present below branches and cladode fascicles. **Cladodes** 1–4 per fascicle, triangular in cross section, smooth, apiculate, 15–20 × 1–2 mm. **Flowers** in simple racemes; stamens with yellow anthers; pedicels short. **Flowering time** Apr., May. **Fruit** a red berry. Open veld amongst scrub; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Cathcart and Komga to Grahamstown and Alexandria).

racemosus Willd.

Climber or tangled shrub, up to 4 m high. **Stems** straight, smooth, shiny yellow, with spreading branches; young stems purple. **Spines** short, recurved, present on stems and main branches. **Cladodes** 4–8 in overlapping fascicles, filiform, thin, 10–16 mm long. **Flowers** in simple racemes in axils of stems and branches; stamens with red or dark anthers; pedicels ± 2 mm long, articulated below middle. **Flowering time** Nov.–Apr. **Fruit** a red berry. Thicket element in frost-free, fairly high-rainfall savanna; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Port Edward SW to Komga).

Species excluded – Asparagus mariae (Oberm.) Fellingham & N.L.Mey., recorded from Bredasdorp and Riversdale with one disjunct record from Grahamstown (this specimen at PRE is rather poor and it is difficult to make a positive identification).

BEHNIA Didr.

African Solomon's seal

Monotypic, eastern sthn Afr., from Knysna to Zimbabwe, LIM, M, S, KZN, WC, EC.

reticulata (Thunb.) Didr.

Witbessieklimop (A)

Slender, climbing perennial. **Leaves** alternate, ovate, glossy, parallel-veined with reticulate venation. **Flowers** in lax, axillary cymes, small, nodding, urn-shaped, cream-coloured to green. **Flowering time** Sept.–Dec. **Fruit** a green to light yellow or whitish berry. Forests and scrub; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad and Port Edward along coast and inland to Fort Beaufort and Port Elizabeth).

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ASPHODELACEAE

(Order Asparagales)

Compiled by R.R. Klopper, G.F. Smith, M.B. Bayer & C.L. Bredenkamp

Changes in generic classification of Asphodelaceae subfamily Alooideae:

Ongoing research on the phylogeny of alooid taxa has indicated that most of the genera traditionally recognised in the subfamily are not monophyletic. Changes in the generic classification of these plants are thus required to more accurately reflect the phylogenetic relationships among them. Various approaches could be followed. The first would be to subsume all segregate genera in the subfamily Alooideae in an expanded, near-Linnean generic concept of *Aloe* [one of the possibilities suggested by Treutlein et al. (2003a, b)]. An alternative approach would be to reflect the accumulating evidence for the circumscription of monophyletic groups within the subfamily, by applying narrower generic concepts within especially *Aloe* (Grace et al. 2013) and *Haworthia* (Ramdhani et al. 2011), which would result in the recognition of segregate genera. The current review of the subfamily Alooideae is adapted from Manning et al. (2014), who examined possible options for recircumscribing the genera of Alooideae as reciprocally monophyletic entities.

Two subfamilies are currently recognised:

1a Succulent rosette plants to small pachycaul trees (subfamily **Alooideae** Burnett):
2a Anthers and styles deeply included, often more than halfway; leaves never prickly on margins; herbs, often dwarf:
3a Perianth ± actinomorphic:
4a Plants caulescent with stiff, pungent leaves, usually eccentrically keeled beneath; flowers usually < 15 mm long and whitish, rarely larger and orange but then not gasteriform ..... **Astroloba**
4b Plants caulescent or acaulescent with smooth, rugulose, or puberulous leaves; flowers > 20 mm long, pink to orange with greenish tips, gasteriform with outer and inner tepals ± completely connate..... ..... **Gasteria**
3b Perianth bilabiate:
5a Flowers arcuate; inner and outer tepal whorls not adherent; style arcuate; leaves smooth, pubescent, or rugulose ..... **Haworthia**
5b Flowers straight; inner and outer tepal whorls adherent; style straight; leaves smooth or with white, subtuberculate to subspinescent spots on lower or both surfaces ..... **Haworthiopsis**
2b Anthers and styles usually exserted or just included (flowers small and strongly bilabiate with included anthers and styles in *Aloe* sect. *Chortolirion* but then subsessile); leaves often prickly on margins; herbs, shrubs or trees:
6a Plants dichotomously branched trees or large shrubs with stems leafless below; leaves immaculate .... **Aloidendron**

6b Plants herbs or shrubs, sometimes tree-like but not dichotomously branched; leaves maculate or not:
7a Plants several-stemmed shrubs or climbers; leaves cauline, dispersed, distinctly sheathing, immaculate, with soft marginal teeth; flowers with outer tepals almost completely connate..... **Aloiampelos**
7b Plants mostly single-stemmed herbs or shrubs; leaves not dispersed along stems; flowers with outer tepals free or variously connate:
8a Plants dwarf, acaulescent herbs; leaves white-spotted or with hair-like prickles from white tubercles; outer tepals connate more than halfway; anthers not or hardly exserted:
9a Leaves trifarious, without prickles, margins cartilaginous; peduncles with many sterile bracts..... **Gonialoe**
9b Leaves spirally arranged, lower surface and margins with soft prickles; peduncles without sterile bracts..... **Aristaloe**
8b Plants acaulescent or caulescent herbs or shrubs but without above combination of characters..... **Aloe**
1b Perennial, rarely annual herbs to subshrubs (subfamily **Asphodeloideae** Burnett):
10a Leaves distinctly succulent; filaments hairy..... **Bulbine**
10b Leaves ± non-succulent, mesophytic or leathery; filaments not hairy:
11a Perianth tubular, segments fused towards base..... **Kniphofia**
11b Perianth stellate, segments free:
12a Perianth caducous; racemes simple or branched, sparsely flowered; flowers white, rarely white with yellow spots or pink; tepals usually dark keeled..... **Trachyandra**
12b Perianth persistent; racemes simple, densely flowered; flowers yellow, orange or white; tepals usually not dark keeled..... **Bulbinella**

ALOE L.

(= *CHORTOLIRION* A.Berger)

Aloe; *aalwyn* (A)

A large genus of ± 400 species widely distributed through Africa, Arabia, Madagascar, and Socotra; ± 160 in sthn Afr., widespread.

1a Capsule apically acuminate; underground parts distinctly bulbous

welwitschii Klopper & Gideon F. Sm.

[= *Haworthia angolensis* Baker, *Chortolirion angolense* (Baker) A.Berger, non *Aloe angolensis* Baker]

Acaulescent, bulbous perennial. **Bulb** with loosely packed, membranous scales covering slightly fleshy leaf bases. **Leaves** light green to glaucous green, erect, slender, grass-like, deciduous, usually twisted once or twice, white-spotted near base, margins with soft, white, decurved teeth. **Flowers** *Haworthia*-like, in lax, unbranched racemes, zygomorphic, greenish, brownish or pinkish white with greenish keels to segments. **Flowering time** Aug.–Apr. Sparse or dense grasslands; Mesic Highveld Grassland (Lady Grey area).

1b Capsule apically rounded or obtuse; underground parts mostly rhizomatous
2a Plants with well-developed stems
3a Trees or tree-like shrubs with erect stems

[E]**africana** Mill.

Uitenhage aloe; *Uitenhaagse aalwyn* (A); *ikhala* (X)

Succulent, perennial tree. **Stem** 2–4 m high, single or rarely branched, erect, with persistent dried leaves. **Leaves** dull green to somewhat glaucous, without spots, spreading to recurved, up to 0.65 m long, upper surface glabrous or with few scattered reddish spines in upper $^1/_3$, lower surface with few reddish spines in median line near apex, margins with pungent, deltoid, reddish teeth. **Inflorescences** 2 or 3, branched, erect, 0.6–0.8 m high, with cylindric-acuminate, dense racemes. **Flowers** dull red in bud, yellow-orange at maturity, up to 55 mm long, upper half of open flowers markedly

upcurved; stamens and stigma well exserted. **Flowering time** July–Sept., some clones flower irregularly throughout the year. Dense bushveld; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Port Alfred).

ferox Mill.

Bitter aloe; *tapaalwyn*, *bitteraalwyn*, *opregte-aalwyn*, *karoo-aalwyn* (A); *hlaba* (SS); *ikhala* (X); *umhlaba* (Z)

Succulent, perennial tree. **Stem** 2–3 m high, can be up to 5 m high, unbranched, erect, densely covered with persistent dried leaves. **Leaves** dull green, sometimes with reddish tinge, without spots, lanceolate-ensiform, up to 1 m long, surfaces smooth or with irregular scattered spines, margins with stout, deltoid, reddish to brownish red teeth. **Inflorescence** single, branched, erect, ± 1 m high, with cylindric, very dense racemes. **Flowers** orange, scarlet, yellow or white, ± 33 mm long; stamens and stigma well exserted. **Flowering time** May–Nov. Rocky slopes; Upper Karoo, Mesic Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Lady Grey S, from Queenstown to Port Edward, Graaff-Reinet area to Komga and Humansdorp District to East London).

lineata (Aiton) Haw.

Streepaalwyn (A)

Succulent, perennial, tree-like shrub. **Stem** up to 1.5 m high, simple or branched low down, usually covered in persistent dried leaves. **Leaves** dull to bright green, or bright yellowish green to orange-green, not glaucous, distinctly lineate, lanceolate-acuminate, ± 0.3 m long, margins reddish brown, horny, with pungent, deltoid, reddish brown teeth. **Inflorescences** 1–4, simple, erect, 0.75–1.00 m high, with conical, subdense racemes. **Flowers** salmon-pink, 45–50 mm long; stamens and stigma well exserted. **Flowering time** Jan.–Mar., June–Nov. Thicket and dense bushy vegetation; Albany Thicket, Eastern Fynbos-Renosterveld (Hankey E to Grahamstown and Alexandria).

pluridens Haw.

French aloe; *Fransaalwyn*, *garaa* (A)

Succulent, perennial tree. **Stem** ± 2–3 m high, can reach up to 5 m, simple or branched, erect, with persistent, papery, dried leaves in upper half. **Leaves** pale green to yellowish green, obscurely lineate, lanceolate-falcate, 0.6–0.7 m long, margins narrow, white, cartilaginous, with deltoid, incurved, white or pale pink teeth. **Inflorescences** up to 3, branched, erect, up to 1 m high, with conical, dense racemes. **Flowers** salmon-pink to dull scarlet, rarely yellow, 40–45 mm long; stamens and stigma well exserted. **Flowering time** May–July. Succulent thicket vegetation; Albany Thicket, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Fort Beaufort to Kei River Mouth S, from Kirkwood to Port Elizabeth and Bathurst, and to Humansdorp).

speciosa Baker

Tilt-head aloe; *Spaansaalwyn*, *slaphoringaalwyn* (A); *ikhlala* (X)

Succulent, perennial, tree. **Stem** simple or branched, ± 3–4 m high, can reach up to 6 m, erect, with persistent dried leaves; rosettes oblique. **Leaves** dull glaucous-green with slight bluish or reddish tinge, without spots, lanceolate-attenuate, 0.6–0.8 m long, margins very narrow, deep to pale pink, with very small, pale red teeth. **Inflorescences** up to 4, always simple, arcuate-erect, ± 0.5 m high, with broadly cylindric, slightly acuminate, very dense racemes. **Flowers** red in bud, greenish white at maturity,

30–35 mm long; stamens and stigma well exserted. **Flowering time** Aug., Sept. Steep slopes in succulent thicket; Albany Thicket, Dry Highveld Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Jansenville to Somerset East and King William's Town S, from Addo to Grahamstown, Port Alfred and Southwell).

thraskii Baker

Dune aloe; *strand aloe*, *strandaalwyn* (A); *umhlaba* (Z)

Succulent, perennial tree. **Stem** simple, 1–2 m high, can reach up to 4 m, erect, with persistent dried leaves. **Leaves** dull green to glaucous, without lines or spots, lower surface sometimes with a few spines in median line, lanceolate-attenuate, 1.6 m long, margins very narrow, reddish or brownish red, with small, reddish teeth. **Inflorescence** 3 or 4, branched, erect, 0.5–0.8 m high, with broadly cylindric, slightly tapering, somewhat truncate, very dense racemes. **Flowers** greenish to orange in bud, lemon-yellow to pale orange at maturity, greenish tipped, ± 25 mm long; stamens and stigma well exserted. **Flowering time** June, July. Beach dunes; Indian Ocean Coastal Belt (Port Edward to Port St Johns).

3b Shrubs with mostly slender, often tangled stems

arborescens Mill.

Krantz aloe; *kransaalwyn* (A); *tshikhopha* (Venda); *unomaweni* (X); *inkalane* (Z)

Succulent, perennial shrub. **Stems** 2–3 m high, much branched to form arborescent shrub, only terminal portion with leaves. **Leaves** dull green to grey-green, without spots, 0.5–0.6 m long, margins with firm, pale teeth, usually curved forward. **Inflorescences** several, usually simple, erect, ± 0.8 m high, with conical to elongate-conical, dense racemes. **Flowers** scarlet, orange or occasionally yellow; stamens and stigma exserted. **Flowering time** May–Aug. Rocky outcrops; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Queenstown to Port Edward S, from Fort Cunynghame to Willowvale District and Humansdorp District to Grahamstown).

2b Plants acaulescent or with short stems
4a Inflorescence usually branched

comptonii Reynolds

Succulent, perennial herb; acaulescent or stem short, rarely up to 1 m long, decumbent, with persistent dried leaves; rosettes usually in dense groups, erect. **Leaves** glaucous-green, with reddish tinge, without lines or spots, lanceolate-attenuate, up to 0.3 m long, up to 6 spines at tip of keel, margins with pale brown teeth from white base. **Inflorescence** branched, erect to ascending, 0.8–1.0 m high, with subcapitate, rounded, sometimes broadly conical, dense racemes. **Flowers** dull scarlet, 35–40 mm long; stamens and stigma well exserted. **Flowering time** Aug.–Dec. Rocky flats, slopes and cliffs; Albany Thicket, Eastern Fynbos-Renosterveld (Jansenville S to Port Elizabeth).

grandidentata Salm-Dyck

Kleinbontaalwyn (A)

Succulent, perennial herb; acaulescent or stems very short, suckering to form dense groups. **Leaves** brownish green, with many dull, white, oblong spots, usually arranged in interrupted, transverse bands, more prominently marked abaxially, lanceolate, 100–150 mm long, margins horny, reddish brown, with pungent, deltoid, reddish brown

teeth. **Inflorescence** branched above middle, ± 0.9 m high, with cylindric, slightly acuminate, lax racemes. **Flowers** dull red, club-shaped; perianth with basal swelling, 28–30 mm long; stamens and stigma exserted. **Flowering time** Aug.–Oct. Gravelly or stony soil in flat areas and on ironstone koppies; Upper Karoo, Dry Highveld Grassland (Venterstad to Aliwal North).

maculata All.

Common soap aloe; *bontaalwyn*, *seepaalwyn* (A); *lekhala* (SS); *ingcelwane* (X); *amahlala* (Z)

Succulent, perennial herb; acaulescent or stem up to 0.5 m long, rosettes solitary or suckering to form dense groups. **Leaves** pale to darker green, with many, dull, white spots in irregular broken, wavy, transverse bands, adaxially paler green, obscurely lineate and usually without spots abaxially, narrowly to broadly lanceolate, up to 250–300 mm long, with dried twisted apex, margins with pungent, deltoid, horny, brown teeth. **Inflorescence** branched in middle, 0.4–1.0 m high, branches ascending, with capitate-corymbose, dense racemes. **Flowers** red, orange or yellow; perianth with basal swelling, 35–45 mm long; stamens and stigma exserted. **Flowering time** June, July, Sept.–Jan. Rocky outcrops, thicket and grassland; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Lady Grey to Port Edward, Graaff-Reinet to Kentani District, Grahamstown to East London).

[E]**reynoldsii** Letty

Yellow spineless aloe

Succulent, perennial herb; acaulescent or stem short, branching to form dense groups, without persistent dried leaves. **Leaves** glaucous-green, distinctly lineate, with many irregularly scattered, confluent, narrowly oblong or H-shaped, dull white spots, ovate-lanceolate, acuminate, up to 0.35 m long, margins pink, cartilaginous, crenulate, with soft to firm, minute teeth. **Inflorescence** branched, subcorymbose panicle, erect, up to 0.4–0.6 m high, with subcapitate, lax racemes. **Flowers** yellow, tinged with orange towards mouth, ± 28 mm long; stamens and stigma slightly exserted. **Flowering time** Sept., Oct. Cliff faces and steep grassy slopes; Sub-Escarpment Savanna (Mbashe River).

striata Haw.

Coral aloe; *mak-aalwyn*, *streepaalwyn* (A)

Succulent, perennial herb; acaulescent or short-stemmed, up to 0.75 m high, with persistent dried leaves, rosettes usually solitary. **Leaves** glaucous to reddish tinged, with distinct or faint longitudinal striations, broadly lanceolate-attenuate, spreading-incurved, up to 0.5 m long, margins pale pink to almost red, spineless. **Inflorescences** 1–3, branched, lower branches rebranched, erect, up to 1 m high, with capitate to slightly conical, lax racemes. **Flowers** peach-red to coral-red, ± 30 mm long; stamens and stigma exserted. **Flowering time** Aug.–Oct. Variety of habitats, from valley bushveld to bare stony slopes in grassland; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Middelburg to East London).

4b Inflorescence usually simple
5a Rosettes usually suckering to form dense groups

[E]**bowiea** Schult. & Schult.f.

Succulent, perennial, dwarf herb, grass-like; acaulescent, rosettes up to 100 mm high, suckering to form dense groups. **Leaves** pale glaucous-green, minutely spotted below, distinct longitudinal lines at broad base, narrowly linear-subulate, 90–110 mm long, margins with small, soft, white teeth. **Inflorescence** simple, rarely branched, erect, up to 0.25 m high, with cylindric, lax racemes. **Flowers** greenish white, 8–15 mm long; stamens and stigma exserted. **Flowering time** Dec.–Mar. Karroid thicket; Albany Thicket (Port Elizabeth).

claviflora Burch.

Aanteelaalwyn, *kanonaalwyn*, *kraalaalwyn* (A)

Succulent, perennial herb; acaulescent, forming dense, often hollow, circular groups, rosettes not erect, facing outwards, 150–250 mm high. **Leaves** grey-green, up to 200 mm long, few spines along tip of keel, margins with sharp, brown teeth. **Inflorescence** usually simple, almost horizontal, with cylindric, dense racemes. **Flowers** bright red, yellowing with age, club-shaped; stamens and stigma well exserted. **Flowering time** Aug., Sept. Usually on calcrete, margins of Kalahari Thornveld; Upper Karoo (Middelburg area).

humilis (L.) Mill.

Dwarf hedgehog aloe

Succulent, perennial herb; acaulescent, suckering to form dense groups. **Leaves** glaucous-green with dewy bloom, without spots, obscurely linear-veined, ovate-lanceolate, very acuminate, ± 100 mm long, surface tuberculate and with irregularly arranged, soft, white prickles, margins with deltoid, soft, white teeth. **Inflorescence** simple, suberect, 0.25–0.35 m high with cylindric, subdense racemes. **Flowers** usually scarlet, occasionally orange, 35–42 mm long; stamens and stigma scarcely exserted. **Flowering time** Aug., Sept. Clay soils in Noorsveld; Albany Thicket, Dry Highveld Grassland, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Graaff-Reinet area to Port Elizabeth).

[E]**pictifolia** Hardy

Succulent, perennial herb. **Stem** short, 0.2–0.3 m high, branching at base, creeping or pendent, with persistent dried leaves. **Leaves** blue-grey to grey-green, with many white spots on both surfaces, narrowly lanceolate-acuminate, 120–175 mm long, lower surface with prickles on keel near tip, margins with small pungent, red-brown teeth. **Inflorescence** simple, ascending, ± 0.2 m high, with cylindric-acuminate, subdense racemes. **Flowers** scarlet, with greenish tips, 15–18 mm long; stamens and stigma exserted. **Flowering time** June–Aug. Steep rocky outcrops and cliffs; Eastern Fynbos-Renosterveld (Humansdorp).

pratensis Baker

Meadow aloe; *lekhala-qualane* (SS)

Succulent, perennial herb; acaulescent, rosettes rarely solitary, usually in small groups, 150–250 mm diam. **Leaves** glaucous, lineate, lanceolate to ovate-lanceolate, up to 150 mm long, surfaces with few, scattered, brownish spines from white tuberculate bases, keel armed with few brown spines, margins with pungent, deltoid, reddish brown teeth. **Inflorescence** 1–4, simple, up to 0.6 m high, erect, with cylindric, dense racemes. **Flowers** rose-red, 35–40 mm long, completely hidden by bracts in bud; stamens and

stigma slightly exserted. **Flowering time** June–Oct. Rocky slopes in montane grassland; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad S to Grahamstown).

5b Rosettes usually single, sometimes suckering to form small groups

boylei Baker

Boyle's grass aloe; *Boyle-se-grasaalwyn* (A); *isiphukuthwane*, *isiphuthumane* (Z)

Succulent, perennial herb, grass-like. **Stem** short, up to 0.2 m long, simple or with offshoots from ground level to form dense groups. **Leaves** deep green, upper surface usually without spots, sometimes lineate or with few scattered spots near base, lower surface copiously white-spotted near base, lanceolate-ensiform, 0.5–0.6 m long, margins with soft, white teeth. **Inflorescence** simple, erect, 0.4–0.6 m high with capitate, subcorymbose or slightly conic, dense racemes. **Flowers** salmon-pink, greenish tipped; stamens and style exserted. **Flowering time** Dec., Jan. Eastern Escarpment grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad to Komga).

broomii Schönland

Bergaalwyn, *slangaalwyn* (A)

Succulent, perennial herb. **Stem** short, up to 1 m high, usually simple, sometimes dividing at apex, procumbent, with persistent dried leaves. **Leaves** yellowish green or glossy reddish to brownish green, obscurely lineate, broadly ovate-lanceolate, ± 0.3 m long, apex dry, terminating in pungent spine, margins reddish brown, with deltoid, pale-tipped teeth. **Inflorescence** usually simple, erect, 1.0–1.5 m high, with cylindric, slightly acuminate, dense racemes. **Flowers** pale lemon, up to 30 mm long, hidden by large bracts (particularly in typical variety, not as pronounced in var. *tarkaensis*); stamens and stigma well exserted. **Flowering time** Aug.–Oct. (var. *broomii*), Feb., Mar. (var. *tarkaensis*). Rocky slopes; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Aliwal North to Somerset East).

cooperi Baker

Grasaalwyn (A)

Succulent, perennial herb, grass-like; acaulescent or stem up to 0.15 m high, usually simple, sometimes suckering to form small groups. **Leaves** distichous, green, usually without spots adaxially and with copious white spots at base abaxially, obscurely lineate, narrowly long-deltoid, distinctly keeled, V-shaped in cross section, margins narrow, white, with firm, white teeth. **Inflorescence** simple, erect, up to 1 m or more high, with conical, dense racemes. **Flowers** salmon-pink near base, green at apex, 38–40 mm long; stamens not or only slightly exserted; stigma exserted. **Flowering time** Jan.–Mar. Marshy places or among rocks on hillsides; Sub-Escarpment Grassland, Sub-Escarpment Savanna (near KZN Border).

ecklonis Salm-Dyck

Grasaalwyn (A); *maroba lihale* (SS); *isiphukuthwane* (Z)

Succulent, perennial herb, grass-like; acaulescent or stem very short, rosettes solitary or in small groups. **Leaves** dull green, without spots, sometimes with few, small, white spots near base, lanceolate, up to 0.4 m long, margins white, cartilaginous, with firm, white, deltoid teeth. **Inflorescence** simple, erect, up to 0.5 m high, with densely capitate, somewhat corymbose racemes. **Flowers** yellow to red, 20–24 mm long; stamens

and stigma exserted. **Flowering time** Nov.–Feb. Grassland, heavy soils; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Lady Grey to Kei River Mouth).

kniphofioides Baker

Grass aloe; *grasaalwyn* (A); *inhlatjana* (S)

Succulent, perennial herb, grass-like; acaulescent, rosettes solitary, leaf bases forming bulb-like swelling underground. **Leaves** green, without spots, narrowly linear, 0.2–0.3 m long, margins entire or minutely dentate, with small, white teeth. **Inflorescence** single, rarely 2, simple, erect, up to 0.55 m high, with very lax, few-flowered racemes. **Flowers** scarlet, green-tipped, 35–50 mm long, cylindric; stamens and stigma not or very shortly exserted. **Flowering time** Nov., Dec. Grassy slopes in stony ground; Sub-Escarpment Grassland (Kokstad).

[E]**liliputana** Van Jaarsv. & Harrower

Grass aloe with acaulescent rosettes, solitary or sometimes suckering from base to form small groups, ascending or decumbent, up to 0.13 m high. **Leaves** rosulate, ascending-spreading to ± prostrate, linear, subterete, 80–190 × 1.7–2.5 mm; leathery to smooth, dark green to purplish green, especially towards base with small, faint, oval white spots on lower surface, margins denticulate, especially in lower $^{3}/_{4}$, marginal teeth white, cartilaginous, 0.3 mm long, 1.5 mm apart, apex acuminate. **Inflorescence** 0.100–0.145 m high, ascending to decumbent, simple. **Raceme** shortly capitate, 15 mm long, rather dense. **Floral bracts** 4 × 2.5 mm. **Pedicels** 7–9 mm long. **Flowers**: perianth pink, greenish tipped, 8–11 mm long, narrowing towards slightly upturned mouth, cylindrical, angular and trigonous; outer segments free to base; stamens and style not exserted. **Flowering time** Feb., Mar. Shallow quartzitic sandstone bedrock; Indian Ocean Coastal Belt [NE part of the EC (Pondoland), N of Luputhana Gorge].

Distinguishing characters: distinguished from other EC grass aloes (*A. boylei*, *A. cooperi*, *A. ecklonis*, *A. kniphofioides*, *A. linearifolia*, *A. micracantha*, *A. minima* and *A. myriacantha*) by rosulate, wiry leaves of 2 mm wide with white non-tuberculate spots on lower surface, especially towards base. Unbranched inflorescence with rather dense, head-shaped raceme; flowers pink, green-tipped, 8–11 mm long; floral bracts as long as, or a little longer than pedicels.

linearifolia A.Berger

Inkuphuyana (Z)

Succulent, perennial herb, grass-like; acaulescent or stem very short, usually simple, occasionally branched at ground level, erect. **Leaves** green, with copious white and brown spots near base, usually distichous, linear, ± 250 mm long, margins usually minutely dentate near base. **Inflorescence** usually single, simple, erect, 200–250 mm high, with capitate, dense racemes. **Flowers** greenish yellow to yellow, ± 12 mm long; stamens and stigma exserted. **Flowering time** Jan., Feb. Grassland; Indian Ocean Coastal Belt (Port Edward to Port St Johns).

longistyla Baker

Karoo aloe; *karoo-aalwyn*, *ramenas* (A)

Succulent, perennial herb; acaulescent, rosettes single or occasionally 2 or 3, dense and compact. **Leaves** greyish green, distinctly waxy, without spots, lanceolate, 120–150 mm long, both surfaces with soft to firm white spines, margins with firm, horny, deltoid, white

teeth. **Inflorescence** 1 or 2, simple, 150–200 mm high, with broadly conical, dense racemes, exceptionally large relative to plant. **Flowers** pale salmon-pink to coral-red, ± 55 mm long, cylindric; stamens and stigma well exserted. **Flowering time** July, Aug. Flat stony or sandy areas, or on gentle slopes, usually in shade of small bushes; Upper Karoo, Lower Karoo, Albany Thicket, Dry Highveld Grassland, Rainshadow Valley Karoo (Middelburg to Willowmore).

micracantha Haw.

Wateraalwyn (A)

Succulent, perennial herb, grass-like; acaulescent or stem very short, simple, sometimes branched, erect. **Leaves** deep green to yellowish green, with copious white, subtuberculate and subspinulescent spots, narrowly deltoid, acuminate, up to 0.5 m long, margins cartilaginous, armed with firm, white teeth. **Inflorescence** 1 or 2, simple, 0.45–0.50 m high, with capitate, somewhat corymbose, dense racemes. **Flowers** salmon-pink, ± 38 mm long; stamens and stigma exserted. **Flowering time** Dec., Jan. Well-drained, sandy or stony areas; Eastern Fynbos-Renosterveld, Albany Thicket (Joubertina to Bathurst).

microstigma Salm-Dyck

Succulent, perennial herb; acaulescent or short-stemmed, up to 0.5 m high, with persistent dried leaves; rosettes usually single, sometimes in small groups. **Leaves** reddish green, both surfaces usually copiously white-spotted, obscurely lineate, lanceolate-deltoid, up to 0.3 m long, without spines or prickles, margins reddish brown, cartilaginous, with pungent, deltoid, reddish brown teeth. **Inflorescences** usually 2 or 3, simple, erect or slightly arcuate-erect, 0.6–0.8 m high, with conical to cylindric-acuminate, bicoloured, subdense racemes. **Flowers** dull red in bud, yellowing with age, sometimes uniformly yellow or red, 25–30 mm long; stamens and stigma exserted. **Flowering time** May–July. Dry karroid slopes; Upper Karoo, Lower Karoo, Albany Thicket, Rainshadow Valley Karoo (Middelburg area S to Steytlerville).

minima Baker

Inhlatjana (S); *isipukutwane* (Z)

Succulent, perennial herb, grass-like; acaulescent, rosettes single, erect. **Leaves** green, with copious slightly tuberculate-spinulescent spots towards base, linear, 250–350 mm long, margins ciliate, with minute whitish teeth in lower half. **Inflorescences** sometimes 2, simple, erect, 0.3–0.5 m high, with capitate, dense racemes. **Flowers** dull pink, 10–11 mm long; stamens and stigma not or only slightly exserted. **Flowering time** Feb., Mar. Grassland on fairly heavy soils with loose stones; Indian Ocean Coastal Belt (Port Edward).

myriacantha (Haw.) Schult. & Schult.f.

Umakhuphulwane (Z)

Succulent, perennial herb, grass-like; acaulescent, rosettes single or suckering to form small groups. **Leaves** dull green, with few white spots towards base and with more copious somewhat tuberculate-subspinulescent spots abaxially, narrowly linear, ± 250 mm long, margins with minute white teeth. **Inflorescences** sometimes 2, simple, erect, 200–250 mm high, with capitate, dense racemes. **Flowers** dull reddish pink, rarely greenish white, ± 20 mm long; stamens and stigma not or slightly exserted. **Flowering time** Mar., Apr. Stony grassland; Sub-Escarpment Savanna, Albany Thicket (Gonubie to East London).

ALOIAMPELOS Klopper & Gideon F.Sm.

After Van Wyk & Smith (2014); Manning et al. (2014).

[= *ALOE* L. *p.p.*, series *Macrifoliae* Haw, section *Macrifoliae* (Haw) Glen & D.S.Hardy]

Rambling aloes

Species 7, sthn Afr.; alt 200–2 300 m, high mountains of Lesotho, just penetrating KZN, to Cape Peninsula, coastal mountains of Gansbaai and sandstone cliffs of Langeberg to East London, KZN, L, WC, EC.

[E]**ciliaris** (Haw.) Klopper & Gideon F.Sm.

Rankaalwyn (A)

Succulent, perennial shrub. **Stems** long and slender, up to 5 m long, repeatedly branched, scandent, only terminal portion with leaves. **Leaves** green, without spots, lanceolate-deltoid to linear-lanceolate, 70–150 × 13–25 mm, margins with white, cartilaginous teeth; sheath auriculate with ciliate margins, green-lineate. **Inflorescence** simple, arising laterally below apical leaves, ascending, up to 0.3 m long, with cylindric, dense to sublax racemes. **Flowers** bright coral-red to scarlet-red with yellowish green tips, 20–30 mm long; stamens and stigma exserted. **Flowering time** all year. Dry thicket; Sub-Escarpment Savanna, Albany Thicket (Komga S to East London).

[E]**gracilis** (Haw.) Klopper & Gideon F.Sm.

Rankaalwyn (A)

Succulent, perennial shrub. **Stems** long and slender, up to 2 m long, branched at ground level, erect, only terminal portion with leaves. **Leaves** dull green, without spots, narrowly lanceolate, up to 250 mm long, ± 25 mm wide at base, margins slightly cartilaginous, with firm, white teeth; sheath not auriculate and without ciliate margins, faintly striated. **Inflorescences** 2 or 3 per stem, simple or branched, erect, 0.2–0.3 m high, with cylindric, slightly conical, subdense racemes. **Flowers** bright red to scarlet, yellowish at mouth, 40–45 mm long; stamens and stigma included or slightly exserted. **Flowering time** May–Aug. Partly shaded slopes in thicket vegetation; Albany Thicket (Uitenhage and Port Elizabeth).

striatula Haw.

Succulent, perennial shrub. **Stems** up to 2 m long, much branched. **Leaves** milky-green to semi-glossy green, without spots, linear-lanceolate, acuminate, up to 250 mm long, margins very narrow, cartilaginous, with firm, white, deltoid teeth; sheath obscurely to prominently green lined, up to 20 mm long. **Inflorescence** 1 or 2, simple, erect, with cylindric-conic, dense racemes. **Flowers** reddish orange to orange or yellow, green-tipped, 30–45 mm long; stamens and stigma well exserted. **Flowering time** Nov.–Jan. Among rocks on mountain tops; Mesic Highveld Grassland, Drakensberg Grassland, Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket (Lady Grey to Mts of sthn Lesotho S, from Middelburg to Queenstown and Graaff-Reinet).

tenuior (Haw.) Klopper & Gideon F. Sm.

Fence aloe; *heiningaalwyn* (A); *ikhalene* (X); *inhlaba empofu* (Z)

Succulent, perennial shrub. **Stems** slender, 1–3 m high, branched, erectly spreading or scandent to recurved or decumbent, without persistent dried leaves. **Leaves** in lax rosette, glaucous-green, without spots, linear-lanceolate, 100–150 mm long, margins

narrow, white, cartilaginous, with minute, white teeth; sheath obscurely green-lineate, not auriculate. **Inflorescence** simple or branched, ascending to erect, 0.3–0.4 m high, with cylindric, slightly acuminate, subdense to dense racemes. **Flowers** yellow, orange or red with yellow tips, 11–15 mm long; stamens and stigma well exserted. **Flowering time** all year. Open country on sandy soil, rarely in valley bushveld; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Dry Highveld Grassland (Queenstown to Tsolo and Port Edward S, from Jansenville to Somerset East and Kentani, and from Cookhouse to East London).

ALOIDENDRON (A.Berger) Klopper & Gideon F.Sm.

After Van Wyk & Smith (2014); Manning et al. (2014).

(= *ALOE* L. p.p., subgenus *Aloidendron*, section *Aloidendron*]

Tree aloes

Species 5 in Africa; 1 in Somalia, *A. eminens*; 2 spp. in NW corner of sthn Afr., 2 spp. in subtropical E and SE parts of SA, NC, EC.

barberae (Dyer) Klopper & Gideon F.Sm.
(= *A. bainesii* T.-Dyer, *A. barberae* T.-Dyer)

Tree aloe; *boomaalwyn*, *mikaalwyn* (A); *inKalane enkulu* (Z)

Succulent, perennial tree. **Stem** 10–18 m high, copiously dichotomously branched and rebranched from about middle, erect, without persistent dried leaves. **Leaves** dull green, without spots, ensiform, 0.6–0.9 m long, sheathing at base, margins with firm, deltoid, horny, brownish-tipped, dull white teeth. **Inflorescence** dichotomously branched, erect, up to 0.6 m high, with cylindric, slightly acuminate, dense racemes. **Flowers** orange or rose to rose-pink, greenish-tipped, 33–37 mm long, cylindric, mouth slightly upturned; stamens and stigma exserted. **Flowering time** June–Aug. Dense, tall bush and low forest; Sub-Escarpment Savanna, Indigenous Forests (Port Edward to Grahamstown).

ARISTALOE Boatwr. & J.C.Manning

[= *ALOE* series *Aristatae* A.Berger, *ALOE* section *Aristatae* (A.Berger) Glen & D.S.Hardy]

A monotypic genus from montane, southeastern SA: FS, KZN, L, WC, EC.

aristata (Haw.) Boatwr. & J.C.Manning
[= *Aloe aristata* Haw., *Tulista aristata* (Haw.) G.D.Rowley]

Guinea-fowl aloe; *tarentaalaalwyn* (A); *serelei* (SS); *umathithibala* (Z)

Succulent, perennial herb; acaulescent, usually suckering to form dense clumps, rosettes 100–150 mm in diam. **Leaves** green with several, scattered, small, white, subtuberculate to spinulescent spots; narrowly lanceolate, tapering to densely tufted awn, 80–100 mm long, soft white spines in 1 or 2 rows at apex of keel, margins with soft, white, cartilaginous teeth. **Inflorescence** occasionally simple, usually branched from middle, erect, ± 0.5 m high, with lax racemes. **Flowers** red on upper surface, paler below; stamens and stigma slightly exserted. **Flowering time** Nov. Sandy Karoo flats and mountain slopes in grassland; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey and Naude's Neck to Steynsburg, Jamestown and Cathcart).

ASTROLOBA Uitewaal

Species 6, endemic to SA; mainly from winter rainfall, southern and southwestern SA, WC, EC.
All 3 species below belong to the section *Astroloba*.

[E]**congesta** (Salm-Dyck) Uitewaal

Succulent, perennial herb. **Stem** up to 0.25 m high, erect or eventually sprawling, covered with leaves for whole length, proliferating from around base. **Leaves** in 5 straight rows, rarely imbricate, dark green, hard, smooth in texture, apex with sharp points, margins and keel with cartilaginous edge. **Inflorescence** lax, erect. **Flowers** green with creamy tinge. **Flowering time** all year, with peaks in Jan. and Sept. Karroid flats; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Cradock to Grahamstown).

foliolosa (Haw.) Uitewaal

Succulent, perennial herb. **Stem** up to 0.2 m high, erect or eventually sprawling, covered with spiralling leaves for whole length, proliferating from base. **Leaves** 5-ranked or imbricate, light to midgreen, turning purplish when exposed to sun, standing out at almost right angles to stem, flat-triangular, rigid, shining, apex with extremely sharp point. **Inflorescences** lax, erect. **Flowers** greenish white or pale cream-coloured, with green midribs. **Flowering time** Aug.–Mar. Karroid flats; Lower Karoo, Albany Thicket, Rainshadow Valley Karoo (Graaff-Reinet District to Steytlerville).

spiralis (L.) Uitewaal

Succulent, perennial herb. **Stem** up to 0.2 m high, erect or eventually sprawling, proliferating from base, covered with spiralling leaves for whole length. **Leaves** in 5 straight rows or imbricate, green, reddening when exposed to sun, ovate-lanceolate, smooth, not shining, apex with sharp point. **Inflorescence** lax, erect. **Flowers** white with yellow lobes, midribs pale green, outer tepals inflated below. **Flowering time** Nov.–June. Karroid flats and lower slopes; Lower Karoo (Graaff-Reinet).

BULBINE Wolf

Rooiwortel, *kopieva* (A)

Species ± 73, Africa and Australia; ± 67 in sthn Afr., widespread.

1a Plants with rhizomatous base
2a Leaves whorled along stem

frutescens (L.) Willd.

Rankkopieva (A)

Succulent, caulescent, perennial shrublet, with rhizomatous base. **Stem** up to 0.7 m high, woody or rosulate. **Leaves** green to glaucous-green, mostly terete or subterete, up to 280 mm long, erect, whorled along stem. **Inflorescences** many, erect or slightly curved, up to 0.75 m high, with lax to dense raceme; bracts white, base subauriculate, apex filiform-caudate, margins lacerate-lanate towards base; pedicels patent to recurved when barren. **Flowers** yellow. **Flowering time** all year. Bushveld, woodland, grassland, rocky slopes; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Indigenous Forests (widespread in EC).

triebneri Dinter
(= *B. alba* Van Jaarsv.)

Succulent, caulescent, perennial herb, with rhizomatous base. **Stem** up to 200 mm high, with grey-brown amplexicaul remains of leaf bases. **Leaves** glaucous with powdery bloom, subterete, up to 130 mm long, erect, whorled along stem. **Inflorescence** erect or slightly curved, up to 0.5 m high, with lax to dense raceme; bracts triangular, acuminate, white, translucent. **Flowers** white with brownish green median stripes. **Flowering time** all year. Succulent Karoo vegetation on shale ridges and scree slopes; Upper Karoo, Albany Thicket, Rainshadow Valley Karoo (Graaff-Reinet and Cradock S, Willowmore and Joubertina areas).

2b Leaves in rosettes
3a Plants caulescent

latifolia (L.f.) Schult. & Schult.f.
Rooiwortel, *waterglas* (A)

Succulent, shortly-caulescent or caulescent, perennial herb; rosettes pendent, erect or decumbent, solitary, with rhizomatous but slightly tuberous base. **Stems** absent or up to 0.7 m long, with persistent dried leaf bases weathering to form fibrous network. **Leaves** pale green to glaucous, firm, linear-lanceolate to triangular-lanceolate, up to 0.4 m long, spreading-erect, curved or pendent and curving downwards, in rosette. **Inflorescence** erect or ascending, up to 0.9 m high, with dense raceme; bracts deltoid, acuminate, clasping. **Flowers** yellow. **Flowering time** Aug.–Nov. Flat, hilly or mountainous terrain, or exposed quartzitic sandstone cliffs; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Queenstown to Mkambati Waterfall S, from Cradock to Komga, Willowmore to Joubertina, Kouga, Port Elizabeth and East London).

[E]**suurbergensis** Van Jaarsv. & A.E.van Wyk

Succulent, caulescent, perennial herb, with rhizomatous base; rosettes pendent, curving up at apex, initially solitary, later dividing. **Stems** up to 0.7 m long, pendent, branching dichotomously, with persistent leaf bases weathering to form fibrous network. **Leaves** pale green, obscurely striated, soft, ascending to ascending-spreading, linear-lanceolate, up to 170 mm long, margins entire. **Inflorescence** ascending, up to 0.35 m long, with lax raceme; bracts deltoid, acuminate, clasping. **Flowers** bright yellow. **Flowering time** Aug.–Nov. Sheer, quartzitic sandstone cliffs; Albany Thicket, Eastern Fynbos-Renosterveld (Witrivier Poort in the Suurberg).

3b Plants acaulescent
4a Rosettes pendent

[E]**cremnophila** Van Jaarsv.

Succulent, acaulescent, perennial herb; rosettes pendent, clustering, with rhizomatous base. **Leaves** glaucous, with powdery bloom, triangular-lanceolate, soft, up to 100 mm long, curving downwards, in rosette. **Inflorescence** ascending, up to 0.45 m high, with lax racemes; bracts deltoid, acuminate, clasping. **Flowers** orange-yellow. **Flowering time** Sept.–Feb. Quartzitic sandstone cliffs; Eastern Fynbos-Renosterveld (Baviaanskloof).

4b Rosettes erect to decumbent

abyssinica A.Rich.

Bushy bulbine; *geelkatstert* (A)

Succulent, acaulescent, perennial herb; rosettes erect, dividing, with rhizomatous base. **Leaves** bright, dark green, terete, up to 0.4 m long, erect, in basal rosette. **Inflorescence** erect, sometimes arcuate, up to 0.8 m high, with lax to very dense raceme; bracts whitish brown or yellow, base auriculate, apex long-acuminate, margins entire; pedicels erect when barren. **Flowers** yellow. **Flowering time** Aug.–May. Widespread in grassland and also drier areas; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Indigenous Forests (widespread in EC).

asphodeloides (L.) Spreng.

Copaiva; *wildekopieva*, *geelkatstert* (A)

Succulent, acaulescent or almost caulescent, perennial herb; rosettes erect, dividing, with rhizomatous base. **Leaves** dark green, semi-terete, up to 0.57 m long, erect, in basal rosette. **Inflorescence** erect to curved-erect, up to 1 m high, with lax to slightly compact raceme; bracts white, base subauriculate, apex filiform-caudate, margins laceratelanate towards base; pedicels recurved to recurved-recoiled when barren. **Flowers** yellow. **Flowering time** all year. Grassland in sandy soil; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Naude's Neck S, from Queenstown area and Barkly East to Port Edward and to N of Kei River Mouth).

lagopus (Thunb.) N.E.Br.

Succulent, acaulescent, perennial herb; rosettes erect to decumbent, dividing, with vertically elongated, rhizomatous base. **Leaves** bluish green, yellowish towards base, semi-terete, up to 0.49 m long, erect to spreading or curved downwards, in basal rosette. **Inflorescence** erect to curved, up to 0.7 m high, with basally lax raceme; bracts lanceolate, base auriculate, apex long aristate, margins lacerate; pedicels reflexed to revolute when barren. **Flowers** yellow. **Flowering time** Aug.–Nov. S and SW aspects in stony soil; Dry Highveld Grassland, Upper Karoo, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North to Steynsburg S and from Hogsback area to Baviaanskloof).

narcissifolia Salm-Dyck

Strap-leafed bulbine, snake flower; *lintblaar bulbine*, *geelslangkop*, *wildekopieva* (A)

Succulent, acaulescent, perennial herb; rosettes erect, dividing, with rhizomatous base. **Leaves** grey-green, strap-shaped, laxly twisted, up to 0.35 m long, erect to spreading-erect, distichous. **Inflorescence** erect, up to 0.85 m high, with dense raceme; bracts white, membranous, base auriculate, apex caudate, margins entire; pedicels appressed to rachis when barren. **Flowers** yellow. **Flowering time** Feb.–Apr., Sept.–Nov. Grassland in sandy soil; Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North, Matatiele and Kokstad S, from Molteno to Mthatha, Graaff-Reinet to Willowvale District and Addo to Port Elizabeth and East London).

natalensis Baker

Broad-leafed bulbine; *geelkopieva* (A)

Succulent, acaulescent, perennial herb; rosettes erect or decumbent, usually suckering to form small to large groups, young plants with seemingly tuberous base, becoming rhizomatous on older plants. **Leaves** bright green to yellow-green, soft, oblong-lanceolate, acuminate, up to 0.3 m long, ascending, in rosette. **Inflorescence** erect to arcuate, up to 0.32 m high, with moderately dense raceme; bracts lanceolate from deltoid base. **Flowers** bright yellow. **Flowering time** all year. Hot, dry areas; Indian Ocean Coastal Belt (Port Edward to Mkambati and possibly at Mbashe River).

1b Plants with tuberous base
5a Rosettes pendent

[E]**thomasiae** Van Jaarsv.

Succulent, acaulescent, perennial herb; rosettes pendent, dividing, with tuberous base. **Leaves** glaucous, becoming reddish pink during dry season, faintly translucent and striated, soft, surface papillate, pendent or curving downwards, linear-lanceolate to triangular-lanceolate, up to 170 mm long, margins minutely ciliate. **Inflorescence** ascending, up to 0.3 m high, with dense, subcapitate raceme; bracts deltoid ovate, apex acuminate, keel and margins minutely ciliate, clasping. **Flowers** orange-yellow, secundly arranged. **Flowering time** June–Sept. Sheer shale cliffs; Sub-Escarpment Savanna (Mbashe River).

5b Rosettes erect

[E]**erectipilosa** G.Will.

[= *B. canaliculata* G.Will., *non* (Aiton) Spreng.]

Succulent, acaulescent, perennial herb; rosettes erect, occasionally dividing, with tuberous base. **Leaves** very bright, shiny green, linear-lanceolate, acute, up to 180 mm long, erect to suberectly spreading, in rosette, margins hyaline with row of erect to suberectly spreading fine hairs in basal $^{2}/_{3}$, curling upwards and inward forming open tube in upper $^{1}/_{3}$. **Inflorescence** erect, up to 220 mm high, with dense raceme; bracts long acuminate from triangular base, projecting well beyond buds. **Flowers** bright luminous yellow. **Flowering time** Nov., Dec. Exposed rocky outcrops in shallow soil pockets on grassy slopes; Albany Thicket, Eastern Fynbos-Renosterveld (Jeffreys Bay area).

favosa (Thunb.) Schult. & Schult.f.

Succulent, acaulescent, perennial herb; rosettes erect, solitary, with tuberous base, crowned by a dense ring of erect bristles. **Leaves** green, semi-terete, up to 230 mm long, erect, in basal rosette. **Inflorescence** erect to slightly curved, up to 0.7 m high, with lax racemes; bracts white, transparent, base truncate, apex acuminate-caudate, margins entire; pedicels recurved when barren. **Flowers** yellow. **Flowering time** Oct.–Feb. Grassland and rocky areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East to Matatiele area S, from King William's Town to Komga, and Patensie to Port Elizabeth and Alexandria).

[E]**inamarxiae** G.Will. & A.P.Dold

Succulent, acaulescent, perennial herb; rosettes erect, solitary, with tuberous base. **Leaves** pale green, often tinged reddish below and along margins, with yellowish veins, ovate to narrowly ovate, apex acute, aristate or often truncate, transparent, very succulent, up to 10 mm long, prostrate to suberect, in rosette. **Inflorescence** erect, up to 200 mm

high, with lax raceme; bracts papyraceous, white, transparent, basally square, apically narrowly triangular. **Flowers** yellow with dark green keel. **Flowering time** Oct.–Dec. Open, rocky outcrops in grassland; Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Uitenhage and Port Elizabeth to Grahamstown).

longifolia Schinz

Succulent, acaulescent, perennial herb, rosettes erect, solitary, with tuberous base. **Leaves** green, few, narrowly lanceolate, up to 0.3 m long, erect to decurved, in rosette. **Inflorescence** erect, up to 250 mm high, usually slightly shorter than leaves, with lax raceme. **Flowers** yellow. **Flowering time** Aug.–Oct. Rocky slopes; Albany Thicket, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Bedford to Komga S, from Joubertina to Kouga and East London).

mesembryanthoides Haw.

Waterglas, *waterkannetjies* (A)

Succulent, acaulescent, perennial herb; rosettes erect, solitary, with tuberous base. **Leaves** transparent green, unequal, hemispherical, apex truncate and transparent, very succulent, up to 25 mm long, erect, in rosette. **Inflorescence** erect or curved, up to 0.35 m high, with lax raceme; bracts ovate, white, transparent, base rounded, apex acuminate. **Flowers** yellow. **Flowering time** Aug.–Jan. Shallow soil among quartzite pebbles and shale; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore to Port Elizabeth and Grahamstown).

minima Baker

Succulent, acaulescent, perennial herb; rosettes erect, solitary, with tuberous base. **Leaves** very narrow, spirally coiled in upper half, up to ± 100 mm long, erect, in rosette. **Inflorescence** erect to arcuate-erect, up to 100 mm high, with lax raceme; bracts deltoid. **Flowers** yellow. Dry rocky areas; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore area).

[E]**retinens** Van Jaarsv. & S.A.Hammer

Succulent, caulescent, perennial herb; rosettes erect, dividing, with tuberous base. **Stem** short, covered in persistent leaf bases weathering to form fibrous network. **Leaves** grey-green to glaucous, with powdery bloom, obscurely striate, soft, linear, subterete, up to 80 mm long, erect, arising from short neck, in rosettes. **Inflorescence** erect to ascending, up to 0.5 m long, with lax raceme; bracts deltoid, acuminate, clasping. **Flowers** pale orange-yellow. **Flowering time** Sept.–Feb. Quartzitic sandstone cliffs; Eastern Fynbos-Renosterveld (along Kouga River Valley between Haarlem and Joubertina, in Hoeree and Skrikrivier tributaries).

[E]**rupicola** G.Will.

Succulent, acaulescent, perennial herb; rosettes erect, dividing, with ovoid, tuberous base. **Leaves** light transparent green, soft, lanceolate, terete to subterete, up to 60 mm long, erect to suberect, in rosette, margins finely toothed towards base. **Inflorescence** erect to suberect, up to 220 mm high, with lax raceme; bracts deltoid-acuminate. **Flowers** light yellow. **Flowering time** Jan. Cracks and crevices in steep rocky gorges; Lower Karoo, Albany Thicket (Willowmore area near Klipplaat).

BULBINELLA Kunth

Species 22, 6 in New Zealand; 17 in sthn Afr., NC, WC, EC.

trinervis (Baker) P.L.Perry

Perennial, rhizomatous geophyte, up to 0.40 m high; fibrous sheathing neck up to 120 mm long, fibres fine, straight, somewhat reticulate, basally purple. **Leaves** 5–7, scarcely developed at anthesis, up to 400 × 1 mm when fully developed, bright green, semi-terete, margins with minute, sparsely scattered teeth; old dried leaves persisting, brown, loosely spiralling. **Inflorescence** simple, up to 0.44 m long, erect, with conical to narrowly cylindric racemes. **Flowers** whitish or pinkish, stellate. **Flowering time** mainly Mar., Apr. Rocky sandstone or shale slopes; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

CHORTOLIRION A.Berger see **ALOE** L.

GASTERIA Duval

Gasteria; *bontaalwyn* (A)

Species 18 and varieties 8, Mozambique and sthn Afr., mainly WC, EC, with outliers in N, M, KZN, NC.

1a Leaves distichous or spirally arranged
2a Leaves always distichous; plants acaulescent

[E]baylissiana Rauh

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 150–400 mm high, prolific from base to form small dense groups. **Leaves** distichous, 25–55 mm long, 20–23 mm wide at base, lorate, erectly spreading, surface with dense, white, cartilaginous tubercles, apex obtuse, truncate or retuse, mucronate, margins crenulate, becoming entire towards apex. **Inflorescence** simple or occasionally branched, erectly spreading, 80–350 mm high. **Flowers** 14–16 mm long, basally noticeably gasteriform for $^{2}/_{3}$ of its length, gasteriform portion red-pink, tube white with green striations. **Flowering time** Sept., Oct. Quartzitic sandstone; Eastern Fynbos-Renosterveld (Suurberg range).

brachyphylla (Salm-Dyck) Van Jaarsv.

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, up to 2.3 m high, up to 2.3 m in diam., proliferating from base to form small groups. **Leaves** distichous, dark green, 90–230 mm long, up to 80 mm wide at base, lorate, erect to erectly spreading, becoming patent, surface smooth, shiny, apex acute, rarely obtuse, becoming incurved in dry season, margins wavy, crenulate. **Inflorescence** simple or with pair of side branches, inclined, up to 0.9 m high. **Flowers** 12–22 mm long, basally gasteriform for more than half of its length, gasteriform portion pink, tube white with green striations. **Flowering time** July–Dec., peak in Sept., Oct. Among rocks, in shade of xerophytic shrubs, in well-drained soil; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore).

[E]doreeniae Van Jaarsv. & A.E.van Wyk

Succulent, perennial herb; acaulescent, rosettes decumbent to erect, 0.5–0.8 m high, up to 1.2 m in diam., proliferating from base to form dense groups. **Leaves** distichous, mottled with dark green and white spots, 35–80 mm long, 14–25 mm wide at base, lorate, erectly spreading, often becoming patent, surface minutely asperulous, apex obtuse or arcuate, incurved during dry season, mucronate, margins tuberculate. **Inflorescence** simple, erect, 0.12–0.40 m high. **Flowers** 15–17 mm long, basally gasteriform for $^{1}/_{3}$ of length, gasteriform portion pink, tube pale pink to almost white with green striations. Crevices and shallow soil pockets on vertical quartzitic sandstone cliffs; Albany Thicket (Swartwaterspoort).

[E]glomerata Van Jaarsv.

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 150–400 mm high, 200–500 mm in diam., proliferating from base to form dense groups of up to 2 m in diam. **Leaves** distichous, glaucous, 15–25 mm long, 15–12 mm wide at base, lorate to widely ovate, erectly spreading, becoming patent to recurved, surface tuberculate-asperulous, apex truncate or obtuse, mucronate, margins entire. **Inflorescence** simple, erectly spreading, 120–200 mm high. **Flowers** 22–25 mm long, basally distinctly gasteriform for just more than half its length, gasteriform portion reddish pink, tube white with green striations. **Flowering time** Sept. Vertical sandstone cliffs; Eastern Fynbos-Renosterveld (Kouga).

2b Leaves distichous or sometimes spirally arranged; plants with leafy stem

[E]bicolor Haw.

Succulent, perennial herb. **Stem** short, leafy, up to 0.2 m high; rosettes decumbent or erect, 0.05–0.50 m high, proliferating from base to form small groups. **Leaves** distichous or spirally arranged, dark green, with dense white spots arranged in obscure transverse bands, rarely unspotted, 30–400 mm long, 15–60 mm wide at base, lorate to linear, erectly spreading, surface smooth, apex obtuse, with eccentric mucro, becoming incurved during dry season, margins entire, cartilaginous-serrate. **Inflorescence** branched from middle, side branches erectly spreading, rarely simple, 0.1–1.5 m high. **Flowers** 12–20 mm long, basally noticeably gasteriform for more than half of its length, gasteriform portion light pink or rarely white, tube white with green striations. **Flowering time** July–Nov. Dry alluvial coastal plains, in river valleys and on mountainous terrain; Lower Karoo, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Aberdeen to Humansdorp).

[E]rawlinsonii Oberm.

Succulent, perennial herb. **Stem** long, leafy, pendulous, rarely branched, up to 1 m long, proliferating from base. **Leaves** distichous or spirally arranged, green, not spotted or with faint white spots, 30–80 mm long, 10–25 mm wide at base, linear, lorate, recurved, surface asperulous, apex obtuse, mucronate, margins sparingly denticulate, armed with distinct white to green prickles that turn black with age. **Inflorescence** simple, suberect, 0.1–0.3 m high. **Flowers** 16–25 mm long, basally distinctly gasteriform for more than half its length, gasteriform portion pink, tube pink or white, occasionally with green striations. **Flowering time** Aug.–Oct., peak in Sept. In crevices and on ledges of vertical quartzitic sandstone cliffs; Albany Thicket, Eastern Fynbos-Renosterveld (Baviaanskloof).

1b Leaves in a rosette, or initially distichous and later becoming rosulate
3a Leaves usually in a rosette

acinacifolia (J.Jacq.) Haw.

Bontkouterie (A)

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 0.25–0.75 m high, up to 0.65 m in diam., solitary or proliferating from base to form small groups. **Leaves** rosulate, dark green, with dense white spots arranged in transverse bands, 220–600 mm long, 45–100 mm wide at base, linear-lanceolate to lorate, erectly spreading, sometimes falcate, surface smooth, rarely slightly tuberculate, with distinct keel, apex acute and mucronate, margins cartilaginous-serrate, rarely entire. **Inflorescence** usually branched,

erect or inclined, side branches horizontal to erectly spreading, up to 1 m high. **Flowers** 35–45 mm long, basally indistinctly gasteriform for half its length, gasteriform portion pink, tube white with green striations. **Flowering time** Sept.–Dec. Coastal dune thicket; Albany Thicket, Eastern Fynbos-Renosterveld (East London to Tsitsikamma).

croucheri (Hook.f.) Baker

Bosaalwyn (A)

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 0.25–0.40 m high, up to 0.6 m in diam., solitary or proliferating from base to form dense groups. **Leaves** rosulate, dark green, often glaucous, with dense white spots arranged in transverse bands, 200–360 mm long, 30–100 mm wide at base, triangular, linear-lanceolate, erectly spreading, surface smooth, apex obtuse or acute, mucronate, margins tuberculate-serrate. **Inflorescence** simple or branched, horizontal racemes, up to 0.5 m long. **Flowers** 28–40 mm long, basally indistinctly gasteriform for half its length, gasteriform portion pink, tube white with green striations. **Flowering time** Nov.–Feb. Dry, hot, rocky and wooded river valleys, associated with quartzitic sandstone; Indian Ocean Coastal Belt (Port Edward to Port St Johns).

[E]**excelsa** Baker

Succulent, perennial herb; acaulescent, rosettes robust, decumbent or erect, 0.3–0.6 m high, 0.60–0.75 m in diam., solitary. **Leaves** densely rosulate, dark green, with indistinct white spots arranged in transverse bands, rarely striate, 100–400 mm long, 100–180 mm wide at base, triangular to triangular-lanceolate, erectly spreading to somewhat recurved, surface smooth, apex acute or obtuse, mucronate, margins sometimes very sharp, white, serrulate. **Inflorescence** much branched, erectly spreading, 1.0–1.9 m high. **Flowers** 22–26 mm long, basally gasteriform for more than half its length, gasteriform portion light pink or rarely white, tube white with pale green striations. **Flowering time** Nov.–Feb. Evergreen coastal forest and forested river valleys; Indigenous Forests (Aliwal North to East London).

3b Leaves initially distichous, becoming rosulate

[E]**ellaphieae** Van Jaarsv.

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 15–30 mm high, 70–140 mm in diam., solitary or proliferating from base to form small groups. **Leaves** distichous, becoming rosulate, dark green, with dense white tubercles arranged in irregular transverse bands, 20–40 mm long, 10–20 mm wide at base, triangular to triangular-lanceolate and falcate, erectly spreading, becoming recurved, surface tuberculate, apex acute to acuminate, recurved, mucronate, margins tuberculate-denticulate. **Inflorescence** simple or branched in upper $^{1}/_{3}$, erectly spreading, 250–400 mm high. **Flowers** 25–27 mm long, basally gasteriform for just more than half its length, gasteriform portion reddish pink, tube white with green striations. **Flowering time** Jan., Feb. Sandstone outcrops in valley bushveld; Albany Thicket, Eastern Fynbos-Renosterveld (Kouga).

[E]**glauca** Van Jaarsv.

Succulent, perennial herb; acaulescent, rosettes decumbent to erect, 50–70 mm high, 50–140 mm in diam., proliferating from base to form dense clumps. **Leaves** distichous, becoming rosulate, glaucous, 50–70 mm long, 15–18 mm wide at base, lorate-lanceolate, falcate, erect, becoming spreading, surface tuberculate-asperulous, apex acute, mucronate, margins tuberculate-denticulate. **Inflorescence** simple, ascending, 120–250 mm

high. **Flowers** 30–34 mm long, basally gasteriform for ± half its length or slightly less, gasteriform portion reddish pink, tube white with green striations. **Flowering time** Dec., Jan. Sandstone cliffs; Albany Thicket (Kouga).

nitida (Salm-Dyck) Haw.

Rice plant; *hottentotsrys* (A)

Succulent, perennial herb; acaulescent, rosettes decumbent or erect, 60–200 mm high, 50–280 mm in diam., solitary or proliferating from base to form small groups. **Leaves** distichous or becoming rosulate, dark green, with faint to dense white spots arranged in irregular transverse bands, 16–180 mm long, 25–80 mm wide at base, triangular-lanceolate, erectly spreading, surface smooth, shiny, apex acute, mucronate, margins entire to indistinctly tuberculate. **Inflorescence** branched or simple, erectly spreading, 0.2–1.2 m high. **Flowers** 20–25 mm long, basally gasteriform for just over half its length, gasteriform portion bright reddish pink, tube yellowish. **Flowering time** Dec.–Feb. Grassy fynbos and renosterveld, often on quartzitic sandstone soil; Albany Thicket, Eastern Fynbos-Renosterveld (Humansdorp District to Grahamstown).

[E]**pulchra** (Aiton) Haw.

Succulent, perennial herb; acaulescent, rosettes decumbent to erect, 0.20–0.36 m high, up to 0.6 m in diam., solitary or proliferating from base to form small groups. **Leaves** distichous, mostly becoming rosulate, dark green, with dense white spots arranged in transverse bands, 240–360 mm long, 25–40 mm wide at base, erectly spreading, linear-ensiform to linear-acuminate, tapering, distinctly channelled, surface smooth, apex acute or acuminate, mucronate, margins serrulate. **Inflorescence** branched or rarely simple, erect to erectly spreading, 0.35–1.50 m high. **Flowers** 18–25 mm long, basally gasteriform for more than half its length, gasteriform portion reddish pink, tube light to dark pink with green striations. **Flowering time** July–Nov., peak in Sept., Oct. Valley bushveld; Albany Thicket (Hankey to Humansdorp).

GONIALOE (Baker) Boatwr. & J.C.Manning

(= *ALOE* subgenus *Gonialoe* Baker, *ALOE* section *Serrulatae* Salm-Dyck)

Species 3, from arid sthn Afr., N, FS, NC, WC, EC.

variegata (L.) Boatwr. & J.C.Manning

(= *Aloe variegata* L.)

Partridge breast aloe, variegated aloe; *bontaalwyn*, *kanniedood* (A)

Succulent, perennial herb; acaulescent, stoloniferous, rosettes erect, suckering to form dense groups. **Leaves** green or brownish, mottled white, lanceolate-deltoid, keeled, 100–150 mm long, without spines or prickles, distinctly 3-ranked, margins white, horny, with closely spaced, small teeth. **Inflorescence** usually branched, ± 0.3 m high, with conical, lax racemes. **Flowers** dull pink to red, rarely yellow, nodding, 35–45 mm long; stamens not or very shortly exserted; stigma exserted. **Flowering time** July–Sept. Stony ground, usually in protection of small bushes; Upper Karoo, Lower Karoo, Albany Thicket, Dry Highveld Grassland, Rainshadow Valley Karoo (Middelburg to Port Elizabeth).

HAWORTHIA Duval

(= *APICRA* Willd. *nom. illegit.*, *ALOE* section *Limpidae* Salm-Dyck, *ALOE* section *Setatae* Salm-Dyck)

Species ± 70, Mozambique and sthn Afr., mostly confined to the Cape, with 3 in N, M, FS, KZN.

[E]**angustifolia** Haw.

Proliferous from base. **Leaves** slender acuminate 30–150 × 10–20 mm, erect or spreading, dark green becoming blackish green in exposed conditions, margins barely denticulate. **Flowering time** Oct., Nov. Rocky situations with low vegetative cover; Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna, Albany Thicket (Suurberg to Grahamstown).

arachnoidea (L.) Duval

(= *Aloe setosa* Schult.f.)

Spinnekopbolletjie (A)

Seldom proliferous. Leaves in compact rosettes 40–70 mm in diam., oblong-lanceolate, incurving, opaque, dark green with no surface patterning, margins spinose with white bristly spines up to 10 mm long. **Flowering time** Nov., Dec. Rocky southern slopes; Rainshadow Valley Karoo (Steytlerville area).

[E]**aristata** Haw.

Seldom proliferous. **Leaves** in small, compact rosettes 30–60 mm in diam., incurving, dark bluish green, barely translucent and faintly reticulate, margins moderately spined up to 2 mm long. **Flowering time** Oct., Nov. Skeletal soils with surface rock; Lower Karoo (Somerset East).

[E]**bolusii** Baker

Usually solitary. **Leaves** in compact, spinescent rosettes 30–50 mm in diam., oblong-lanceolate, incurving, translucent bluish green, margins moderately to densely spinescent with white hair-like spines up to 10 mm long, occasionally spineless. **Flowering time** Oct., Nov. Among low-growing sparse mesic vegetation; Dry Highland Grassland, Upper Karoo, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Sub-Escarpment Savanna (Aliwal North to Tsolo, Middelburg, Jansenville and Kommadagga).

[E]**cooperi** Baker

Extraordinarily polymorphous. **Leaves** in compact, generally spineless rosettes, from small (40 mm in diam.) to large (120 mm in diam.) rosettes, solitary or proliferous, swollen, erect oblong lanceolate, obtuse, truncate, or even attenuate often as thick as wide when truncate, usually bluish green in colour with purplish hues, margins smooth, denticulate or spinose, ecotypic adaptations to diverse habitats, often withdrawn to soil surface level, or in dense clusters on moderate rock faces. **Flowering time** Sept.–Dec. In skeletal and rocky situations with low biomass potential; Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Mthatha to Alexandria).

[E]**cymbiformis** (Haw.) Duval.

(= *Aloe cymbifolia* Schrad.)

Clump forming. **Leaves** in open rosettes 50–180 mm in diam., broadly ovate to lanceolate, flat to slightly concave, generally more than $^1/_3$ as thick as wide, generally opaque

and non-windowed, bright green often reddening in exposed situations, margins and keel usually smooth. **Flowering time** Sept., Oct. Invariably on riverine rock faces and krantzes; Albany Thicket, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Fort Beaufort to Grahamstown).

decipiens Poelln.
Seldom proliferous. **Leaves** in open rosettes 60–150 mm in diam., broadly ovate, sometimes acuminate, 3–4 mm thick, usually bright green with reticulate patterning and some windowing, margins with spines sparse and broad at base. **Flowering time** Aug.–Oct. Local populations in karroid shrubland or marginal thicket, skeletal soils; Lower Karoo, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Pearston to Coega).

marumiana Uitewaal
Densely proliferous. **Leaves** in small, closed rosettes 30–60 mm in diam., incurving 20–30 mm long, usually dark purplish green, opaque with reticulate patterning, margins usually spined. **Flowering time** Jan., Feb. Mountain situations and upper rocky faces and krantzes; Upper Karoo, Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland (Queenstown, Inverbolo and Inversomo).

monticola Fourc.
Proliferous. **Leaves** slender acuminate, incurving, 30–50 mm long, elongate lanceolate, dark green, opaque and with or without reticulate patterning, margins and keel lightly spined. **Flowering time** Jan., Feb. Mountainous situations, rocky slopes and faces; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore, Baviaanskloof).

[E]**springbokvlakensis** C.L.Scott
Solitary. **Leaves** thumb-like, retracted to soil level, 30–40 × 15–20 mm, 15 mm thick, reddish brown, smooth with translucent end-area and longitudinal or reticulate venation, margins scabrid. **Flowering time** Sept., Oct. Karroid shrubland; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Steytlerville).

transiens (Poelln.) Hayashi.
Proliferous. **Leaves** in closed rosettes, incurving, ovate-obtuse, 25–30 mm long and 8–10 mm thick, pale green, semi-translucent with windows, convex end-area, margins smooth. **Flowering time** Oct., Nov. Rock faces and krantzes, mostly riverine; Eastern Fynbos-Renosterveld (Willowmore to Joubertina).

[E]**zantneriana** Poelln.
Proliferous. **Leaves** lanceolate-acuminate, 40–60 × 10–15 mm, pale green, semi-pellucid with whitish longitudinal markings, smooth, glabrous, margins whitish cartilaginous. **Flowering time** Feb.–Apr. Mountainous, rocky situations; Lower Karoo, Eastern Fynbos-Renosterveld (Willowmore).

Species excluded – H. reddii Scott, poorly understood and treated here as conspecific with **H. marumiana**, occurs in upper Black Kei Valley (Waterdown Dam to Inversomo) and treated in revision questionably as variant of **H. cymbiformis**

HAWORTHIOPSIS G.D.Rowley

[= *ALOE* section *Parviflorae* Haw., *ALOE* subgenus *Parviflorae* (Haw.) Salm-Dyck, *HAWORTHIA* section *Trifariae* Haw., *HAWORTHIA* section *Luridae* Haw., *ALOE* section *Luridae* (Haw.) Salm-Dyck, *ALOE* section *Trique-*

trae Salm-Dyck, *ALOE* section *Tortuosae* Salm-Dyck, *ALOE* section *Tessellatae* Salm-Dyck, *HAWORTHIA* section *Hexangulares* Uitewaal, *HAWORTHIA* subgenus *Hexangulares* (Uitewaal) M.B.Bayer]

Species 18, mostly in winter rainfall areas of southern Cape and Eastern Cape, also present in summer rainfall areas, M, S, KZN, EC.

[E]attenuata (Haw.) G.D.Rowley
[= *Haworthia attenuata* (Haw.) Haw.]

Proliferous, acaulescent. **Leaves** lanceolate, 60–100 × 10–15 mm, scabrid, with raised white tubercles, no fibres. **Flowering time** Oct.–Jan. Rocky, sparsely vegetated sites; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Mbashe River to Fort Brown).

[E]bruynsii (M.B.Bayer) G.D.Rowley
(= *Haworthia bruynsii* M.B.Bayer)

Solitary. **Leaves** thumb-like, retracted to soil level, 25–30 × 12–15 mm, 10–15 mm thick, slightly scabrid with small raised tubercles, opaque, truncated flat end-area. **Flowering time** Jan., Feb. Karroid shrubland; Rainshadow Valley Karoo (Steytlerville).

[E]coarctata (Haw.) G.D.Rowley
(= *Haworthia coarctata* Haw.)

Proliferous, caulescent. **Leaves** multifarious on elongated stems up to 300 mm high, 120 mm in diam., 20–50 × 10–15 mm, incurved and tightly packed on stems, ratio stem diam.:leaf width 1:1.7, brownish green with rounded whitish tubercles. **Flowering time** Oct.–Jan. Rocky, sparsely vegetated sites; Albany Thicket, Lower Karoo, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Graaff-Reinet S to Fish River).

[E]fasciata (Willd.) G.D.Rowley
[= *Haworthia fasciata* (Willd.) Haw.]

Proliferous, acaulescent to semi-caulescent. **Leaves** lanceolate-deltoid, 70–100 × 10–15 mm, incurving to spreading, scabrid with white tubercles, with fibres. **Flowering time** Nov.–Jan. Rocky sparsely vegetated sites; Eastern Fynbos-Renosterveld (Joubertina to Port Elizabeth).

[E]glauca (Baker) G.D.Rowley
(= *Haworthia glauca* Baker)

Proliferous, caulescent. **Leaves** multifarious on elongated stems up to 700 mm high, 60 mm in diam., 20–70 × 10–12 mm, incurved or spreading, tightly packed on stems, glaucous, greyish green, seldom tuberculate except on western Suurberg. **Flowering time** Jan.–Mar. Rocky, sparsely vegetated sites; Albany Thicket, Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Somerset East District to Uitenhage).

[E]longiana (Poelln.) G.D.Rowley
(= *Haworthia longiana* Poelln.)

Proliferous, acaulescent. **Leaves** very elongate, > 300 mm long, 15–20 mm wide, rigid, erect-subulate, subscabrid, occasionally with conspicuous raised tubercles. **Flowering time** Oct.–Dec. Rocky, sparsely vegetated site; Albany Thicket, Eastern Fynbos-Renosterveld (Baviaanskloof to Uitenhage).

nigra (Haw.) G.D.Rowley
[= *Haworthia nigra* (Haw.) Baker]

Stoloniferous, spreading, usually caulescent or semi-caulescent with short stems. **Leaves** nearly trifarious on stem up to 80 mm high, 30 × 12–15 mm, erect or recurving towards apex, blackish to dark greyish green, opaque, surfaces scabrid with distinct, raised, non-confluent, concolorous tubercles. **Flowering time** Nov.–Jan. Beneath karroid shrub canopy; Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Aberdeen to Jansenville).

[E]pungens (M.B.Bayer) Boatwr. & J.C.Manning
[= *Haworthia pungens* M.B.Bayer, *Tulista pungens* (M.B.Bayer) G.D.Rowley]

Proliferous, caulescent. **Leaves** congested 5-farious, on stems up to 250 mm high, 50 mm in diam., 35–40 × 12–15 mm, suberect, smooth, rigid and pungent, blackish to reddish green, sometimes with black subsurface mottling. **Flowering time** Jan., Feb. In stony conglomerate, sparsely vegetated sites; Eastern Fynbos-Renosterveld (Joubertina).

[E]reinwardtii (Salm-Dyck) G.D.Rowley
[= *Haworthia reinwardtii* (Salm-Dyck) Haw.]

Proliferous, caulescent. **Leaves** multifarious, on elongated stems up to 200 mm long, 80 mm in diam., 10–35 × 2–8 mm, incurved and tightly packed on stems, ratio stem diam.: leaf width 1:1.2, brownish green with rounded whitish tubercles. **Flowering time** Oct.–Jan. Rocky, sparsely vegetated sites; Albany Thicket, Sub-Escarpment Savanna (Graaff-Reinet District to East London).

scabra (Haw.) G.D.Rowley
(= *Haworthia scabra* Haw.)

Slowly proliferous, acaulescent or shortly caulescent. **Leaves** tri- or 8-farious, 15–70 × 15 mm, almost as thick as wide, triangular-lanceolate, attenuate, incurved or spreading at apex, rigid, blackish or greyish green, surfaces scabrid with raised, non-confluent tubercles. **Flowering time** Sept.–Nov. Dry, rocky situations; Eastern Fynbos-Renosterveld (Langkloof and Baviaanskloof).

[E]sordida (Haw.) G.D.Rowley
(= *Haworthia sordida* Haw.)

Usually solitary, acaulescent. **Leaves** 100–120 × 15–20 mm, lanceolate-deltoid, attenuate, erect with obtuse apex, dark grey to blackish in colour, with indistinct, slightly raised tubercles, margins obtuse. **Flowering time** Oct.–Dec. Rocky, sparsely vegetated sites, although mostly in shelter of small shrubs; Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Steytlerville to Addo).

tessellata (Haw.) Boatwr. & J.C.Manning
(= *Haworthia tessellata* Haw.)

Plants acaulescent, 15–70 mm in diam; roots stoloniferous, freely suckering. **Leaves** 10–15, spreading, firm, ovate, up to 50 × 30 mm, up to 3 mm thick; dark green to grey-green; upper surface slightly concave, glabrous, mostly transparent with longitudinal, tessellately branched veins; lower surface strongly rounded with small or large sharp

tubercles, apex acuminate with sharp point. **Inflorescence** up to 500 mm long, raceme ± 14-flowered. **Flowers** greenish white, funnel-shaped, segments up to 20 mm long. **Flowering time** Sept. through Oct. Deep, well-drained sandy soil, wedged in cracks; Dry Highveld Grassland, Upper Karoo, Albany Thicket (Aliwal North to Lady Grey S to Steynsburg, from Rietbron to Graaff-Reinet and Somerset East, and to Grahamstown).

venosa (Lam.) G.D.Rowley
[= *Haworthia venosa* (Lam.) Haw.]

Kleinkanniedood (A)

Slowly proliferous, acaulescent. **Leaves** 30–40 × 15–20 mm, ovate-deltoid, thick fleshy, firm, recurved with flattish, reticulate end-area, lower surfaces slightly scabrid, upper surfaces smooth. **Flowering time** Feb.–Apr. Rocky, low biomass sites, in rock cracks and crevices; Upper Karoo, Dry Highveld Grassland, Rainshadow Valley Karoo, Albany Thicket (Bethulie to Fish River Valley).

viscosa (L.) G.D.Rowley
[= *Haworthia viscosa* (L.) Haw.]

Koedoekos (A)

Proliferous, caulescent. **Leaves** amplexicaul, congested trifariously, on erect stems up to 250 mm high, 30–60 mm in diam., 20–50 × 12–15 mm, recurved and spreading, dark green to very red in exposed situations, rigid, minutely scabrid. **Flowering time** June–Aug. In rocky situations under low shrubs; Albany Thicket, Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Graaff-Reinet to Humansdorp District).

[E]woolleyi (Poelln.) G.D.Rowley

Plants acaulescent. **Leaves** ± 25, young ones erect with tips slightly recurved, old ones ascending, spreading, ovate-lanceolate, ± 60–70 × 20 mm, acuminate, falcate; upper surface flat to subconcave, smooth, light green; lower surface convex, dark green with tubercles arranged in cross rows; margins acute with dark green teeth. **Raceme** ± 100 mm long. **Flowers** ± 10, perianth white with brownish green keels, funnel-shaped. **Flowering time** Aug., Sept. Rare on dry rocky S-facing slopes, karroid vegetation; alt. ±800 m.; Rainshadow Valley Karoo (Springbok Flats N of Great Winterhoek Mts, Steytlerville District).

KNIPHOFIA Moench

Red hot poker; *vuurpyl* (A)

Species ± 70, mostly Africa, 1 in Madagascar and 1 in S Arabian Peninsula; 47 in sthn Afr., widespread, except N, B.

1a Plants usually caulescent
2a Leaves U-shaped in cross section, not keeled (at maturity)

northiae Baker

Broad-leafed poker, Marianne North's poker; *leloele* (SS); *icacana*, *umathunga* (Z)

Perennial herb. **Stem** single, simple or rarely branched from base, up to 1.7 m high. **Leaves** recurved in rosette at apex of stem, 0.5–1.5 m long, 35–120 mm wide, keeled (V-shaped) in juvenile plants, not keeled at maturity, margins strongly serrulate. **Inflorescence** overtopping recurved leaves, 0.2–0.3 m high, with cylindric to ovoid dense raceme. **Flowers** pinkish red or orange-red and spreading in bud, whitish or yellow and

pendulous when mature, 22–32 mm long. **Flowering time** Sept.–Feb. Grassy or sparsely wooded, stony, mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Ben Macdhui, Naude's Neck and Kokstad S, from Queenstown to Elliotdale and Katberg to Hogsback and Cathcart).

2b Leaves V-shaped in cross section, keeled (at maturity)

albomontana Baijnath

Perennial herb. **Stems** 1–4, up to 0.25 m high. **Leaves** recurved, stiff, 0.6–1.0 m long, 22–45 mm wide, V-shaped in cross section, margins and keel finely serrulate. **Inflorescence** overtopping leaves, 0.8–1.2 m high, with ovoid, dense raceme. **Flowers** purplish orange and spreading in bud, pale yellow-green or tinged with orange and pendulous when mature, 18–22 mm long. **Flowering time** Nov.–Feb. Seepage areas in mountain grassland; Drakensberg Grassland (Herschel District).

caulescens Baker

Lesotho red-hot poker; *basoetoevuurpyl* (A); *leloele-la-loti* (SS); *icacana*, *umathunga* (Z)

Perennial herb. **Stems** several, simple or sparsely branched, up to 0.6 m high. **Leaves** erect or recurved towards apex, 0.45–0.70 m long, 25–50 mm wide, V-shaped in cross section, margins and keel distinctly and finely serrulate. **Inflorescence** overtopping or subequal to leaves, 0.3–0.6 m high, with oblong to cylindric, very dense raceme. **Flowers** coral-pink to flame-coloured and spreading in bud, pale greenish yellow to creamy yellow and spreading to pendulous when mature, 22–24 mm long. **Flowering time** Jan.–Mar. Marshy places and seepage areas in mountain grassland; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Witteberg Mts and Naude's Neck to Tarkastad area).

1b Plants acaulescent or very shortly caulescent
3a Leaves U-shaped in cross section, not keeled

[E]stricta Codd

Perennial herb. **Stems** several, short. **Leaves** erect to ascending, rigid, strongly nerved, 0.3–0.7 m long, 8–14 mm wide, U-shaped in cross section, not keeled, margins serrulate. **Inflorescence** subequal to leaves, 0.3–0.6 m high, with subcylindric to ovoid, dense raceme. **Flowers** orange or pale orange-red to coral and spreading in bud, yellow to greenish yellow and pendulous when mature, 27–33 mm long. **Flowering time** Jan.–Mar. Grassy slopes; Mesic Highveld Grassland, Drakensberg Grassland, Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland (Lady Grey E to Barkly East and Naude's Neck S, from Nieu-Bethesda to Queenstown and Dordrecht, and to Graaff-Reinet).

3b Leaves V-shaped or triangular in cross section, keeled
4a Leaves narrow, grass-like, mostly < 5 mm wide

fibrosa Baker

Perennial herb. **Stem** usually single, short. **Leaves** grass-like, first erect, later recurved at ± middle, 0.35–0.60 m long, 3–4 mm wide, V-shaped in cross section, margins scaberulous to finely denticulate, often smooth towards base. **Inflorescence** overtopping recurved leaves, 0.3–0.6 m high, with subglobose to oblong, dense raceme. **Flowers** greenish white to reddish and spreading in bud, typically creamy yellow (sometimes yellow, coral or orange in hybrids) and spreading to pendulous when mature, 15–20 mm long. **Flowering time** Feb., Mar. Mountain grassland; Drakensberg Grassland, Sub-Escarpment Savanna (Alice and Hogsback area).

galpinii Baker

Red-hot poker

Perennial herb. **Stems** solitary to few, short. **Leaves** grass-like, recurved, 0.40–0.65 m long, 3–6 mm wide, triangular in cross section, margins entire or minutely denticulate towards apex. **Inflorescence** overtopping recurved leaves, 0.3–0.6 m high, with subglobose to ovoid, dense raceme. **Flowers** flame-red to orange-red and spreading in bud, yellow to orange and pendulous when mature, 27–35 mm long. **Flowering time** Nov.–Mar. Dense grassy hillsides or grassy vleis; Sub-Escarpment Grassland (isolated population in Lady Frere area).

parviflora Kunth

Ihlinzanyoka (Z)

Perennial herb. **Stem** usually single, short. **Leaves** first ascending, later recurved, 0.20–0.75 m long, 3–7 mm wide, V-shaped in cross section, margins smooth or sometimes sparsely toothed. **Inflorescence** overtopping leaves, 0.25–0.80 m high, with elongate-oblong, fairly lax, usually secund raceme. **Flowers** greenish brown to maroon and ascending in bud, creamy yellow or yellow-green to greenish brown and pendulous when mature, 7–10 mm long. **Flowering time** Jan.–Mar. Moist grassland and vleis; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Naude's Neck to Kokstad S, from Barkly Pass to Port Edward, Alice to Hogsback and Kei River Mouth).

triangularis Kunth

Mandarin poker

Perennial herb. **Stems** solitary to several, short. **Leaves** grass-like, erect, recurved at middle, 0.28–0.60 m long, 1.5–3.0 mm wide, triangular in cross section, margins and keel entire to serrulate. **Inflorescence** subequal to leaves, 0.3–0.6 m high, with subcylindric to ovoid, dense raceme. **Flowers** concolorous, coral-red, orange-red or salmon-red to yellow-orange and pendulous in bud and when mature, 24–35 mm long. **Flowering time** Jan.–Apr. Mountain grassland; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland (Lady Grey to Qacha's Neck and Kokstad S, from Queenstown to Barkly East and Somerset East to King William's Town).

4b Leaves > 5 mm wide
5a Perianth < 20 mm long

[E]acraea Codd

Perennial herb. **Stems** several, short. **Leaves** recurved, 0.5–0.7 m long, 10–15 mm wide, V-shaped in cross section, margins minutely and distantly denticulate, keel smooth. **Inflorescence** subequal to leaves, 0.5–0.6 m high, with ovoid to subcylindric, dense raceme. **Flowers** greenish yellow and spreading in bud, yellow and becoming deflexed when mature, 8–9 mm long. **Flowering time** Mar. Seepage areas among rocks; Sub-Escarpment Grassland (Bankberg, Cradock area).

brachystachya (Zahlbr.) Codd

Perennial herb. **Stems** single or several, short. **Leaves** erect, somewhat falcate, rigid, 150–280 × 4–12 mm, V-shaped in cross section, shallowly keeled. **Inflorescence** overtopping leaves, 0.25–0.65 m high, with cylindric, dense raceme. **Flowers** brownish and erect in bud, dull yellow to brownish and erect to spreading when mature, 4–5 mm long. **Flowering time** Nov.–Jan. Mountain grassland; Sub-Escarpment Grassland (Ntsikeni and Kokstad).

ensifolia Baker

Perennial herb. **Stems** several, short. **Leaves** erect, recurved toward apex, 0.5–1.2 m long, 15–45 mm wide, V-shaped in cross section, margins and keel usually conspicuously serrulate, rarely smooth. **Inflorescence** overtopping leaves, 0.6–1.8 m high, with cylindric, very dense raceme. **Flowers** greenish white, sometimes tinged red or dull to flame-red and spreading in bud, white to greenish white with green stripe down each perianth lobe and spreading to pendulous when mature, 15–21 mm long. **Flowering time** Oct.–Dec. Black clay soil in marshy places, vleis and streambanks; Upper Karoo (Burgersdorp area to Steynsburg area).

gracilis Baker

Graceful poker

Perennial herb. **Stems** several, short. **Leaves** recurved at about middle, 0.4–1.2 m long, 4–14 mm wide, V-shaped in cross section, margins smooth to sparsely serrulate toward apex. **Inflorescence** overtopping recurved leaves, 0.25–1.00 m high, with oblong to narrowly cylindric, dense or lax raceme. **Flowers** whitish, tinged with pink, or yellow to orange and ascending in bud, whitish, cream-coloured or yellow and spreading to deflexed when mature, 13–20 mm long. **Flowering time** Dec.–Apr. Grassy slopes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad S, from Mthatha to Port Edward).

5b Perianth > 20 mm long

baurii Baker

Icacane (Z)

Perennial herb. **Stems** several to many, short. **Leaves** erect or occasionally recurved, 0.2–0.5 m long, 12–25 mm wide, V-shaped in cross section, margins and keel markedly to sparsely serrulate to almost smooth. **Inflorescence** overtopping leaves, 0.25–0.60 m high, with globose to oblong, dense raceme. **Flowers** dull red to greenish, tinged with dull red and spreading in bud, greenish to greenish yellow and pendulous when mature, 28–38 mm long. **Flowering time** Sept.–Nov. Moist, grassy slopes or depressions and on streambanks; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Matatiele and Kokstad S, from Maclear to Libode District, and Amatole Mts to Cathcart area).

bruceae (Codd) Codd

Perennial herb. **Stems** several to many, short. **Leaves** somewhat spreading, nervose when dry, 0.9–1.5 m long, 20–30 mm wide, V-shaped in cross section, margins and keel sparsely to distinctly serrulate. **Inflorescence** overtopping leaves, 1.0–1.8 m high, with subcylindric, dense raceme. **Flowers** orange to reddish orange and erect in bud, yellow and spreading to pendulous when mature, 24–30 mm long. **Flowering time** Nov.–Apr. Grassy valleys and low-lying areas; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (King William's Town area and Komga S, Willowmore area).

[E]citrina Baker

Perennial herb. **Stems** several, short. **Leaves** suberect to arcuate, 0.4–0.7 m long, 6–10 mm wide, V-shaped in cross section, margins smooth to minutely and sparsely denticulate. **Inflorescence** usually overtopping leaves, 0.4–0.6 m high, with globose to subglobose, dense raceme. **Flowers** red, red-tipped or yellow and erect in bud, yellow

to yellow-green and spreading to pendulous when mature, 22–27 mm long. **Flowering time** Mar.–May. Dense grassy areas; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown to Humansdorp).

coddiana Cufod.

Codd's poker

Perennial herb. **Stems** single to several, short. **Leaves** erect to recurved at about middle, 0.3–0.6 m long, 8–15 mm wide, V-shaped in cross section, margins and keel smooth or scarcely toothed towards apex. **Inflorescence** overtopping or subequal to leaves, 0.40–0.65 m high, with globose, dense raceme. **Flowers** flame-red and spreading in bud, yellow to orange-yellow and pendulous when mature, 28–32 mm long. **Flowering time** Aug.–Oct. Grass among sandstone rocks; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Lusikisiki area to Port Edward).

[E]**drepanophylla** Baker

Perennial herb. **Stems** few to several, short. **Leaves** falcate, flaccid, 0.15–0.30 m long at flowering stage, elongating up to 0.6 m, 15–30 mm wide, V-shaped in cross section, margins and keel finely serrulate. **Inflorescence** overtopping recurved leaves, 0.25–0.50 m high, with subglobose, apically lax, basally dense raceme. **Flowers** greenish yellow, tinged with dull red and spreading in bud, lemon-yellow and pendulous when mature, 35–40 mm long. **Flowering time** Aug.–Oct. Marshy areas; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Kokstad area to Lusikisiki area).

fluviatilis Codd

River poker

Perennial herb. **Stems** several, short. **Leaves** erect, firm, 0.35–0.70 m long, 8–25 mm wide, V-shaped in cross section, margins and keel smooth. **Inflorescence** usually overtopping leaves, 0.45–0.65 m high, with ovoid to subglobose, dense raceme. **Flowers** flame to orange-red and deflexed in bud, apricot-yellow to greenish yellow and pendulous when mature, 42–50 mm long. **Flowering time** Nov., Dec. Streambanks in mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Matatiele area).

hirsuta Codd

Hairy red-hot poker

Perennial herb. **Stems** single or few, short. **Leaves** erect, 0.4–0.6 m long, 15–25 mm wide, V-shaped in cross section, deeply keeled, hirsute along nerves, margins conspicuously and regularly serrulate. **Inflorescence** equal to or longer than leaves, 0.45–0.60 m high, with shortly rhomboid-cylindric to ovoid, dense raceme. **Flowers** orange or dull coral to salmon-pink, tipped with green and spreading in bud, dull greenish yellow and spreading when mature, 22–27 mm long. **Flowering time** Dec., Jan. Grassy mountain slopes and streambanks; Drakensberg Grassland (Naude's Neck area).

laxiflora Kunth

Torch lily; *inxonya* (X); *icacana*, *umathunga* (Z)

Perennial herb. **Stems** 1–many, short. **Leaves** recurved at about middle, 0.5–1.2 m long, 6–10 mm wide, V-shaped in cross section, margins smooth to serrulate. **Inflorescence** overtopping recurved leaves, 0.4–0.9 m high, with oblong-ovoid, fairly dense to elongate and lax raceme. **Flowers** strongly pigmented and erect to spreading in bud, pale yellow or yellow-green to salmon-pink, orange, coral-red or orange-red and eventually deflexed

when mature, 24–35 mm long. **Flowering time** Feb.–May. Grassy slopes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad S, from Flagstaff to Port Edward, and to Port St Johns).

linearifolia Baker

Common marsh poker; *vuurpyl* (A); *icacana*, *umathunga* (Z)

Perennial herb. **Stems** several to many, short. **Leaves** first erect, later recurved, rigid to flaccid, 0.6–1.4 m long, 12–28 mm wide, V-shaped in cross section, strongly keeled, margins and keel serrulate to sparsely toothed, occasionally smooth. **Inflorescence** overtopping reflexed leaves, 0.8–1.5 m high, with ovoid or oblong to rhomboid, dense raceme. **Flowers** pinkish red to green, tinged with dull red and erect to spreading in bud, yellow-orange to yellow-green or greenish and pendulous when mature, 25–35 mm long. **Flowering time** Jan.–Apr. Streambanks, marshy places and mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Upper Karoo, Mesic Highveld Grassland, Dry Highveld Grassland (widespread from Naude's Neck to Matatiele and Bizana S, Middelburg to Port St Johns, and Graaff-Reinet to Somerset East and Kei River Mouth).

porphyrantha Baker

Dwarf red-hot poker; *hoëveldvuurpyl* (A); *licaca-latokoloshi* (S); *icacana*, *umathunga* (Z)

Perennial herb. **Stems** usually many, short. **Leaves** first erect, later recurved, 0.30–0.45 m long, 6–14 mm wide, V-shaped in cross section, margins and keel smooth. **Inflorescence** overtopping leaves, 0.4–0.6 m high, with subglobose to shortly cylindric, dense raceme. **Flowers** flame-orange, tipped with yellow and spreading in bud, lemon-yellow and pendulous when mature, 30–42 mm long. **Flowering time** Oct.–Feb. Grassy vleis and mountain grassland; Sub-Escarpment Grassland (Mount Frere area).

ritualis Codd

Leloele, *lelutla* (SS)

Perennial herb. **Stems** solitary to few, short. **Leaves** first erect, later recurved to semi-spreading, soft, 0.4–0.9 m long, 12–24 mm wide, V-shaped in cross section, deeply keeled, margins and keel conspicuously and regularly serrulate. **Inflorescence** subequal to or shorter than leaves, 0.4–0.8 m high, with rhomboid-cylindric to ovoid, basally dense, apically lax raceme. **Flowers** coral- or salmon- to dull orange-red and spreading to pendulous in bud, greenish yellow and pendulous when mature, 25–30 mm long. **Flowering time** Jan.–Mar. Shallow soil in rock crevices, dry watercourses and on grassy slopes; Drakensberg Grassland (Naude's Neck area).

rooperi (T.Moore) Lem.

Winter poker; *lente vuurpyl* (A); *icacana*, *ompofu*, *umathunga* (Z)

Perennial herb. **Stems** many, short. **Leaves** usually 4-ranked, arcuate-spreading to strongly recurved, 0.5–1.1 m long, 15–35 mm wide, V-shaped in cross section, deeply keeled, margins and keel distinctly sparsely serrulate or rarely almost smooth. **Inflorescence** overtopping leaves, 0.6–1.4 m high, with globose, very dense raceme. **Flowers** brilliant flame-red to orange-yellow or greenish, erect and hidden by bracts in bud, orange-red to yellow-green and pendulous when mature, 35–42 mm long. **Flowering time** June–Sept. Coastal marshy areas; Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Port Edward S, from Stutterheim to Kentani District, and to East London).

tysonii Baker

Perennial herb. **Stems** several to many, short. **Leaves** first erect, becoming reflexed at about middle, 0.8–1.5 m long, 15–40 mm wide, V-shaped in cross section, strongly keeled, margins serrulate to smooth. **Inflorescence** overtopping reflexed leaves, 1–2 m high, with oblong to subcylindric, dense raceme. **Flowers** orange-red to pinkish red and spreading in bud, yellow to yellow-green and spreading to pendulous when mature, 20–28 mm long. **Flowering time** Jan.–Mar. Dense grassy hillsides and forest margins; Sub-Escarpment Grassland, Sub-Escarpment Savanna (uMzimkhulu, Kokstad, Bizana and Mthatha).

uvaria (L.) Oken

Fire lily, bishop's torch, torch lily; *soldaat*, *vuurlelie* (A); *icacane* (Z)

Perennial herb. **Stems** several to many, short. **Leaves** erect to arcuate-spreading, 0.35–0.80 m long, 6–18 mm wide, V-shaped in cross section, margins and keel smooth to sparsely serrulate towards apex. **Inflorescence** overtopping or subequal to leaves, up to 1 m high, with oblong to globose, dense to subdense raceme. **Flowers** brilliant scarlet to greenish tinged with red and spreading in bud, orange-yellow to greenish yellow and pendulous when mature, 28–40 mm long. **Flowering time** Jan.–Mar. Moist grassland; Sub-Escarpment Grassland, Albany Thicket, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Queenstown to Elliot and Maclear S, from Graaff-Reinet to King William's Town, Joubertina to Port Elizabeth, Grahamstown and East London, and to Humansdorp).

TRACHYANDRA Kunth

Cape spinach; *wildeblomkool*, *vier-uurtjie* (A)

Species ± 50, Africa; 49 in sthn Afr., widespread.

1a Fruit and/or inflorescence glandular-pubescent

asperata Kunth

Wildeknolflok (A)

Perennial, grass-like herb. **Leaves** linear and keeled or triquetrous to terete, straight or twisted, 0.2–0.4 m long, glabrous or minutely glandular-pubescent, fibres of old leaf bases persistent. **Inflorescence** simple or few- to divaricately-branched raceme; pedicels glabrous or scabrid, erect or contorted in fruit, up to 15 mm long. **Flowers** white or pink with darker keel. **Flowering time** Sept.–Dec. **Fruit** a capsule, sparsely to densely covered with short, gland-tipped tubercles. Marshy areas or stony soil in mountain grassland; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Aliwal North and Naude's Neck to Kokstad S, from Middelburg to Maclear, Mountain Zebra National Park to Alice and Keiskammahoek, and from Suurberg in Greater Addo Elephant National Park to Port Elizabeth and Fish River Mouth).

capillata (Poelln.) Oberm.

Perennial, grass-like herb. **Leaves** linear, triquetrous, up to 0.45 m long, softly and patently pilose with long hairs, fibres of old leaf bases persistent. **Inflorescence** branched or simple; pedicels patent, up to 17 mm long. **Flowers** white with dark keel. **Flowering time** Feb. **Fruit** a capsule, covered in glands. Grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad to Ugie and Maclear).

gerrardii (Baker) Oberm.
Perennial, grass-like herb. **Leaves** linear, triquetrous, 0.1–0.4 m long, with patent setae, margins often minutely glandular-papillate, fibres of old leaf bases persistent. **Inflorescence** divaricately branched raceme, roughly glandular; pedicels densely to sparsely scabrid-glandular, spreading to recurved and looped in fruit, up to 15 mm long. **Flowers** white with dark keel, glandular. **Flowering time** Oct.–Feb. **Fruit** a globose capsule, densely covered with long, pectinate, gland-tipped tubercles. Grassy mountain slopes or in marshes; Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Molteno S, from Sada to N of Kei River Mouth and Willowmore area to Port Elizabeth and Grahamstown).

[E]giffenii (F.M.Leight.) Oberm.
Perennial, grass-like herb. **Leaves** somewhat distichous, linear-lanceolate, triquetrous, up to 0.5 m long, softly pubescent, fibres of old leaf bases not persistent. **Inflorescence** few-branched or simple raceme, up to 1.5 m high, glandular-pubescent; pedicels recurved in fruit, up to 20 mm long. **Flowers** white with green keel, glandular-pubescent. **Flowering time** Sept.–Mar. **Fruit** a capsule, roughly glandular, with lateral horns of ± 5 mm long. Moist grassland; Albany Thicket (Port Alfred to Middleton).

1b Inflorescence and fruit not glandular-pubescent
2a Inflorescence simple, seldom branched; perianth usually immaculate

affinis Kunth
Perennial, grass-like herb. **Leaves** linear, semi-terete, up to 0.4 m long, usually glabrous, occasionally pubescent, margins sometimes ciliate. **Inflorescence** simple or sparsely-branched raceme, up to 1 m high, with pubescent peduncle; pedicels erect in fruit, up to 16 mm long. **Flowers** white. **Flowering time** Sept.–June. **Fruit** a glabrous capsule. In clearings or grassy coastal slopes; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Indigenous Forests, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld [Queenstown to Maclear and Port Edward S, from Pearston to Dwessa Forest, and from Alexandria District (Melkhoutboom) to Hankey, Addo, Uitenhage, Port Elizabeth, Grahamstown and Kowie West, and to Humansdorp].

saltii (Baker) Oberm.
Perennial, grass-like herb. **Leaves** linear, up to 0.5 m long, glabrous or pubescent. **Inflorescence** simple raceme, up to 0.4 m high; scape arcuate near base, protruding outside leaf rosette; pedicels erect in fruit, ± 10 mm long. **Flowers** white with darker keel. **Flowering time** Nov.–Mar. **Fruit** a glabrous capsule. Grassland; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld, Indigenous Forests [Bethulie District to Aliwal North and Ntsikeni Nature Reserve S, from Middelburg to Mthatha District (Baziya Forest), Cathcart to King William's Town, and from Suurberg to Port Elizabeth and Alexandria].

smalliana Hilliard & B.L.Burtt
Perennial, grass-like herb. **Leaves** linear, semi-terete, 0.5–0.6 m long, glabrous, fibrous old leaf bases persistent. **Inflorescence** simple raceme, 0.6–0.7 m high, glabrous; pedicels erect in fruit, 8–10 mm long. **Flowers** white with reddish brown keel. **Flowering time** Nov.–Feb. **Fruit** a globose, glabrous capsule. Damp, humus-rich soil in mountain grassland; Drakensberg Grassland (Naude's Neck).

2b Inflorescence usually branched, seldom simple; perianth maculate

ciliata (L.f.) Kunth

Wildeblomkool (A)

Perennial, grass-like herb. **Leaves** linear, up to 1 m long, up to 40 mm wide, glabrous or with scattered hairs on margins and keel. **Inflorescence** branched raceme or rarely simple through reduction, erect or sometimes becoming prostrate, usually pubescent; pedicels recurved in fruit, up to 20 mm long. **Flowers** white, with yellow spots near base. **Fruit** an ovoid to globose or cylindric, glabrous capsule. **Flowering time** Aug., Sept. Damp sandy coastal flats; Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown and Port Alfred, and to Humansdorp).

divaricata (Jacq.) Kunth

Perennial, grass-like herb. **Leaves** linear, up to 1 m long, 4–12 mm wide, glabrous. **Inflorescence** divaricately-branched raceme, up to 0.5 m high, glabrous; pedicels 4–12 mm long. **Flowers** white with green keel, with yellow dot near base. **Flowering time** Aug., Sept. **Fruit** a globose, glabrous capsule. Coastal sand and littoral dunes; Albany Thicket (Bathurst and Port Alfred).

revoluta (L.) Kunth

Water grass; *watergras*, *waterknolle*, *watertoue*, *wilde-ui*, *hottentotskool* (A)

Perennial, grass-like herb. **Leaves** linear, sometimes slightly undulate or with lax spiral twist, 0.1–0.4 m long, scabrid when young. **Inflorescence** much branched, divaricate raceme, up to 0.3 m long, scabrid when young; pedicels erect in fruit, up to 10 mm long. **Flowers** white with brown keel, with two yellow spots near base. **Flowering time** Aug.–Nov. **Fruit** a subglobose, glabrous capsule. Seasonally damp flats or seasonal swamps; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth to East London).

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BEHNIACEAE see ASPARAGACEAE

COLCHICACEAE

(Order Liliales)

Compiled by C.L. Bredenkamp

1a Leaf apex cirrhiferous (attenuated into a recurved tendril), or aristate; leaves cauline, alternate on usually scandent annual stems, herbaceous or leathery; flowers solitary, with a leaf placed beside them, or unattended:
2a Perianth segments fused; tube campanulate ..... **Sandersonia**
2b Perianth segments free ..... **Gloriosa**
1b Leaf apex not cirrhiferous; leaves basal, rosulate or distichous; flowers variously arranged:
3a Flowers ebracteate, at least upper ones; styles 3(4) ..... **Wurmbea**
3b Flowers bracteate; styles 3 or 1:
4a Flowers in a capitulum or rhipidium overtopped by exterior green or petaloid bracts ..... **Colchicum**
4b Flowers not in a capitulum ..... **Ornithoglossum**

COLCHICUM L.

[= *ANDROCYMBIUM* Willd. (Manning *et al.*, 2007)]

Cup-and-saucer; *patrysblom* (A)

Species ± 90, from Portugal to Himalayas, southern, eastern and northern Africa and Mediterranean; ± 50 in sthn Afr., ± 32 from winter rainfall region, widespread.

Bracts grading gradually into leaves, like leaves in shape, colour and margins

[E]**longipes** (Baker) J.C.Manning & Vinn.

Acaulescent, cormous geophyte 0.06–0.25 m high; underground neck ± 40 mm long. **Leaves** spreading, narrowly lanceolate, channelled, 100–200 mm long. **Flowers** 1–3(9) in a terminal capitulum, enclosed in leaf-like bracts; tepals with claws 10–35 mm long, blades auriculate and cupped below, 9–15 mm long. **Stamens**: filaments 5–6 mm long; anthers oblong. **Ovary** with 3 subulate style bases; styles ± as long as ovary. **Flowering time** Apr.–Jan. Moist slopes and stony grasslands; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Naude's Neck southwards to Barkly Pass, Amatole Mts and Komga, from Port Elizabeth to Grahamstown and East London).

Bracts ± abruptly differentiated from leaves, differing in shape and often colour, margins and keel usually ciliolate

albanense (Schönland) J.C.Manning & Vinn.

Cormous geophyte; underground neck 5–15 mm long. **Leaves** ± horizontal, glabrous; outer two plicate, ovate-lanceolate, up to 80 mm long, inner shorter, ovate, base brownish, margins white. **Flowers** 2–5 in a terminal capitulum; pedicels thick, ± 3 mm long; bracts broadly ovate, ± folded around each flower, 15 mm long; tepals greenish white, ± 14 mm long, claws longer than blades, blades cucullate. **Stamens**: filaments reddish brown, broad-based, subulate; anthers with reddish brown pollen sacs. **Ovary** as long as style; stigma minute. **Flowering time** July–Oct. Coastal fynbos, dunes, calcrete, partial shade, thicket; Eastern Fynbos-Renosterveld, Albany Thicket (St Francis Bay E to Humansdorp, Port Elizabeth, Grahamstown).

austrocapense (U. & D.Müll.-Doblies) J.C.Manning & Vinn.

Cormous geophyte, relatively large. **Leaves** 3 or 4(5), longest leaf 85–345 × 9–53 mm, margins glabrous. **Flowers** 1–17 in a terminal capitulum; bract of the first flower 35–130

× 20–56 mm, patently erect; tepals 11.5–25.0 mm long, claws 6–12 mm long, blades 5.5–13.5 mm long; blades auriculate and cupped below. **Stamens** exserted; open anthers 1.5–2.8 mm long. **Ovary** with 3 subulate style bases; styles keeled; carina distinctly excurrent from upper $^1/_3$ part of ovary; stigma punctate. **Flowering time** Aug., Sept.? Very dense coastal scrub, under bushes; Eastern Fynbos-Renosterveld (Humansdorp, Port Elizabeth).

melanthioides (Willd.) J.C.Manning & Vinn.

Patrysblom (A)

Caulescent, cormous geophyte, 0.05–0.25 m high. **Leaves** suberect, linear-lanceolate, channelled, 100–300 mm long. **Bracts** ovate, scarious, whitish with conspicuous green veins. **Flowers** pedicellate, 3–7 in a terminal capitulum; tepals 9.5–12.5 mm long, claws 3.0–5.5 mm long, blades ovate or obtrullate, auriculate and deeply cupped or tubular below, 6.5–7.0 mm long. **Stamens**: filaments 8–10 mm long; anthers oblong. **Ovary** with 3 subulate style bases; styles ± as long as ovary. **Flowering time** May–Aug. Stony grasslands and flats, mountain slopes; Sub-Escarpment Grassland, Lower Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Sterkstroom and Queenstown Districts S to Graaff-Reinet, Alicedale, Uitenhage and Grahamstown).

orienticapense (U. & D.Müll.-Doblies) J.C.Manning & Vinn.

Bobbejaanskoen (A)

Caulescent, cormous geophyte, 0.1–0.2 m high. **Leaves** suberect, linear-lanceolate, channelled, 100–300 mm long. **Bracts** ovate, scarious, whitish with conspicuous green veins. **Flowers** pedicellate, 3–7 in a terminal capitulum; tepals with claws 4–5 mm long, blades channelled and auriculate below, not deeply cupped, linear and channelled above, 8–9 mm long. **Stamens**: filaments 4–5 mm long; anthers oblong. **Ovary** with 3 subulate style bases; styles ± as long as ovary, slender. **Flowering time** May–Aug. Grazed bushland; Eastern Fynbos-Renosterveld, Albany Thicket (Knysna to Lions Drift, SW of Keiskamma River).

striatum (Hochst. ex A.Rich.) J.C.Manning & Vinn.

Pyjama flower; *patrysblom* (A); *khara*, *khukhoana e nyenyane* (SS)

Caulescent, cormous geophyte, 0.05–0.25 m high. **Leaves** suberect, linear-lanceolate, channelled, 55–170 mm long. **Bracts** ovate, scarious, whitish with conspicuous green veins. **Flowers** pedicellate, 3–7 in a terminal rhipidium; tepals 6.0–9.5(13.5) mm long, claws ± 2 mm long, blades ovate or obtrullate and cuspidate, canaliculate, conduplicate, 4–6 mm long. **Stamens**: filaments 3.5–7.0 mm long; anthers oblong. **Ovary** with 3 subulate style bases; styles ± as long as ovary. **Flowering time** Dec.–Mar. Grassland, shallow soil, sheet rocks, rocky hillsides; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna (Joubertspas E to Naude's Neck Pass, S from Wodehouse District to Butterworth).

GLORIOSA L.

[= *LITTONIA* Hook. (Vinnersten & Manning 2007)]

Species ± 13, subtropical and tropical Africa and India; 3 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, EC.

COLCHICACEAE

Tepals strongly reflexed; style filiform, bent sharply outwards at base, with 3 short stigmatic arms

superba L.

Climbing or erect geophyte, 0.25–2.43 m high. **Corms** abruptly bent, tunic lacking. **Stems** supple, scandent. **Leaves** alternate or crowded in places, linear to ovate, attenuated into a terminal, recurved tendril. **Flowers** ± nodding, on upper part of stem on long pedicels, placed beside a leaf or unattended; tepal segments free, equal, narrowly ovate-acuminate, often crisped, persistent, yellow, orange or red. **Stamens** hypogynous; filaments firm, terete, spreading; anthers 2-thecous, versatile. **Ovary** oblong; ovules many. **Flowering time** Nov.–Mar. **Fruit** a cylindrical capsule, 3-valved, loculicidal, leathery. **Seeds** globose, bright red, fleshy. Undergrowth in coastal forest and dune bush, estuaries, riverbanks; Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Mkambati Nature Reserve E to Umtamvuna Lagoon, S from Mazeppa Bay to Hole-in-the-Wall and from Kowie to Fish River Mouth and East London).

Tepals ascending; style short, terete, with 3 short falcate stigmatic arms

modesta (Hook.) J.C.Manning & Vinn.
(= *Littonia modesta* Hook.)

Climbing geophyte, 0.3–2.0 m high. **Corms** tunicated. **Stems** usually simple, scandent or erect. **Leaves** verticillate below, alternate above, linear to ovate, apex attenuated into a recurved tendril. **Flowers** cymose, on upper part of stem; pedicels long, arising beside a leaf or unattended; tepals equal, persistent, slightly saccate at base, yellow. **Stamens** short, filiform; anthers 2-thecous, erect, basifixed. **Ovary** ovoid, trigonous; ovules many. **Flowering time** Dec.–Feb. **Fruit** an ovoid capsule, 3-valved, loculicidal, leathery. **Seed** globose, fleshy, red, on long funicles. Undergrowth in closed woodland or forest, stony soil, amongst dolerite boulders; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Mbashe River E to Mkambati Nature Reserve, S to Stutterheim, Kentani and East London).

ORNITHOGLOSSUM Salisb.

Snake lily

Species 8, tropical and sthn Afr., widespread, except S, KZN and L, poisonous to stock.

Nectary margin shaped like a funnel or a protruding mouth

dinteri K.Krause

Geophyte, 0.06–0.45 m high. **Corms** ovoid-subglobose, tunics loose, brown, subterranean neck wiry, ± 120 mm long. **Stem** above ground, 100–120 **mm** high, simple. **Leaves** (2)3(5), alternate, cauline leaves erecto-patent; blade linear-lanceolate, base 10–30 mm wide, apex acuminate. **Inflorescence** dense to lax raceme, 3–25-flowered. **Bracts** ± half pedicel length; lowermost leaf-like. **Perianth** actinomorphic; segments free, 10–25 mm long, unguiculate; claw distinct, blade ± lanceolate, basally auriculate, coloured in shades of green, purple and brown, reflexed during anthesis. **Nectary** between claw and blade, margins irregular. **Stamens**: filaments up to 13 mm long; anthers yellowish green. **Ovary** oblong-ovoid; styles up to 10 mm long. **Flowering time** Jan.–Mar. **Fruit** an oblong-ovoid capsule. Sandy flats with limestone surface, sandy pockets on solid rock areas; Upper Karoo (Middelburg, Graaff-Reinet, Cradock).

Nectary margin simple, straight, emarginate or shortly tongue-shaped

undulatum Sweet

Poison onion; *karoo slangkop* (A)

Geophyte, 0.05–0.40 m high. **Corms** ovoid, tunics several-layered, brown, firm, subterranean neck 50–150 mm long. **Stem** above ground, 50–200 **mm** high; basal sheath present, light brown. **Leaves** 2–4, alternate, lanceolate, apex mucronate, margins crisped-undulate. **Inflorescence** a 1–5(10)-flowered raceme. **Bracts**: lowermost leaf-like, upper successively smaller. **Flowers** nodding, zygomorphic, freesia-scented. **Perianth**: tepals free, arranged fan-wise; segments 16–30 mm long, unguiculate; claw canaliculate; blade linear-lanceolate, margins involute, adaxially creamy white with purple apices, abaxially pale purple. **Nectary** 1–2 **mm** long. **Stamens**: filaments almost as long as tepals, white to pink; anthers narrowly oblong, olive-green, brownish. **Ovary** rounded-oblong. **Flowering time** Apr.–July. **Fruit** an oblong, subglobose or pyriform capsule. Karoo areas of Cape, stony, rocky soil; Albany Thicket, Rainshadow Valley Karoo (Jansenville, Willowmore, Steytlerville, Somerset East).

SANDERSONIA Hook.

Monotypic, sthn Afr., M, S, KZN, EC.

aurantiaca Hook.

Christmas bells; *geelklokkies* (A); *ihlamvu lasenhla*, *umagobongwana* (Z)

Erect or scandent geophyte, 0.30–2.74 m high. **Corms** small, lobes short, spreading, tunics thin. **Stems** simple, striate, supple. **Leaves** close together, alternate, clasping below, linear to narrowly ovate-acuminate; tip cirrhiferous or aristate. **Inflorescences** cymose. **Flowers** orange, on upper part of stem, subtended by a leaf; pedicels long, arcuate. **Perianth** tubular, urceolate, pendulous, persistent, shortly 6-spurred at base; lobes short, triangular, recurved. **Stamens** short, included; anthers 2-thecous, introrse, basifixed. **Ovary** ovoid, obtusely trigonous; ovules many; styles 3, free; stigma apical. **Flowering time** Nov.–Jan. **Fruit** an obtusely ovoid capsule, trisulcate, enclosed in perianth. **Seeds** globose, verrucose, funicle large, broad. Grassland, forest; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (uMzimkhulu District, Kokstad, Weza State Forest, S to Port St Johns and Willowvale).

WURMBEA Thunb.

[= *NEODREGEA* C.H.Wright, *ONIXOTIS* Raf. (Vinnersten & Manning 2007)]

Spider lily

Species ± 45, ± 19 in Australia; 21 in sthn Afr., S, FS, KZN, NC, WC, EC.

1a Basal part of tepals fused into a tube, lateral nectaries fused into a single median structure
2a Concentration of species in summer rainfall region

angustifolia B.Nord.

Geophyte, 0.03–0.20 m high. **Corms** subglobose, tunics light to dark brown, neck submembranous up to 40 mm long. **Stem** slender 30–200 **mm** long; basal sheath membranous. **Leaves** 3, alternate; basal leaf narrowly linear, flat, margins inrolled, scabrid; cauline leaves 2, lowest one long acuminate, base spathaceous, upper inserted below spike, acuminate, base vaginate. **Inflorescence** a scorpioid cyme, 1–7-flowered. **Perianth** persistent, suberect; tube cup-shaped; lobes narrowly ovate-oblong, greenish white

to cream-coloured with many orange-brown dots. **Nectary** a reniform pocket basal to each perianth lobe. **Stamens**: filaments at base of perianth lobes, up to 2 mm long; anthers rounded-oblong, bright yellow. **Ovary** oblong-elliptic, 3-angled; free styles conical-subulate. **Flowering time** Nov.–Mar. Seasonal seepages on rock sheets; Sub-Escarpment Grassland (Engcobo Mtn, Maclear District).

elatior B.Nord.

Khahlana-ea-loti (SS)

Geophyte, 0.27–0.40 m high. **Corms** subglobose, tunics light brown, papery, subterranean neck ± indistinct. **Stem** tall, stout. **Leaves** cauline 2(3); blade long attenuate, base broader, sheathing, apex slender. **Inflorescence** a spike-like cyme, 3–20-flowered. **Perianth** widely campanulate; segments 6, greenish cream-coloured; tube oblong; lobes narrowly oblong-lanceolate, unguiculate (clawed), honey mark deep-red or purplish black. **Nectary** of 2 subparallel elevations extending into shallow pocket above filament base. **Stamens**: filaments at base of perianth lobes, ± 1.5 mm long, white; anthers oblong, crimson to purple. **Ovary** elliptic-oblong; styles subulate; stigmas small, capitate. **Flowering time** Jan.–Mar. **Fruit** a rounded-oblong capsule; styles persistent, suberect. Moist, montane grassland, mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland (Ben Macdhui E to Ngeli Mts, S from Nadouwsberg, Boschberg, Andriesberg, Winterberg Mts, Katberg and Hogsback to Cathcart District).

kraussii Baker

Geophyte, 0.07–0.15 m high. **Corms** oblong-ovoid, tunics dark to reddish brown, subterranean neck 10–80 mm long. **Stem** above ground, 30–150 **mm** high; basal sheath vaginate. **Leaves** 3, alternate, cauline leaves spathaceous, blade narrowly ovate, apex acuminate, base wide. **Inflorescence** a spike-like cyme, 1–6(10)-flowered. **Perianth**, segments 6–12 mm long, tube ± 2 mm long, membranous; lobes lanceolate-oblong, unguiculate, pink-mauve-purple, speckled. **Nectary** elevated, boat-shaped, 2–3 mm long, white or purplish mauve. **Stamens**: filaments whitish, 3–5 mm long; anthers oblong, reddish brown. **Ovary** oblong, 3-angled; styles free, 2–4 mm long; stigmas capitate. **Flowering time** Aug.–Dec. **Fruit** an elliptic, oblong capsule; styles persistent, subulate, spreading. Black, stony soil, recently burned grassland, seepage areas; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Weza State Forest, Umtamvuna Nature Reserve, Egoso, Port Edward).

2b Concentration of species in winter rainfall region

variabilis B.Nord.

Geophyte, 30–200 mm high, often clumped. **Corms** ovoid, basal roots many, tunics dark, subterranean neck long. **Stem** erect, short. **Leaves** 3, alternate, cauline leaves basally stem-sheathing; blade ovate, attenuate from dilated base, glaucous, apex acuminate, margins flat, sometimes ciliolate. **Inflorescence** an ebracteate, many-flowered, scorpioid cyme. **Perianth** persistent, segments 6; tube cup-shaped, spurred basally; lobes linear-lanceolate, acute, greenish or cream-coloured with central spot. **Nectaries** purple, groove-like, margins elevated. **Stamens**: filaments subulate; anthers dorsifixed, versatile. **Ovary** 3-carpellate, 3-locular and ± 3-lobed, sessile; ovules several to many; styles 3, free, flattened subulate. **Flowering time** Aug.–Oct. **Fruit** an ellipsoid to oblong capsule. **Seeds** globose, ± 1 mm in diam., black or brown. Sandy, loamy, stony soil in open patches in renosterveld; Eastern Fynbos-Renosterveld (Louterwater, Avontuur, Humansdorp, Bakens River, Port Elizabeth).

1b Extreme basal part of tepals fused, segments free, lateral nectaries separate

glassii (C.H.Wright) J.C.Manning & Vinn.
(= *Neodregea glassii* C.H.Wright)

Mosquito lily

Small geophyte, 20–60 mm high. **Corms** asymmetrical, obovoid; roots emerging fan-wise. **Shoot** with basal neck covered by sheaths, simple above. **Leaves** 3, basal one sheathing, spreading, linear, second leaf smaller, opposite, and third leaf bract-like below lowest flower of cyme. **Inflorescence** an ebracteate cyme. **Flowers** 3, yellow. **Perianth**: segments narrowly linear-ovate, aristate, auriculate above claw, persistent, reflexed in fruit. **Stamens** arising on claw, short, dorsifixed, introrse. **Ovary** ovoid; ovules several; styles 3, long, arising laterally on truncate ovary lobes; stigmas apical, minute. **Flowering time** May, June. **Fruit** a trigonous capsule, with apical flat part of locules diverging in fruit, bearing persistent incurved, pointed style bases on outside. **Seeds** globose, lenticular. Damp places; Eastern Fynbos-Renosterveld (Bethelsdorp, Port Elizabeth, Grahamstown).

stricta (Burm.f.) J.C.Manning & Vinn.
[= *Onixotis stricta* (Burm.f.) Wijnands, *Pontederia stricta* Burm.f.]

Waterblom (A)

Terrestrial geophyte, helophyte, up to 0.5 m high. **Corms** asymmetrical, tunics thin, dark brown; roots appear fan-wise. **Shoot**: neck covered with old leaf bases. **Leaves** 3, basal one linear, sheathing, upper two situated below inflorescence. **Inflorescence** an ebracteate spike. **Flowers** many, sessile, alternate, pink with red nectar guides. **Perianth**: segments free, equal, ovate, auriculate above claw with 2 dark nectaries forming a tube or groove down each side of claw, deciduous. **Stamens** at base of perianth segments; anthers purple, versatile, introrse. **Ovary** ovoid or obovoid, almost completely syncarpous, trisulcate; ovules many; styles 3, united basally, arising centrally on ovary, filiform; stigma apical, minute. **Flowering time** Aug.–Oct. **Fruit** an obtusely ovoid, angled and triumbonate capsule, topped with persistent style bases. **Seeds** subglobose, angled. Seasonal marshes; Eastern Fynbos-Renosterveld (Humansdorp, Port Elizabeth).

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COMMELINACEAE

(Order Commelinales)

Compiled by Z.L. Magwaza & C.L. Bredenkamp

1a Fertile stamens 6, filaments bearded; flowers mostly regular (tribe Tradescantieae):
2a Inflorescence axillary, perforating base of leaf sheath ..... **Coleotrype**
2b Inflorescence terminal or terminal and axillary, never perforating leaf sheath:
3a Petals white, free; cymes regularly paired ..... ***Tradescantia**
3b Petals pink or purple to violet, united basally into a tube; cymes usually not paired ..... **Cyanotis**
1b Fertile stamens 3, if 6(5), then filaments glabrous; staminodes 3(4); flowers irregular to regular (tribe Commelineae):
4a Inflorescence consisting of 1 or 2 cymes enclosed in or closely subtended by folded or obliquely funnel-shaped leafy spathe; staminodes typically with 4(–6)-lobed anthers ..... **Commelina**
4b Inflorescence not enclosed in spathe, consisting of 1–many cymes; staminodes lacking or, if present, with 2- or 3-lobed anthers:
5a Fertile stamens (5)6; ovary and capsule glabrous ..... **Floscopa**
5b Fertile stamens 3; staminodes 3; ovary and capsule puberulous ..... **Aneilema**

ANEILEMA R.Br.

Species ± 62, mainly tropical Africa; 11 in sthn Afr., mainly in tropical and eastern regions, N, B, LIM, NW, G, M, S, KZN, EC.

aequinoctiale (P.Beauv.) Loudon

Clinging aneilema; *idangabane elikhulu* (Z)

Perennial herb, 0.3–1.0 m high, decumbent with ascending or straggling shoots. **Leaves** distichous, sheaths sticky, basal leaves petiolate, lanceolate to ovate, 35–165 × 10–50 mm, apex acute to acuminate. **Inflorescence** mostly terminal, with 2–7 alternate, opposite or whorled cincinni. **Flowers**: petals paired, yellow. **Stamens** with bearded filaments. **Ovary**: style 11–21 mm long, purple. **Flowering time** Dec.–May. **Fruit** an oblong-elliptic capsule, trilocular or bilocular; dorsal locule 1-seeded or empty, ventral locule 2- or 3-seeded. **Seeds** ovate to subquadrate; testa brown, shallowly foveolate-reticulate. Grassland; Indian Ocean Coastal Belt (along coast from Port Edward to Port St Johns, Kentani and East London).

dregeanum Kunth

Perennial herb, 0.40–0.45 m high; stem straggling, procumbent or ascending, all vegetative parts covered with minute hooked hairs. **Leaves** spirally arranged, lanceolate, 20–150 × 10–45 mm, sheathing at base for 20 mm. **Inflorescence** terminal or axillary, ovoid, moderately dense thyrses. **Flowers**: petals paired, blue to violet-blue, longer than medial petal. **Stamens** with finely bearded filaments. **Ovary**: style 7–11 mm long,

apically violet. **Flowering time** Dec.–Feb. **Fruit** a shortly stipitate capsule, bilocular, oblong-elliptic; locules 2-seeded. **Seeds** ovate; testa foveolate-scrobiculate. Moist clay soil; Indian Ocean Coastal Belt (Port St Johns).

COLEOTRYPE C.B.Clarke

Species 9, Africa and Madagascar; 1 in sthn Afr., LIM?, S, KZN, EC.

natalensis C.B.Clarke

Trailing, leafy, perennial herb, up to 0.5 m high, rooting at nodes. **Leaves** alternate, spreading, oblong, 100 × 15–20 mm, apex acuminate, margins purple or red; sheath with purplish longitudinal stripes, bearded at mouth. **Inflorescence** in axils of uppermost leaves, piercing leaf sheaths. **Flowers**: mauve, open in morning and closed in afternoon. **Sepals** 3, free. **Corolla** deep purple to blue; tube curved; lobes, patent, ovate. **Stamens** 6; filaments inserted in corolla throat, covered with dense purple hairs; anthers basifixed, with locules curved around discoid connective. **Ovary** pilose, 3-locular, with 1 or 2 axillary ovules in each cell; style exserted, filiform; stigma shallowly cup-shaped, with 3 erect, glandular, papillate lobes. **Flowering time** Dec.–Feb. **Fruit** an obovate-trigonous capsule, rostrate, hairy. **Seeds** oblong-ellipsoid. Moist, sandy areas; Indian Ocean Coastal Belt (Port St Johns).

COMMELINA L.

Species ± 170, warmer countries of the world; 16 in sthn Afr., widespread.

Capsule and seeds are important for the identification of species.

1a Spathe simple folded, dry inside, proximal end free, convex

africana L.

Yellow commelina; *geeleendagsblom* (A); *lidzangamane* (S); *khopo*, *khotsoana* (SS); *lekzotswana* (X); *idangabane* (Z)

Perennial herb, 0.15–0.50 m high; spreading, glabrous or pubescent. **Leaves** variable, oblong or linear, flat or folded, up to 120 mm long, margins smooth or crenulate. **Spathe** solitary, pedunculate, apex acute to acuminate, often falcate. **Inflorescence** of 2 well-developed cymes, hidden within spathe when young. **Flowers**: petals yellow. **Ovary** ellipsoid, with 5 ovules; stigma simple. **Flowering time** all year. **Fruit** an oblong capsule; dorsal locule indehiscent, 1-seeded or empty; ventral locules dehiscent, each with 2 ovules, lower ovule aborting. Loam soil, well drained and coastal grasslands; in all bioregions, except Lower Karoo and Rainshadow Valley Karoo (Oviston District E to Weza State Forest, S from Middelburg to Port St Johns, Cradock, Kentani, Baviaanskloof and Port Alfred).

diffusa Burm.f.

Perennial, spreading herb, heliophyte, 0.10–0.87 m high. **Leaves** linear, 50–140 × 15–25 mm, apex ± acuminate, margins may be encrusted with white pustules. **Spathe** pendunculate, acute to attenuate. **Inflorescence** a 1–3-flowered cyme. **Flowers**: petals blue or rarely white. **Stamens** with yellow, red, blue or black filaments and anthers. **Flowering time** Nov.–May. **Fruit** a quadrate capsule, 2 ventral locules 2-seeded, dorsal locule indehiscent, fusiform, 1-seeded or empty. Innocuous hydrophytic weed in grasslands; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Mateku Waterfall, Dwessa and Gqunube Nature Reserves).

1b Spathe obliquely fused, mucilaginous inside when flowering, proximal side connate, straight
2a Capsule quadrate, ventral locules 2-seeded, constricted between seed, dorsal locule 1-seeded or often aborted

benghalensis L.

Benghal commelina; *blouselblommetjie* (A); *khotsoana* (SS); *uhlotshane* (X); *idambiso*, *idemadema* (Z)

Annual spreading herb, 0.2–1.0 m high, pubescent. **Leaves** pale green, ovate, up to 80 × 30 mm, base narrowed into a sheath, ciliated with reddish or rarely colourless setae at mouth, margins ± crenulate. **Spathe** subsessile, clustered at apices of branches. **Inflorescence** of 2 cymes. **Flowers** enclosed in spathe, top most flower exserted; petals 3, 2 side petals deep ink-blue. **Stamens** 6, 3 barren. **Ovary** subglobose, 3-celled; style cylindric; stigma simple. **Flowering time** Aug.–May. **Fruit** a 5-seeded capsule, indehiscent. Weed in open woodlands and stony soils; Mesic Highveld Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket (Oviston E to Oribi Gorge District, S from Port St Johns to Alice, Komga, Steytlerville and Port Alfred).

eckloniana Kunth

Ecklon's blue commelina; *idangabane elincane* (Z)

Perennial herb, 0.1–0.6 m high; with spreading stems arising from a knobby rootstock; pubescent. **Leaves** pale grey-green, linear-acuminate; 60–100 × 3–25 mm; sheath with white hairs at mouth; abaxial surface pubescent; adaxial surface glabrous. **Spathe** solitary, funnel-shaped, falcate. **Inflorescence** of 2 cymes; upper cyme exserted, 1-flowered; lower 5-flowered. **Flowers**: petals unequal, blue. **Ovary** with 2 ovules in each of 2 anterior chambers and 1 ovule in dorsal chamber; style terete; stigma simple. **Flowering time** Oct.–Mar. **Fruit** a flat capsule; dorsal locule not developed. Weed in moist or well-drained soil and forests; Drakensberg Grassland, Indigenous Forests, Albany Thicket (Mpofu Game Reserve S to Suurberg in Greater Addo Elephant National Park and Bathurst).

2b Capsule triangular with 3 one-seeded, subglobose locules or with only 2 ventral locules bearing seeds, the dorsal locule smaller or absent, or indehiscent and tuberculate

erecta L.

Blouselblommetjie (A); *idangabane* (Z)

Perennial herb, 0.2–0.9 m high; stems erect or spreading. **Leaves** attenuate, 60–120 mm long. **Spathe** pedunculate and solitary or clustered apically, puberulous. **Inflorescence** with 1 cyme, lower cyme absent. **Flowers**: petals blue. **Flowering time** Aug.–Mar. **Fruit** a capsule with smooth, dehiscent ventral locule. Dunes or sandy flats near sea and rocky grassland; Indian Ocean Coastal Belt (along coast from Mkambati Nature Reserve and Port St Johns to East London).

livingstonii C.B.Clarke

Perennial herb, 0.1–0.3 m high; with spreading, branched stems. **Leaves** greyish green, ovate-acuminate, 70 × 20 mm, usually folded, pubescent with short setae. **Spathe** clustered apically, subsessile, apiculate. **Inflorescence** with only lower cyme developed, 3–5-flowered. **Flowers**: petals blue or whitish. **Flowering time** Dec. **Fruit** a 3-locular

capsule; locules dehiscent, smooth or 2-locular when dorsal locule is aborted. Grassland and dry bushveld in summer rainfall regions; Albany Thicket (Kentani).

modesta Oberm.

Perennial herb, 0.12–0.30 m high; with several erect stems, diffusely branched; rootstock knobby. **Leaves** linear, flat, 80–100 × 4–10 mm, base attenuate into pseudo-petiole; sheath membranous, subauriculate. **Spathe** solitary, terminal, subsessile, puberulous. **Inflorescence** with solitary cyme. **Flowers** blue or rarely white; upper petals rounded, lower one minute. **Stamens**: anthers occasionally marked with dark margins; staminodes with yellow bulbous antherodes. **Flowering time** Dec.–Mar. **Fruit** a capsule with globose, shiny, cream-coloured locules. Rocky areas; Indian Ocean Coastal Belt, Albany Thicket (Mkambati Nature Reserve to Kentani District).

CYANOTIS D.Don

Species ± 50, warm regions of Africa, Asia and N Australia; 7 in sthn Afr., widespread, but absent in NC and WC, except in the far east.

speciosa (L.f.) Hassk.

Doll's powderpuff; *bloupoeierkwassie* (A); *khopo* (SS); *umagoswana* (X); *insonga*, *udabulamafu* (Z)

Perennial herb, 0.10–1.35 m high; basal shoots form a cluster of ± decussate leaves and erect stems; all shoots enclosed in tight sheaths, purple when young; rhizome well developed, U-shaped, older parts dying; stem covered with white hairs. **Leaves** linear, acuminate, 170 × 8 mm, canaliculate; adaxial surface glabrous, abaxial surface with long, white, patent hairs. **Inflorescence** a cyme. **Flowers**: pale to deep blue or mauve. **Flowering time** June–Mar. **Fruit** an obovoid capsule, hairy at apex. Common locally as solitary plants or rarely together in summer rainfall region, grasslands and steep rocky slopes; Sub-Escarpment Savanna, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Upper Karoo, Rainshadow Valley Karoo, Albany Thicket (Oribi Gorge S to Queenstown, Lusikisiki, Cradock, Kentani, Uniondale and Alexandria Districts).

FLOSCOPA Lour.

Species ± 20, widespread in warmer regions of Africa, Asia, Australia, Central and South America; 3 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, EC.

glomerata (Willd. ex Schult. & Schult.f.) Hassk.

Perennial herb, heliophyte, 0.25–0.60 m high; stems few branched, decumbent. **Leaves** sessile, 80 × 12 mm, glabrous. **Inflorescence** terminal, glandular-pubescent, compact, consisting of several 1-sided, dense, short cymes and reduced thyrses, ebracteolate, shortly pedicelled. **Flowers** zygomorphic, pale blue, glandular-pubescent; petals 3, mauve, unequal, upper 2 ovate, lower linear. **Stamens** 6, 3 lower longer, declinate; anthers with narrow connectives; sacs separated by broader, yellow connective. **Ovary** compressed-cordate; style filiform; stigma terminal, minute. **Flowering time** July, Feb.? Warmer parts, growing along streambanks, marshes and forest edges; Sub-Escarpment Grassland, Indigenous Forests (Bizana District).

*TRADESCANTIA L.

Species ± 60, North and South America; several in cultivation; 1 naturalised in sthn Afr., M, KZN, EC.

fluminensis Vell.

Wandering Jew; *wandelende jood* (A)

Perennial herb; stems leafy, decumbent. **Leaves** distichous, ovate-acuminate, sheath with short white hairs at mouth, 25–40 × 15–20 mm, usually with white and purple stripes, adaxial surface purple. **Inflorescence** a cyme. **Flowers**: petals ovate, white. **Stamens** 6; filaments bearded in lower half; anthers with obtriangular connective; locules spreading towards apex. **Ovary** 3-locular, oblong-globose, with 3 ovules in each locule; style terete or ± swollen in middle; stigma capitate. **Flowering time** Oct. Forests; Albany Thicket, Indigenous Forests (Bathurst).

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CYPERACEAE

(Order Poales)

Compiled by C. Archer

1a Flowers all unisexual or functionally unisexual; spikelets unisexual or bisexual; some empty glumes and/or spikelet bracts present:

2a Plants functionally dioecious, rush-like; inflorescence capitate, pseudolateral..... **Scirpoides dioecus**

2b Plants neither dioecious nor rush-like:

3a Spikelet solitary, pseudolateral, composed of many male flowers and 1 terminal female flower..... **Chrysitrix**

3b Spikelet not as above:

4a Female spikelet not enclosed by a perigynium; nutlet borne on a stalk (gynophore)..... **Scleria**

4b Female spikelet partially or wholly enclosed by perigynium:

5a Perigynium entire or split unevenly in 1 or 2 places; rachilla present, usually bearing male flowers, which are exserted from perigynium..... **Schoenoxiphium**

5b Perigynium entire, bottle-shaped, frequently apex rostrate, 2-toothed; rudimentary rachilla occasionally present within perigynium..... **Carex**

1b Flowers all bisexual, or bisexual and unisexual or functionally unisexual together; spikelets, at least aerial ones, bisexual; some empty glumes and/or spikelet bracts occasionally present:
6a Spikelets composed of 1 bisexual flower, with 0 or 1 empty glumes and/or spikelet bracts at base; glume margins adaxially connate ..... **Ascolepis**
6b Spikelets composed of (1–)several bisexual flowers, or of bisexual and unisexual flowers together, with several empty glumes and/or spikelet bracts at base; glume margins free:
7a Glumes distichous:
8a Spikelets with 0–2 empty glumes and/or bracts at base; nutlets not accompanied by bristles:
9a Stigmas 3 (sometimes very short or absent), or if 2, nutlet dorsiventrally compressed ..... **Cyperus**
9b Stigmas 2; nutlet laterally compressed:
10a Inflorescence digitate or anthelate to compound-anthelate; flowers many (> 5)..... **Pycreus**
10b Inflorescence capitate (occasionally with accessory capitula); flowers 1 or 2(–5) ..... **Kyllinga**
8b Spikelets with 3 or more empty glumes and/or bracts at base; nutlets sometimes accompanied by bristles:
11a Spikelets with well-developed bristles ..... **Carpha**
11b Spikelets without bristles, or if present, minute:
12a Rachilla of spikelet between bisexual flowers elongated, thickened and curved ..... **Schoenus**
12b Rachilla of spikelet elongated and sometimes curved above uppermost bisexual flower..... **Epischoenus**
7b Glumes subdistichous to spirally arranged:
13a Spikelets with 0–2 empty glumes and/or bracts at base:
14a Stamens 6 ..... **Cyathocoma**
14b Stamens 1–3:
15a Style base enlarged:
16a Inflorescence 1 spikelet (occasionally with accessory spikelets); inflorescence bracts scale-like; style base persisting..... **Eleocharis**
16b Inflorescence seldom only 1 spikelet, or if so, then inflorescence bracts not scale-like and style base not persisting:
17a Mouth of leaf sheath pilose; style base persisting as a button-like structure on nutlet..... **Bulbostylis**
17b Mouth of leaf sheath glabrous; style base not persisting on nutlet:
18a Inflorescence of 1–4 large spikelets > 8 mm long; stigmas 3; nutlet obpyriform, epidermal cells isodiametric..... **Abildgaardia**
18b Inflorescence of > 10 small spikelets < 5 mm long, or if > 8 mm long, then stigmas 2; nutlet obovate (occasionally obpyriform), epidermal cells mostly horizontally elongated ..... **Fimbristylis**
15b Style base not enlarged:
19a Nutlet borne on gynophore:
20a Ligule usually well developed, papyraceous ..... **Ficinia** (also see 22b)
20b Ligule not well developed:
21a Plants annual ..... **Isolepis marginata**
21b Plants perennial:
22a Leaf blades well developed; plants occurring in high-altitude grassland..... **Dracoscirpoides**
22b Leaf blades reduced to sheaths (sometimes a very short blade developed); plants occurring along coast (occasionally inland) ..... **Ficinia nodosa**
19b Nutlet not borne on gynophore:
23a Culms nodose, leaf-bearing, usually markedly 3(–5)-angled:
24a Inflorescence anthelate to compound-anthelate, occasionally capitate or reduced to 1 spikelet but, if so, with at least 2 leaf-like involucral bracts ..... **Bolboschoenus**
24b Inflorescence paniculate or occasionally capitate but, if so, with only 1 involucral bract ..... **Fuirena**
23b Culms scapose:
25a Leaf blades well developed:
26a Hard, perennial plants occurring in grassland or denuded areas..... **Scirpoides burkei**
26b Soft, annual or perennial plants, if perennial, then occurring in aquatic or marshland habitats .... **Isolepis**
25b Leaf blades reduced to sheaths (sometimes a very short blade developed):
27a Inflorescence pseudolateral..... **Schoenoplectus**
27b Inflorescence terminal:
28a Inflorescence of several stalked, rounded clusters of spikelets..... **Scirpoides thunbergii**
28b Inflorescence paniculate or capitate:

29a Inflorescence paniculate, of many spikelets ..... **Pseudoschoenus**
29b Inflorescence capitate, of (1–)several spikelets:
30a Densely tufted, or with culms in uniseriate row, robust perennials; spikes 6–10 mm in diam. ..... **Hellmuthia**
30b Dwarf annuals or slender perennials up to 0.2 m high (usually much less); spikelets < 3 mm in diam..... **Isolepis**
13b Spikelets with 3 or more empty glumes and/or bracts at base:
31a Stigmas 2..... **Rhynchospora**
31b Stigmas 3 or more:
32a Inflorescence cryptic; nutlet long-stalked..... **Capeobolus**
32b Inflorescence never cryptic; nutlet sessile or shortly stalked:
33a Large robust plants; culm nodose, rounded and hollow; inflorescence a panicle..... **Cladium**
33b Plants variable in height and robustness; culm variable, if nodose, then solid; inflorescence variable. ..... **Tetraria**

ABILDGAARDIA Vahl

Species ± 10, Afr., Asia and Australia; ± 3 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, EC.

Leaf blade merely an apiculus on sheath; nutlet transversely ribbed

hygrophila (Gordon-Gray) Lye

Perennial herb, tufted, 0.23–0.45 m high. **Leaf blades** < 3 mm long, filiform. **Culm** scapose, terete, ridged, 0.5–1.0 mm in diam. **Inflorescence** head-like. **Subtending bracts** 2–4, shorter than inflorescence, glume-like. **Spikelets** ± compressed when young, oblong to oblong-lanceolate, 10–22 × 3–9 mm. **Glumes**: fertile ovate, 6.1–8.2 × 3.2–4.3 mm, keel excurrent into 0.5–1.0 mm long awn. **Style branches** 3. **Flowering time** Sept.–Jan. **Nutlet** broadly obovate, 1.2–1.4 × 0.8–1.1 mm, 3-angled, whitish, surface transversely ribbed. Marshy ± coastal grassland; Indian Ocean Coastal Belt (Inland of Mkambati Nature Reserve, Tracor, Msikaba Gorge, Luphuthana and Mzamba River Mouth).

Leaf blade well developed; nutlet tuberculate

ovata (Burm.f.) Kral

Perennial herb, tufted, 0.1–0.5 m high. **Leaf blades** 0.5–1.7 mm wide, ± filiform to linear, flat to slightly inrolled. **Culm** scapose, flattened, 0.5–1.2 mm in diam. **Inflorescence** of 1 spikelet. **Subtending bracts** 2 or 3, up to 13 mm long, glume-like. **Spikelets** ovate to elliptic becoming lanceolate to oblong in age, 7–19(–29) × 3–6 mm. **Glumes**: fertile broadly ovate to ovate-oblong, 5.0–7.5 × 3.4–5.8 mm, keel excurrent into 0.5–1.0 mm long awn. **Style branches** 3. **Flowering time** Sept.–Apr. **Nutlet** obovate, 2.0–2.8 × 1.2–1.9 mm, 3-angled, whitish, surface tuberculate. Moist grassland, marshes and near streams; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Queenstown E to Mzamba River Mouth, from Menziesberg to Kentani and from Rockcliff to Grahamstown).

ASCOLEPIS Nees ex Steud.

Species ± 20, ± cosmopolitan in warm climates; 2 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, EC.

capensis (Kunth) Ridl.

Perennial herb, sparsely tufted, 0.12–0.91 m high. **Leaf blade** inrolled, ± 1 mm wide when flattened. **Culm** scapose, terete, 1.0–1.2 mm in diam. in middle. **Inflorescence** dense, capitate, of 1–5 ± hemispherical spikes of several spikelets. **Subtending bracts**

2(3), broadly expanded basally to cup inflorescence; blade inrolled, leaf-like. **Spikelets** densely spirally imbricate, of 1 bisexual flower. **Glumes** dorsiventrally compressed, 3.5–5.5(–7.0) mm long, chartaceous, white, margins connate on upper side, with 2-cleft valve on lower side at top of basal ovate part. **Style branches** 2. **Flowering time** (Aug.) Nov.–Jan. **Nutlet** narrowly oblong, stalked, 1.0–1.5 mm long, ± lenticular, dark grey to reddish brown. Marshy grassland and banks of watercourses; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland (Houtbosfontein E to Kokstad, from Cala to Mtentu River Mouth, S to Gaika's Kop and Hogsback).

BOLBOSCHOENUS (Asch.) Palla

Species ± 11, widespread in Old and New World; 3 in sthn Afr., mainly along coasts of N, KZN, WC, EC, and sporadically inland.

maritimus (L.) Palla

Snygras, *snyruigte* (A)

Perennial herb, 0.45–1.75 m high, rhizomatous, shoot bases bulbously thickened. **Leaf blade** 0.3–0.7 mm wide, flat, keeled, margins serrated. **Culm** nodose, sharply 3-angled. **Inflorescence** a head of 1–20 sessile or subsessile spikelets. **Subtending bracts** erect; blades leaf-like. **Spikelets** ovate, 15–20 × 7 mm. **Glumes** ovate, 7.5 × 4 mm, keel excurrent into awn up to 2 mm long. **Perianth** of (0–)3–6 retrorsely scabrid bristles. **Style branches** 3. **Flowering time** (Oct.) Dec.–Apr. **Nutlet** obovate, 3.0–3.4 × 1.9–2.4 mm, ± biconvex to ± 3-angled, shining dark brown, surface finely reticulate. Brackish coastal estuaries and pans; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (The Haven to Kei River Mouth S, from Uitenhage to Riet River Mouth).

BULBOSTYLIS Kunth

Species ± 100, mainly tropical Africa and tropical America; ± 15 in sthn Afr., widespread.

1a Annuals
2a Leaves and culms capillary; culms ± glabrous to scabrid
3a Glumes boat-shaped, keel excurrent into a minute point or 0.2 mm long awn

densa (Wall.) Hand.-Mazz.

Annual herb, sparsely tufted, 0.06–0.25 m high. **Leaf blades** up to 160 × 0.25(–0.40) mm flexuous, capillary. **Culm** scapose, erect to flexuous, ± terete, ridged, ± 0.25 mm in diam. **Inflorescence** terminal, a compound anthela, up to 4–30 × 20 mm. **Subtending bracts** 3 or 4, usually shorter than inflorescence; blades capillary. **Spikelets** ovate to oblong, 3.0–8.0 × 1.3–2.0 mm. **Glumes**: fertile, boat-shaped, ± broadly ovate, 1.4–1.8 × 0.75–1.70 mm, keel excurrent into minute point or awn. **Flowering time** Jan.–Apr. **Nutlet** obovate, 0.5–1.0 × 0.35–0.80 mm, 3-angled, whitish becoming dark brown, surface transversely lineate. Seasonally moist places, edges of watercourses, in moist grasslands; Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Mkambati Nature Reserve S, from Fort Fordyce to Pirie).

3b Glumes lanceolate, keel excurrent into 1.5 mm long awn

humilis (Kunth) C.B.Clarke

Annual herb, densely tufted, 0.03–0.25 m high. **Leaf blades** up to 100 × 0.25(–0.40) mm, capillary, glabrous. **Culm** scapose, ± capillary, ridged, ± scabrid, 0.2–0.3 mm in diam. **Subtending bracts** 4 or 5; blades filiform. **Inflorescence** up to 16 × 14 mm, sessile

spikelets (1)2–5, clustered to form a head. **Spikelets** ovate-oblong, 5–15 × 1.5–3.0 mm. **Glumes**: fertile narrowly ovate-oblong, 3.0–4.2 × 1.6–1.9 mm. **Flowering time** all year. **Nutlet** elliptic, excluding style base 0.95–1.30 × 0.8–0.9 mm, 3-angled or biconvex, golden- to dark brown, surface reticulate. Seasonally moist, shallow, bare soil between other vegetation; in all bioregions, except Lower Karoo and Rainshadow Valley Karoo (Joubertspas to Mtn near Singisi, southwards from Steynsburg District to Mkambati Nature Reserve, from Mountain Zebra National Park to Kentani and from Joubertina to Fish River Mouth).

2b Leaves and culms filiform; culms pilose

hispidula (Vahl) R.W.Haines

Annual herb, tufted, 0.06–0.49 m high. **Leaf blades** up to 490 × 0.30–0.63 mm, abaxial surface white-pilose. **Culm** scapose, terete, ridged, 0.50–0.75 mm in diam. **Inflorescence** a simple or compound anthela, up to 30 × 55 mm. **Subtending bracts** 2 or 3; blades filiform. **Spikelets** ovate to oblong, 4–13 × 1.8–3.5 mm. **Glumes**: fertile boat-shaped, narrowly to broadly ovate, 2.0–3.3 × 2.0–3.4 mm, keel excurrent into minute point or very short awn. **Flowering time** Jan.–May. **Nutlet** obovate to pyriform, 0.8–1.7 × 0.7–1.5 mm, 3-angled, whitish becoming dark brown, surface transversely wrinkled. Bare areas between other vegetation in temporarily moist sandy soil, in disturbed grassland; Sub-Escarpment Grassland, Upper Karoo, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Matatiele District, Guildford, Grootfontein, Port St Johns, Komga, East London).

1b Perennials
4a Rhizome elongated; plant bases placed along rhizome in uniseriate row

oritrephes (Ridl.) C.B.Clarke

Perennial herb with annual aerial parts, 0.05–0.45 m high. **Leaf blades** 4–200 × 0.2 (–0.5) mm, capillary (to filiform). **Culm** scapose, ± terete, filiform, ± 0.4 mm in diam. **Inflorescence** up to 27 × 24 mm, 1 head of 2–5 sessile or stalked spikelets. **Subtending bracts** 2–4; blades capillary (to filiform), scabrid. **Spikelets** ovate-oblong becoming lanceolate oblong in age, 4–12 × 1.5–3.0 mm. **Glumes**: fertile boat-shaped, ovate, 2.4–3.6 × 2–3 mm, keel non-excurrent. **Flowering time** Sept.–Apr. **Nutlet** obovate to oblanceolate, excluding style base 0.9–1.3 mm, 3-angled, slate-grey, crowned with persistent, brown, button-like style base, surface transversely wavy. Fire-regulated grasslands; Drakensberg Grassland, Dry Highveld Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (York Farm E to Bizana S, from Molteno to Port St Johns, Baviaansrivierberg to Komga and Grahamstown).

4b Rhizome abbreviated; plant bases tufted
5a Inflorescence bracts (at least of primary branches) bearing long ± transparent hairs on margins
6a Inflorescence branched; nutlet (excluding style base) 0.6–1.0 × 0.4–0.7 mm

burchellii (Ficalho & Hiern) C.B.Clarke

Perennial herb, up to 0.49 m high. **Leaf blades** up to 125 × 0.2–0.4 mm, filiform, ± glabrous. **Culm** scapose, filiform, terete, ridged, ± 0.4 mm in diam. **Inflorescence** ± 40(–72) × 35(–70) mm, a compound anthela of ± 37(–90) spikelets, sometimes more compact, reduced to ± 11 spikelets. **Subtending bracts** 2–4; blades filiform. **Spike-**

lets 4.5–15.0 × 1.0–2.0 mm, elliptic-lanceolate to oblong-lanceolate. **Glumes**: fertile boat-shaped, ovate-elliptic, 2.2–3.6 × 1.3–2.5 mm, keel excurrent into minute awn. **Flowering time** Jan. **Nutlet** obovate to obcordate, excluding style base 0.6–1.0 × 0.4–0.7 mm, 3-angled, cream-coloured becoming dark brown, crowned with persistent, dark, button-like style base, surface transversely wavy. Rocky areas, in sandy soils; Indian Ocean Coastal Belt (Port St Johns).

6b Inflorescence branched or simple (capitate); nutlet (excluding style base) 0.9–2.0 × 0.8–1.3 mm

contexta (Nees) M.Bodard

Perennial herb, tufted, 0.10–0.29 m high. **Leaf blades** 35–150 × 0.3–0.9 mm, filiform, adaxial surface glabrous to densely white-villous. **Culm** scapose, terete, ridged, ± glabrous, 0.75 mm in diam. **Inflorescence** variable, up to 68 × 75 mm, either a compound anthela or capitate head. **Subtending bracts** 2–4; blades setaceous, scabrid. **Spikelets** ovate to elliptic becoming lanceolate-elliptic, 6–14 × 2–4 mm. **Glumes**: fertile boat-shaped, ovate-oblong to elliptic-oblong, 3.2–5.3 × 2–4 mm, keel excurrent into minute awn. **Flowering time** Aug.–Mar. **Nutlet** obovate, 3-angled, pale yellow to light brown, surface transversely wavy. Grasslands; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Lady Grey E to Bokberg S, from Fraser Falls to near Mzamba River Mouth, Guildford to Kei River Mouth and from Suurberg in Greater Addo Elephant National Park to Port Alfred).

5b Inflorescence bracts without long marginal hairs
7a Persistent leaf sheath bases soft, not shining, midbrown

schoenoides (Kunth) C.B.Clarke

Perennial herb, tufted, 0.15–0.40 m high. **Leaf blades** up to 210 × 0.20–1.43 mm, filiform to linear, glabrous. **Culm** scapose, ± terete, ridged, ± glabrous, filiform, ± 0.4–0.8 mm in diam. **Inflorescence** up to 29 × 25 mm, capitate head of ± 4–6 spikelets. **Subtending bracts** 2–4; blade filiform. **Spikelets** elliptic, 7–17 × 2.0–4.5 mm. **Glumes**: fertile narrowly oblong, 3.4–6.7 × 1.9–3.5 mm, keel terminating below apex. **Flowering time** Aug., Nov., Dec. **Nutlet** obovate, excluding style base 1.0–1.8 × 0.50–1.25 mm, 3-angled, golden-yellow, brown or slate-grey, crowned with brown, button-like style base, surface transversely wavy. Marshy grasslands; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland (Satansnek, Fraser Falls, Gaika's Kop).

7b Persistent leaf sheath bases hard, coarse, shining, dark brown to black

scleropus C.B.Clarke

Perennial herb, tufted, 0.12–0.50 m high. Description as for *B. schoenoides* but leaf bases hard, dark brown to black, persistent; blades coarser and wider. **Flowering time** Sept., Nov., Dec. Fire-regulated grasslands, on shallow soils; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Mount Fletcher E to Kokstad and Mkambati Nature Reserve, from Dohne to Berlin).

CAPEOBOLUS Browning

Species 1, sthn mountains of WC, reaching Humansdorp District of EC.

brevicaulis (C.B.Clarke) Browning

Perennial herb, tufted, frequently cushion-like, 0.07–0.20 m high. **Leaf blades** up to 200 × 3–4 mm, bifacial, lacking midrib, flat. **Culm** nodose, 40–60 × 1.0–1.5 mm, cryptic among leaves. **Inflorescence** reduced, paniculate, of 2–4 nodes each bearing

1 subsessile, or 1 subsessile and 1 shortly peduncled spikelet. **Bracts** 1 at each node. **Spikelets** solitary, of 7–10 distichous glumes, lower few sterile, upper 2 fertile. **Glumes**: fertile imbricate, lanceolate, ± 7.5 mm long, keel excurrent into minute point. **Perianth** 6 villous outgrowths shorter than nutlet. **Flowering time** Dec.–Mar. **Nutlet** elliptical or oblong, base narrow, up to 4 × 3 mm, 3-ridged, whitish or pale brown, surface faintly transversely rugose towards apex. Rocky mountainous areas, in seasonally moist sandy soils; Eastern Fynbos-Renosterveld (Tsitsikamma Mts to Elands River Mouth).

CAREX L.

Species ± 2 000, ± cosmopolitan in moist temperate climates and extending into arctic and Antarctic regions; ± 14 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Inflorescence of several discrete spikes
2a Style branches 2; nutlet biconvex

rhodesiaca Nelmes
[= *C. austro-africana* (Kük.) Raymond]

Perennial herb, tufted, 0.25–0.60 m high. **Leaf blades** up to 300–480 × 3–7 mm, flat or plicate, glabrous. **Culm** nodose, sharply 3-angled, ± 2 mm in diam. **Inflorescence** 50–310 mm long. **Bracts** 1 at each node. **Spikes** 4–6, pendulous, uppermost staminate, lowermost 3–5 pistillate. **Pistillate bracts (glumes)** ovate, 4.5–6.5 × 0.8–1.2 mm, keel excurrent into 2.0–4.2 mm long scabrid awn. **Perigynium** suberect, stalked, rostrate, 3–4 mm × 1.5–1.8 mm, shallowly biconvex in cross section, slightly inflated, midbrown to reddish brown with whitish 0.3–0.5 mm long rostrum, surface papillate. **Flowering time** Nov., Dec. **Nutlet** obovate, 1.9–2.2 × 1.0–1.7 mm, dark brown, surface minutely papillose. Waterfall marshes, confluence of streams; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Cedarville E to Kokstad, from Ugie S to Katberg and to Kentani).

2b Style branches 3; nutlet 3-angled
3a Dwarf plants, culms < 60 mm high; restricted to alpine 'sedge meadows'

monotropa Nelmes

Perennial herb, tufted, 0.02–0.06 m high. **Leaf blades** up to 65–100 × 2.2–3.0 mm, flat or keeled, glabrous. **Culm** cryptic, 3-angled, 0.5–1.0 mm in diam. **Inflorescence** a raceme of spikes, 12–20 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 3 or 4, spreading, clustered, the largest 7–9 × 7–9 mm; apical spike staminate, lowest 2- or 3-pistillate. **Pistillate bracts (glumes)** shorter and narrower than perigynium, lanceolate, 2.5–3.0 × 1.2 mm, keel terminating subapically, sometimes excurrent into minute scabrid awn. **Perigynium** suberect to spreading, 4.0–4.5 mm × 1.2–1.5 mm, elliptic or rotund in cross section, much inflated, bright yellow, glabrous, nervose; rostrum 1.2–1.8 mm long with shallowly bidentate apex. **Flowering time** Jan. **Nutlet** obovate, 1.5–1.8 × 1.0 mm, dark brown, surface minutely papillose. Drakensberg Grassland (Naude's Neck to Ben Macdhui).

3b Taller plants, up to 1.7 m high; not restricted to alpine habitats
4a Inflorescence of many (7–9), long, narrow, pendulous spikes, the longest 120–185 × 5–8 mm

mossii Nelmes

Perennial herb, tufted, 0.4–1.4 m high. **Leaf blades** ± 485 × 12–16 mm, flat or plicate, adaxial surface glabrous, abaxial surface papillate. **Culm** nodose, 3-angled, 2.5–4.0 mm

in diam. **Bracts** 1 at each node, leaf-like. **Spikes** 7–9, pendulous, the largest 120–185 × 5–8 mm, the uppermost staminate, lowermost 6–8 bisexual. **Pistillate bracts (glumes)** lanceolate, 4.0–5.5 × 1.0–1.5 mm, keel often excurrent into minute awn up to 0.3 mm long. **Perigynium** suberect, stalked, 2.5–3.5 × 1.0–1.5 mm, 3-angled in cross section, slightly inflated, green or stramineous; rostrum 0.5–0.6 mm long, apex shallowly bidentate. **Flowering time** Nov., Mar. **Nutlet** obovate or elliptic, narrowly clawed, 1.8–2.0 mm × 1.0–1.2 mm, 3-angled, blackish, or dark brown with lighter angles, glabrous. Forest glades; Indigenous Forests (Kokstad, Baziya Mtn, Somerset East, Boschberg, Komga).

4b Inflorescence of fewer, shorter, thicker, mostly erect to suberect spikes, the longest up to 80(–100) × (4–)7–15 mm
5a Spikes clustered; largest inflorescence bract sharply reflexed near base of blade at maturity

ecklonii Nees

Perennial herb, tufted, 0.17–0.70 m high. **Leaf blades** 80–340 × 2.5–4.0 mm, channelled or plicate, glabrous. **Culm** nodose, 3-angled, 1–2 mm in diam. **Bracts** 1 at each node, leaf-like. **Spikes** 4 or 5, largest 15–22 × 7–10 mm, apical spike male, lowermost 3 or 4 spikes female. **Female bracts (glumes)** shorter and narrower than perigynium, ovate, 4.2–5.0 × 1.8–2.2 mm, keel excurrent into 0.8–2.0 mm long scabrid awn. **Perigynium** suberect, stalked, 4.5–5.5 × 1.8–2.5 mm, 3-angled with rounded base, inflated, green, or stramineous, cartilaginous, glabrous, nervose; rostrum 0.7–1.2 mm long, apex shallowly bidentate. **Flowering time** Dec. **Nutlet** obovate, narrowly clawed, 2.5–3.2 × 1.5–2.0 mm, 3-angled, dark brown, surface minutely papillose. Moist saline places at coast; Albany Thicket (Port Alfred, Kidd's Beach, Riet River Estuary, East London).

5b Spikes (apart from apical few) not clustered; largest inflorescence bract not reflexed
6a Leaf blades, especially near base with well-developed cross-venation (easily observed in dry material but observable in fresh material by shining light source or sunlight from behind)

cognata Kunth

Perennial herb, tufted (sometimes long-rhizomatous), 0.35–0.80 m high. **Leaf blades** 230–680 × 6–8 mm, flat; upper and lower surfaces scabrid. **Culm** nodose, sharply 3-angled, 2–3 mm in diam. **Inflorescence** a raceme of spikes, 115–195 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 3–6, the largest 20–70 × 7–11 mm. **Pistillate bracts (glumes)** ovate-lanceolate, 5–6 mm × 1.2–1.8 mm, keel excurrent into 1.2–3.0 mm long scabrid awn. **Perigynium** spreading, stalked, 4.0–5.2 × 1.5–2.0 mm, elliptic or rotund in cross section, much inflated, stramineous and reddish, cartilaginous, glabrous, nervose; rostrum 1.1–2.0 mm long, apex deeply bidentate. **Flowering time** Dec., Mar. **Nutlet** obovate or elliptic, 1.7–2.8 × 1.2–1.5 mm, 3-angled, dark brown, surface minutely papillose. Bogs and marshy places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Ben Macdhui E to Port St. Johns and from Gaika's Kop to Kentani).

6b Leaf blades without well-developed cross-venation
7a Rostrum of perigynium elongate, 2 mm long

***sylvatica** Huds.

Perennial herb, tufted, up to 0.5 m high. **Leaf blades** 450 × 7–9 mm, flat, glabrous. **Culm** nodose, 3-angled, 1.5–2.0 mm in diam. **Inflorescence** a raceme of spikes, 200–330 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 7 or 8, erect or suberect, the

largest 35–45 × 6–7 mm. **Pistillate bracts (glumes)** same length as and narrower than perigynium, lanceolate, 4–5 × 1.5 mm, keel excurrent into 0.5–1.0 mm long scabrid awn. **Perigynium** suberect, stalked, 4.5–4.7 × 1.3 mm, 3-angled with rounded base in cross section, not inflated, green or golden-brown, membranous, glabrous; rostrum 2 mm long, apex shallowly bidentate. **Flowering time** Nov., Jan. **Nutlet** elliptic, 2.3–2.4 × 1.3–1.4 mm, 3-angled, dark brown with lighter angles, surface smooth. Forest interiors; Indigenous Forests (Hogsback, Auckland Forest).

7b Rostrum of perigynium shorter, < 1.6 mm
8a Bracts of male and female spikelets markedly dimorphic

***acutiformis** Ehrh.

Perennial herb, tufted, 0.45–0.80 m high, rhizomatous. **Leaf blades** up to 550 × 5–10 mm, flat or plicate. **Culm** nodose, sharply 3-angled, 2–3 mm in diam. **Inflorescence** a raceme of spikes, 130–400 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 5–7, largest 300–800 × 4–8 mm, apical 1–3 male, lowest 1–4 female. **Female bracts (glumes)** lanceolate, 3.0–5.5 × 0.6–1.2 mm, keel excurrent into 1.3–3.0 mm long scabrid awn. **Perigynium** suberect, stalked, 3–4 × 1.6–2.0 mm, 3-angled in cross section, not inflated, greyish green with whitish rostrum, cartilaginous, nervose, apex shallowly bidentate. **Flowering time** (Sept.) Nov., Dec. **Nutlet** obovate, 1.7–2.0 × 1.2–1.5 mm, 3-angled, yellowish brown, surface smooth. Marshy grasslands at high altitudes; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Sterkspruit Farm E to Kokstad, from Lapa Munnik Pass S to Boma Pass).

8b Bracts of male and female spikelets similar
9a Perigynium rostrum deeply bidentate, teeth 0.5–1.0 mm long
10a Shoot scales and basal leaves developing extensive anthocyanin colouration; leaves dark green

aethiopica Schkuhr

Perennial herb, tufted, 0.4–1.2 m high. **Leaf blades** ± 800–1 150 × 7–12 mm, flat, keeled, or plicate, upper surface glabrous, lower surface papillate. **Culm** nodose, 3-angled, 1.5–3.0 mm in diam. **Inflorescence** a raceme of spikes, 165–445 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 5–7, erect or suberect, the largest 300–800 × 4–8 mm, upper 1 or 2 male, lower 3–5 female. **Female bracts (glumes)** same length as and narrower than perigynium, ovate, 4–6 × 1.5–3.0 mm, keel excurrent into 0.5–1.8 mm long scabrid awn. **Perigynium** suberect, 5.5–6.5 × 1.2–4.0 mm, narrowly elliptic in cross section, slightly inflated, green, or stramineous, cartilaginous, glabrous, nervose; rostrum 1.2–1.6 mm long. **Flowering time** Oct., Jan., Apr. **Nutlet** obovate, 2.5–2.8 × 1.2–1.8 mm, 3-angled, dark brown, minutely papillose. Forest margins; Indigenous Forests (Lottering State Forest E to Curries Kloof, from Storms River Mouth E to Witelsbos).

10b Shoot scales and basal leaves not developing extensive anthocyanin colouration (or sometimes small patches); leaves yellow-green

clavata Thunb.

Perennial herb, tufted, 0.4–1.7 m high. **Leaf blades** ± 300–500 × 6–11 mm, plicate; upper surface glabrous, lower surface papillate. **Culm** nodose, 3-angled, 1.5–3.0 mm in diam. **Inflorescence** a raceme of spikes, 115–650 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** (3–)6, erect or suberect, the largest 30–100 × 10–15 mm, upper 1–3 male, lower 1–4 female. **Female bracts (glumes)** ovate-lanceolate, 5–6 × 1.9–4.0 mm, keel excurrent into 0.7–2.0 mm long scabrid awn. **Perigynium** spreading, 6–7 × 2.5–3.0 mm, shallowly 3-angled in cross section, much inflated, green or stramineous, cartilaginous,

glabrous, nervose; rostrum 1.0–1.5 mm long, apex deeply bidentate. **Flowering time** Sept.–Dec. **Nutlet** obovate, narrowly clawed, 2.8–3.5 × 1.7–2.5 mm, 3-angled, dark, minutely papillose. Marshes at low altitude; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Port St Johns S to Kobongaba, from Humansdorp to Hankey and Kleinemonde and from Witelsbos to Sea View).

9b Perigynium rostrum shallowly bidentate, teeth 0.3–0.6 mm long

subinflata Nelmes

Perennial herb, tufted, 0.3–0.9 m high. **Leaf blades** up to 220 × 6–10 mm, flat or plicate, upper surface glabrous, lower surface papillate. **Culm** nodose, 3-angled, 1.5–2.0 mm in diam. **Inflorescence** a raceme of spikes, 65–110 mm long. **Bracts** 1 at each node, leaf-like. **Spikes** 4–6, erect or suberect, the largest 20–40 × 9–11 mm, upper 1 or 2 male, lower 3–5 female. **Female bracts (glumes)** shorter and narrower than perigynium, broadly ovate, 3.5–5.0 × 1.5–2.5 mm, keel excurrent into 0.5–1.0 mm long, scabrid awn. **Perigynium** stalked, 4–6 × 1.2–2.5 mm, elliptic or rotund in cross section, much inflated ('hump-backed'), green or reddish, cartilaginous, glabrous, nervose. **Flowering time** Nov.–Feb. **Nutlet** obovate, 2.2–2.8 × 1.2–1.8 mm, 3-angled, dark brown with lighter angles, surface minutely papillose. Marshy grasslands at high altitudes; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Sterkspruit Farm E to Naude's Neck).

1b Inflorescence a single spike, or foxtail-like or panicled
11a Inflorescence spicate

killickii Nelmes

Perennial herb, up to 0.14 m high, long-rhizomatous. **Leaf blades** < 1 mm wide, thick, ± U-shaped. **Culm** scapose, ± 3-angled, 0.7–1.2 mm in diam. **Inflorescence** spicate, up to 10 mm long. **Bracts** erect, leaf-like. **Spike** 1. **Female bracts (glumes)** lanceolate or oblong-lanceolate, 4–5 × 1.75–2.00 mm, keel terminating subapically or lowest ± excurrent. **Perigynium** spreading at maturity, shortly stalked, 5–6 × ± 0.5 mm, 3-angled in cross section, nervose, glabrous, green except for a brownish, castaneous, beak-like portion with whitish apex. **Flowering time** Dec. **Nutlet** oblong, ± 2–3 mm long, 3-angled. Marshy areas in alpine grassland; Drakensberg Grassland (Ben Macdhui, Naude's Neck).

11b Inflorescence foxtail-like or a panicle
12a Inflorescence foxtail-like
13a Perigynia suberect at maturity

***divisa** Huds.

Perennial herb, 0.10–0.42 m high, long-rhizomatous. **Leaf blades** up to 150 × 2.0–2.5 mm, U- to V-shaped, upper surface papillate, lower surface glabrous. **Culm** scapose, 3-angled, 1 mm in diam. **Inflorescence** terminal, a dense, foxtail-shaped 'panicle', 12–17 × 7–8 mm. **Bracts** bristle-like. **Glomerules** 5–7, bisexual, the largest 5 × 2 mm. **Female bracts (glumes)** longer and wider than perigynium, ovate, 4.5–5.0 × 2.5 mm, keel excurrent into scabrid awn up to 0.3 mm long. **Perigynium** suberect, 4.2 × 1.8 mm, elliptic in cross section, not inflated, golden-brown, cartilaginous, glabrous, nervose; rostrum 1.5 mm long, apex shallowly bidentate. **Flowering time** June. **Nutlet** ovate, broadly clawed, 2.0 × 1.6 mm, narrowly elliptic, yellowish brown, surface glabrous. Marshy grasslands; Upper Karoo (Grootfontein).

13b Perigynia spreading at maturity

glomerabilis V.I.Krecz.

Perennial herb, 0.1–0.7 m high, long-rhizomatous. **Leaf blades** 130–300 × 2.5–5.0 (–9.0) mm, flat or U-shaped. **Culm** scapose, 3-angled, 1–3 mm in diam. **Inflorescence** foxtail-like, glomerate-spicate/paniculate, 15–60 × 8–15 mm. **Bracts** bristle-like. **Glomerules** 7–10, the largest 5–15 × 5–10 mm, all bisexual. **Female bracts (glumes)** ovate, 3.0–5.5 × 1.3–2.0 mm, awn up to 2 mm long. **Perigynium** 3.0–5.5 × 1.1–2.2 mm, elliptic with flat base in cross section, not inflated, stramineous or reddish, base with layer of corky material, cartilaginous, nervose, glabrous; rostrum 0.8–2.0 mm long, apex shallowly bidentate. **Flowering time** Sept.–Mar. **Nutlet** 1.7–2.2 × 1.0–1.7 mm, narrowly elliptic, yellowish brown, surface glabrous. Marshy grasslands and watercourses; in all bioregions, except Mesic Highveld Grassland, Lower Karoo, Rainshadow Valley Karoo, Indigenous Forests (Elandshoek E to Mount Currie, southwards from Kompasberg to Engcobo, Mountain Zebra National Park to Hole-in-the-Wall and from Uitenhage to Hamburg).

12b Inflorescence a panicle

zuluensis C.B.Clarke

Perennial herb, tufted, 0.8–1.2 m high. **Leaf blades** ± 500–650 × 7–12 mm, flat. **Culm** nodose, 3-angled, 1.5–2.7 mm in diam. **Inflorescence** up to 240–505 × 20–50 mm. **Bracts** 1 at each node, leaf-like. **Primary inflorescence units** 5 or 6, linear, all bisexual, erect or suberect, the largest 50–95 × 8–20 mm. **Female bracts (glumes)** ovate, 3.5–4.5 × 2 mm, awn up to 1 mm long. **Perigynium** suberect, with basal callus, 4.5–6.0 × 1.5–2.0 mm, 3-angled with upper side winged in cross section, slightly inflated, green, herbaceous, with 2 conspicuous curved submarginal nerves on lower (outward) surface, scabrid in distal half; rostrum 1.2–2.0 mm long, apex shallowly bidentate. **Flowering time** Dec.–Apr. **Nutlet** obovate, narrowly clawed, 2.5–3.5 × 1.2–1.8 mm, 3-angled, dark brown with lighter angles, surface minutely papillose. Indigenous Forests (Mount Ayliff SE to Cutweni, from Hogsback to Grahamstown).

CARPHA R.Br.

Species ± 15, sthn hemisphere; ± 5 in sthn Afr., LIM, M, FS, KZN, L, WC, EC.

1a Leaves flat or V-shaped
2a Inflorescence of many clusters of spikelets in a large interrupted panicle

glomerata (Thunb.) Nees

Vals vuurpyl (A)

Perennial herb, robust, 1–3 m high, long-rhizomatous. **Leaf blades** 4–12 mm wide, flat (3-angled towards apex), margins minutely scabrid or smooth. **Culm** nodose, acutely 3-angled, 3–5 mm in diam. below inflorescence. **Inflorescence** ± 250–500 × 40–75 mm, of many, ± sessile, globose, head-like clusters 8–18 mm in diam., of 16–30 spikelets. **Bracts** 1 per node, leaf-like. **Spikelets** ± compressed, broadly lanceolate, 6–8 mm long, 1- or 2(3)-flowered. **Glumes**: fertile lanceolate, 5–8 mm long. **Perianth** up to 6 linear, rigid, antrorsely scabrid, slender bristles. **Flowering time** July–Jan. **Nutlet** oblong, 2.8–3.5 mm long, sharply 3-angled, dark brown, surface minutely reticulate. Marshy areas and watercourses at ± low altitudes; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve to Mateku S, from Hogsback to Kabusie Forest, Kleinrivier to Grahamstown and from Witelsbos to Humansdorp).

2b Inflorescence of few clusters of spikelets in a slender interrupted panicle

capitellata (Nees) Boeck.

Perennial herb, 0.30–0.45 m high, long-rhizomatous. **Leaf blades** 2.5–5.0 mm wide, flat (3-angled towards apex), margins ± smooth. **Culm** 3-angled, 1–2 mm in diam. **Inflorescence** 40–150 mm long, of 1 or 2 long-stalked, partial inflorescences from each of upper 1–4 nodes, of few, ± sessile, semi-globose, head-like clusters 10–15 mm in diam. **Bracts** subtending partial inflorescences 1 per node, leaf-like; bracts subtending spikelet clusters inconspicuous, narrow. **Spikelets** lanceolate, 5–6 mm long, 2-flowered. **Glumes**: fertile lanceolate, 5.5 mm long, keel non-excurrent. **Perianth** 6, linear, rigid, antrorsely scabrid, slender bristles of unequal lengths. **Flowering time** July–Dec. **Nutlet** elliptical, 2.2 mm long, 3-angled, brown, crowned by large, persistent, scabrid style base, surface minutely tuberculate and lacunose. Marshy places; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Komga S, from Suurberg Range to Woodlands and from Klipdrift to Humansdorp).

1b Leaves filiform or semi-terete (U-shaped)
3a Leaf blades filiform, 0.50–0.75 mm wide

filifolia Reid & T.H.Arnold

Perennial herb, tufted, 0.4–0.6 m high. **Leaf blades** filiform, 0.50–0.75 mm wide. **Culm** ± 1-noded, terete, ± 1 mm in diam. **Inflorescence** a much-reduced, head-like panicle 12–25 mm long. **Bracts** erect, longer than inflorescence, leaf-like. **Spikelets** lanceolate, 8–10 mm long, of 4 or 5 glumes. **Glumes**: fertile lanceolate, ± 6 mm long, keel non-excurrent. **Perianth** 6, whitish, antrorsely scabrid, slender bristles of varying lengths (both longer and shorter than nutlet on same nutlet), setose or plumose towards base. **Flowering time** Feb. **Nutlet** oblong, 4–5 × 1 mm, 3-angled, brown, crowned with large, persistent, scabrid style base, surface reticulate. Marshy grassland at high altitudes; Drakensberg Grassland (Bastervoetpad).

3b Leaf blades semi-terete, 1.0–1.2 mm wide

sp. A

(= *C. bracteosa* C.B.Clarke in part, at least as to EC specimens cited)

Perennial herb, tufted. **Leaf blades** semi-terete, ± flattened near tip, 1.0–1.2 mm wide. **Culm** ± 1-noded, terete, 1.2 mm in diam. **Inflorescence** a reduced, slender panicle up to 45 mm long, with peduncled or sessile partial panicles from upper few nodes of culm. **Bracts** erect, longer than inflorescence, leaf-like. **Spikelets** lanceolate, ± 11 mm long. **Glumes**: fertile lanceolate, 6.0–6.5 mm long, keel non-excurrent. **Perianth** 6, whitish, antrorsely scabrid, slender bristles, broadened at base into a cup-like structure. **Flowering time** Nov.–Jan. **Nutlet** oblong, 3.7–4.2 mm long, brown, crowned by large, persistent, scabrid style base, surface reticulate. Marshy places in mountains; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Boschberg, Hogsback, W of Mount Thomas, Pirie Mts).

CHRYSITRIX L.

Species ± 4, 1 in Australia; ± 3 in sthn Afr., WC, EC.

Sometimes spelled *Chrysithrix*.

junciformis Nees

Perennial herb, tufted or long-rhizomatous, 0.3–0.5(–1.0) m high. **Leaf blades** lower absent, upper well developed, terete to slightly flattened, 1.5–2.4 mm in diam.

Culm scapose, terete to slightly flattened, striate, 1.25–1.80 mm in diam. below inflorescence. **Inflorescence** pseudo-lateral, a single, head-like spike, 12–16 × 6–8 mm. **Spike** of many spirally imbricate, ovate, shining chestnut or black-red bracts ± 10 mm long, with many male flowers below and 1 female flower uppermost. **Subtending bract** longer than inflorescence, erect, green, culm-like. **Style branches** extremely variable in number. **Flowering time** Sept.–Nov., Feb., May. **Nutlet** ovate, 6–8 mm long, subglobose, pale, surface longitudinally closely striate. Moist sandy places; Eastern Fynbos-Renosterveld (Storms River Walk E to Elandsrivier (Uitenhage) and S to Humansdorp).

CLADIUM P.Browne

Species ± 4, ± cosmopolitan in warm areas but largely Australia; 1 subsp. in sthn Afr., N, B, LIM, NW, G, M, KZN, WC, EC.

mariscus (L.) Pohl subsp. **jamaicense** (Crantz) Kük.

Saw grass

Perennial herb, robust, tufted, 1–3(–6) m high. **Leaf blades** 0.60–1.25 m × 6–12 mm with scabrous (cutting) margins, V-shaped. **Culm** nodose, terete, ± 10 mm in diam. below inflorescence; frequently additional shoots developed at culm nodes. **Inflorescence** paniculate, ± 300–700 × 75–125 mm. **Bracts** 1 from each node, leaf-like. **Primary inflorescence units** many axillary compound (often dense) corymbs. **Spikelets** of 4–11 spirally imbricate glumes. **Glumes**: fertile boat-shaped, ± 4.0–4.5 mm long, keel excurrent into minute point or very short awn. **Flowering time** Nov.–Jan. **Nutlet** ovate, ± 2.2 mm long, obscurely 3-angled, brown, crowned with persistent, glabrous style base, surface smooth. Marshes at low altitudes; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Kentani S, from Van Stadens River to Port Elizabeth and from Klipdrift River to Skoenmakerskop).

CYATHOCOMA Nees

Species 3, sthn Afr., KZN, WC, EC.

Perianth bristles (at least some) longer than nutlet plus style base

hexandra (Nees) Browning

Perennial herb, up to 1.5 m high, shortly rhizomatous. **Leaf blades** stout, semi-terete, grooved, ± 5 mm in diam. **Culm** stout, terete, grooved, 1.5–2.5 mm in diam. below inflorescence. **Inflorescence** a compact panicle, 300–600 × 25–75 mm. **Subtending bracts** 1 from each node, leaf-like, sheaths conspicuous, dark chestnut red. **Primary inflorescence units** densely clustered. **Spikelets** compressed, elliptical, ± 10 mm long. **Glumes**: fertile lanceolate, ± 8.5 mm long, keel shortly excurrent. **Perianth** of (3–)6 or 7 slender, flexuous, apically villous bristles, at least some of them longer than nutlet plus style base. **Flowering time** Aug.–Nov. **Nutlet** obovate, stalked, including style base 2.5–3.0 × 1.5 mm, 3-angled, brown, crowned with persistent, broadly conical, hispid style base, surface ± transversely rugose. Marshy places at low altitudes; Eastern Fynbos-Renosterveld (Kareedouw Pass, Van Stadens Mts, Witelsbos and Humansdorp).

Perianth bristles shorter than nutlet plus style base

bachmannii (Kük.) C.Archer

Perennial herb, tufted, 0.3–0.5 m high. **Leaf blades** up to 50 × 1–2 mm, inrolled. **Culm** 0–1-noded, 0.3–0.5 m × 3 mm in diam., slightly flattened. **Inflorescence** a narrow panicle. **Subtending bracts** 1 from each node, leaf-like, sheaths conspicuous,

midbrown to chestnut-coloured. **Primary inflorescence units** 2–7. **Spikelets** compressed, oblong-elliptic, 7 × 2 mm. **Glumes**: fertile lanceolate, ± 5 mm long, keel excurrent into ± 1.5 mm long awn. **Perianth** of 6 antrorsely scabrid bristles, shorter than nutlet plus style base. **Flowering time** Mar., July, Aug. **Nutlet** obovate, stalked, including style base 2.5–3.0 × 1.5 mm, crowned with persistent, conical, hispid style base, surface ± transversely rugose. Marshy grassland; Indian Ocean Coastal Belt (Magwa and Fraser Falls, Lambasi, Mkambati Nature Reserve).

CYPERUS L.

Species ± 550, ± cosmopolitan; < 80 in sthn Afr., widespread.
C. tenellus L.f. = **Isolepis levynsiana**

1a Glumes disarticulating in age sequence from base of spikelet, spikelet axis persisting
*2a Leaves bladeless or blade represented by a short apiculus on sheath, or if blades occasionally developed (*C. denudatus*), then < 1/3 culm length*
3a Stigmas 2; nutlet plano-convex

laevigatus L.

Perennial herb, 0.1–0.6 m high, long-rhizomatous or ± tufted. **Leaf blades** very short, rigid. **Culm** scapose, subterete, 2–3 mm in diam. at middle. **Inflorescence** appearing lateral, ± 10–30 × ± 8–30 mm, a digitate cluster of (1–)several spikelets. **Subtending bract** erect, rigid, longer than inflorescence. **Spikelets** ± compressed, linear to lanceolate, 5–20 × 1.5–3.0 mm, straight or curved. **Glumes** very closely imbricate, broadly elliptic, 2.0–3.5 mm long, light brown or purplish. **Flowering time** Oct.–Dec. **Nutlet** with plane face against rachilla, obovate, 1.5–1.7 × 0.8–1.0 mm, plano-convex, grey to brown, surface smooth. Brackish pans and watercourses, also littoral; Upper Karoo, Albany Thicket, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Middelburg District S, from Van Rynevelds Pass Dam to Bulura Mouth and from Swartkops River Estuary to near Fish River Mouth and to Aasvoëlkrans).

3b Stigmas 3; nutlet 3-angled
4a Inflorescence bracts glumaceous
5a Spikelets narrow, 1.0–1.2 mm wide; glumes light brown

articulatus L.

Perennial herb, robust, 0.6–1.6 m high, long-rhizomatous. **Leaf blades** absent (rarely up to 25 mm long). **Culm** scapose, septate (evident when dry), 3–12 mm in diam. at middle. **Inflorescence** a compound, terminal, lax anthela 40–150 mm in diam., with 1–3 sessile spikelet-clusters and 2–10 stalked spikelet clusters. **Subtending bracts** scale-like, 5–15 mm long. **Spikelets** linear, 5–55 × 1–2 mm. **Glumes** ovate, 3–4 mm long, keel pale, apex obtuse. **Flowering time** Dec. **Nutlet** narrowly elliptic, shortly apiculate, 1.4–1.7 × 0.4–0.5 mm, 3-angled, greyish yellow becoming reddish brown to dark olive-brown when mature; surface smooth. Swamps at low altitudes; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

5b Spikelets broad, ± 2.5–3.0 mm wide; glume flanks usually dark chestnut-red with pale margins

marginatus Thunb.

Matjiesgoed (A)

Perennial herb, 0.30–1.52 m high, long-rhizomatous or tufted. **Leaf blades** absent. **Culm** scapose, terete, ± 2 mm in diam. at middle. **Inflorescence** a compound or sim-

ple anthela or congested into digitate head, 25–125 mm in diam., frequently pseudo-viviparous. **Subtending bracts** 2 or 3, lower suberect, much shorter than inflorescence, scale-like, up to ± 30 mm long, longer than inflorescence, leaf-like. **Spikelets** compressed, oblong-ovate. **Glumes** closely imbricate, lanceolate, 2.2–3.5 mm long, keel excurrent into short point. **Flowering time** Oct.–Apr. **Nutlet** elliptical, 1.5 mm long, 3-angled, brown, surface puncticulate. Seasonal or permanent often brackish watercourses and fountains; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Oviston E to Lusikisiki River southwards, from Middelburg to Indwe, Little Fish River to Komga, and from Suurberg in Greater Addo Elephant National Park to Break Neck).

4b Inflorescence bracts foliaceous
6a Culm flattened to triangular; inflorescence bracts 1 or 2
7a Inflorescence when mature pseudo-lateral; bracts erect to suberect

denudatus L.f.

Perennial herb, 0.2–0.9 m high, stems tufted or spaced on long rhizome. **Leaf blades** absent or up to 10 mm long. **Culm** scapose, 3-angled, 0.5–5.0 mm in diam. **Inflorescence** an open or congested anthela, 20–150 × 20–120 mm, spikelets arranged in digitate clusters. **Subtending bract** suberect, leaf-like. **Spikelets** linear-lanceolate, 3–10 × 0.8–1.7 mm. **Glumes** ovate, 1.3–1.8 mm long, keel excurrent into minute point. **Flowering time** Dec.–Apr. (June). **Nutlet** ovate to obovate, 0.5–0.7 × 0.3–0.4 mm, brown, surface tuberculate. Marshes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Ntsikeni S, from Surat Farm to Mkambati Nature Reserve, from Rooikrantz Dam to Mbashe River and from Swartkops River Mouth to Sherwood Farm).

7b Inflorescence when mature erect, of many axes spreading 'dandelion' fashion from culm apex; bracts spreading or deflexed

prolifer Lam.

Miniature papyrus

Perennial herb, 0.3–1.2 m high, rhizomatous. **Leaf blades** absent. **Culm** scapose, 1.5–5.5 mm in diam., ± terete, glabrous. **Inflorescence** umbellate, 60–240 mm in diam., with up to 100 stalks, each supporting a digitate cluster of spikelets or 1 sessile and 1–several shortly stalked clusters of spikelets. **Subtending bracts** 3, leaf-like. **Spikelets** linear to narrowly lanceolate, 3–12 × 0.8–1.3 mm. **Glumes** oblong, 1.2–1.5 × 0.6–0.8 mm wide, rounded to ± truncate, keel excurrent into short awn. **Flowering time** Dec., Jan. **Nutlet** obovate, apex rounded, 0.4–0.5 × 0.3–0.4 mm, 3-angled, whitish to pale brown, surface smooth to puncticulate. Marshes; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

6b Culm terete to 6-angular; inflorescence bracts many (> 6)
8a Culm terete, smooth

textilis Thunb.

Matjiesgoed (A); *imizi* (X)

Perennial herb, tufted, 0.6–1.2 m high. **Leaf blades** absent. **Culm** scapose, terete, ± 3–5 mm in diam. at middle, smooth. **Inflorescence** a compound umbel, each stalk supporting a digitate cluster of 2–7 spikelets, frequently pseudo-viviparous. **Subtending bracts** 8–10, ± equal length, overtopping umbel. **Spikelets** compressed, lanceolate, up to 8.0 × 2.5 mm, 6–16-flowered. **Glumes** imbricate, boat-shaped, 1.8–2.2 mm

long, keel excurrent into minute point. **Flowering time** Aug.–Jan. **Nutlet** oblong-ovate, 1.2 mm long, 3-angled (angle on back obscure), brown, surface puncticulate. Marshy places at low altitudes; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Ntafufu to Port St Johns S, from Stutterheim to Mazeppa Bay and from Kareedouw to Port Alfred).

8b Culm 6-angular, angles scabrid

sexangularis Nees

Matjiesgoed (A)

Perennial herb, tufted, 0.3–1.5 m high. **Leaf blades** absent. **Culm** scapose, 6-angled (i.e. 3-angled with a line or rib down centre of each face). Other details ± as for *C. textilis*. **Flowering time** Oct., Mar. Marshes and watercourses; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Queenstown E to Port St Johns S, from Bedford to Yellowwood River, and from near Komga to Hamburg).

2b Leaf blades usually well developed
*9a Inflorescence a dense sessile head of several spikelets, occasionally branched clusters present (*C. semitrifidus*)*
10a Glumes entirely white or yellow

obtusiflorus Vahl

Geelbiesie, *witbiesie* (A)

Perennial herb, tufted to short-rhizomatous, 0.04–0.45 m high. **Leaves** with sheaths persisting as fibres; blades 2–5 mm wide, flat or inrolled. **Culm** scapose, 2–5 mm in diam. **Inflorescence** a dense head of 5–20 spikelets, ± 20(–40) mm in diam. **Subtending bracts** 3, dilated at base, leaf-like. **Spikelets** compressed, ovate, acute, 8–12 × 5–8 mm, 8–10-flowered. **Glumes** imbricate, boat-shaped, ovate, obtuse, up to 8 × 4 mm. **Flowering time** Sept.–Apr. **Nutlet** obovate, 2.0 × 0.5 mm, 3-angled, dark brown to black, surface minutely reticulate. Moist grasslands.

Two varieties are recognised:

C. obtusiflorus Vahl var. **flavissimus** (Schrad.) Boeck.

Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Kokstad S, from Indwe to Port St Johns, from Gaika's Kop to near East London and from Suurberg in Greater Addo Elephant National Park to Port Alfred).

C. obtusiflorus Vahl var. **obtusiflorus**

Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Maclear to Mount Fletcher S, from Indwe to Kei River Mouth).

10b Glumes midbrown, variously patterned with, to entirely chestnut-red
11a Rhizomes bearing tunicated corms

usitatus Burch.

Indian grass; *boesmanuintjie*, *hoendergras* (A)

Perennial herb, 0.05–0.45 m high, long-rhizomatous. **Leaf blades** 1.6–3.4 mm wide, flat or V-shaped. **Culm** scapose, 0.5–1.6 mm in diam. **Inflorescence** a single, terminal spike of several densely crowded spikelets, or a partly contracted simple or compound anthela of up to 7 stalked clusters. **Subtending bracts** 2–5, leaf-like. **Spikelets** laterally compressed, narrowly ovate, 6.7–15.3 × 1.5–3.3 mm, 6–13-flowered. **Glumes** tightly imbricate, ovate, 3.3–5.0 mm long, apex acute. **Flowering time** Dec.–May. **Nutlet**

narrowly obovate, 1.7–2.2 × 0.7–1.0 mm, 3-angled, dark brown, surface minutely reticulate. Grassland, in shallow bare soil between other vegetation; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Burgersdorp E to Rhodes southwards, from Grootfontein to Lady Frere, from Cradock to Cathcart and from Hankey to Port Alfred).

11b Rhizomes absent or, if developed, not bearing tunicated corms
12a Glume bases distant at maturity, partly exposing nutlets
13a Mature nutlets obpyriform, acutely 3-angled, dark brown appearing greyish

bellus Kunth

Perennial herb, forming small tufts, 0.04–0.06 m high. **Leaf blades** < 1 mm wide, inrolled. **Culm** scapose, slightly succulent, ± 3-angled, 0.8–1.2 mm in diam., frequently down curved at fruiting stage. **Inflorescence** a small subglobose head, 5–12 mm in diam., of 3–12 spikelets. **Subtending bracts** 2 or 3, leaf-like. **Spikelets** compressed, linear-oblong, 4–10 × 1.5–2.0 mm. **Glumes** imbricate when young, distant at maturity, lanceolate, 1.5–2.0 mm long, keel excurrent into small point. **Flowering time** Jan. **Nutlet** obpyriform, 1.2 mm long, 3-angled, dark brown appearing greyish, surface minutely reticulate. Seasonal pans; Upper Karoo (Steynsburg District and Hofmeyr District, Grootfontein Farm).

13b Mature nutlets obovate, 3-angled (angle on back obscure), dark brown to black

parvinux C.B.Clarke

Perennial herb, forming small tufts, 0.04–0.05 m high. **Leaf blades** setaceous, 0.6–0.8 mm wide. **Culm** scapose, ± 1.2 mm in diam., erect. **Inflorescence** a small subglobose head up to 15 mm in diam., of 3–14 spikelets. **Subtending bracts** 2, leaf-like. **Spikelets** compressed, linear-oblong, up to 15 × 2.5 mm, 8–36-flowered. **Glumes** imbricate when young, distant at maturity, lanceolate, 2.0–2.5 mm long, keel excurrent into minute point. **Flowering time** Feb., Mar. **Nutlet** narrowly obovate, 0.8 mm long, 3-angled (angle on back obscure), dark brown to black, surface minutely reticulate or puncticulate. Seasonally moist shallow soil in rock depressions in grasslands at high altitudes; Sub-Escarpment Grassland (Molteno E to Maclear and Ugie).

12b Glume bases imbricate at maturity, or if distant, not exposing nutlets
14a Flanks of glumes strongly nervose; style branches very short

semitrifidus Schrad.

Perennial herb, forming small tufts, 0.06–0.25 m high. **Leaf blades** 1.5–2.0 mm wide, inrolled. **Culm** scapose, ± 1.0–1.5 mm in diam. **Inflorescence** a head of 6–14 spikelets. **Subtending bracts** 3, leaf-like. **Spikelets** compressed, lanceolate, up to 18 × 5 mm, smaller, 20-flowered. **Glumes** close-packed, ± lanceolate, 3–4 mm long, keel excurrent into small point. **Flowering time** Dec., Jan. **Nutlet** obovate, subobtuse, 1.3–1.7 mm long, 3-angled (obscurely angled on back), black appearing greyish, surface minutely reticulate. Shallow soils in ± moist grasslands; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Lundin's Neck E to Ben Nevis Farm S, from Indwe and Elliot to Mthatha, from Mountain Zebra National Park to Komga and from Swartkops River Alexandria).

14b Flanks of glumes inconspicuously nervose; style branches long
15a Glume flanks dark chestnut to ± black
16a Spikelets densely packed in head, ovate; keel excurrent into 0.5 mm long, frequently recurved awn

schlechteri C.B.Clarke

Perennial herb, forming small tussocks, bases with fibrous remains of old leaf sheaths, 0.1–0.3 m high. **Leaf blades** 1.5–3.0 mm wide, flat, frequently inrolled. **Culm** scapose, ± 1 mm in diam. **Inflorescence** a small head, 10–12 mm in diam., of ± 6–10 spikelets, 2 or more stalked clusters added. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** compressed, ovate, 5–9 mm long, 6–10-flowered. **Glumes** lanceolate, 2.5–4.0 mm long, keel excurrent into 0.5 mm long, variably recurved awn, nervose. **Flowering time** Dec., Jan. **Nutlet** obovate, 1.8 mm long, 3-angled (obscurely angled on back), brown, surface puncticulate. High altitude moist grasslands on shallow soils; Sub-Escarpment Grassland, Drakensberg Grassland (Insizwa, Katberg and Amatole Mts).

16b Spikelets easily discernable in head, oblong; keel excurrent into ± straight point

rupestris Kunth

Perennial herb, tufted, mat-forming, 0.01–0.15 m high. **Leaf blades** ± 0.5 mm wide, setaceous. **Culm** scapose, ± 1 mm in diam. **Inflorescence** a small head 10–20 mm in diam., of 2–9 spikelets. **Subtending bracts** 2 or 3, leaf-like. **Spikelets** compressed, shining, oblong, of varying lengths in same head, 8–12 × 2–3 mm, 8–16-flowered. **Glumes** imbricate, boat-shaped, ovate, ± 3 mm long, keel excurrent into minute point. **Flowering time** Nov.–Mar. **Nutlet** ± obtriangular, ± 1.2 mm long, 3-angled, black appearing greyish, surface puncticulate. Rocky outcrops in shallow soils.
Three varieties recognised:

C. rupestris Kunth var. **amnicola** (Kunth) Kük

Indian Ocean Coastal Belt (Mkambati Nature Reserve).

C. rupestris Kunth var. **parvinux** (C.B.Clarke) Kük

Dry Highveld Grassland, Sub-Escarpment Grassland (Molteno to Maclear District).

C. rupestris Kunth var. **rupestris**

Drakensberg Grassland, Dry Highveld Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Lower Karoo, Sub-Escarpment Savanna (Joubertspas E to Mavis Bank Farm southwards, from Molteno to Port Edward and from Tandjiesberg summit to Stutterheim District).

15b Glume flanks reddish with pale margins

rubicundus Vahl

Annual herb, 0.02–0.20 m high. **Leaves** with sheaths ± inflated; blades 3–4 mm wide, ± succulent. **Culm** scapose, 3-angled, 1.0–1.5 mm in diam. **Inflorescence** a single head ± 20–45 mm in diam., of 3–20 spikelets. **Subtending bracts** 2, leaf-like. **Spikelets** compressed, large, of varying lengths in same head, up to 25 × 6 mm, 10–36-flowered. **Glumes** closely imbricate, lanceolate, 3–4 mm long, keel excurrent into small, ± straight point. **Flowering time** (Sept.) Dec.–Apr. (June). **Nutlet** obovate, 1.3 mm long, 3-angled, black appearing grey, surface finely reticulate when mature (cells arranged in lengthwise rows, thus at a younger stage surface appears striatulate). Grasslands, often near water; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Mthatha Waterfall S, from Adelaide to Komga and from Suurberg Pass to Port Alfred).

9b Inflorescence branched
17a Spikelets clustered, 1–many on ends of branches
18a Spikelet clusters ± spherical
19a Littoral plants; rhizomatous perennials with culm bases persisting as tubers on old rhizomes; spikelets large, 2–3 mm wide

brevis Boeck.

Perennial herb, long-rhizomatous, 0.25–0.40 m high; rhizomes persistent, wiry, bearing tubers (remains of swollen culm bases). **Leaf blades** up to 6 mm wide, flat or V-shaped. **Inflorescence** 30–90 mm in diam., congested, of 1 sessile plus often 2(–few) very shortly stalked, additional, ± spherical clusters of many spikelets. **Culm** scapose, 3-angled, 2–5 mm in diam. at middle. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** slightly compressed, of irregular lengths, up to 23 × 2–3 mm. **Glumes** lanceolate, 4.5–5.0 mm long, keel (hardly) excurrent into minute point. **Flowering time** Oct.–Apr. **Nutlet** oblong, 2 × 0.8 mm, 3-angled, dark brown, surface finely reticulate. Littoral; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve to Port St Johns S, from Cape Morgan to Cintsa and Cefane River Mouths and from Sandflats to Fish River Mouth and Sea View).

19b Plants of other habitats; annuals or tufted perennials; spikelets small, < 1.5 mm wide
20a Glumes not awned

difformis L.

Annual herb, tufted, 0.05–0.80 m high. **Leaf blades** up to 3.5 mm wide, flat, flaccid. **Culm** scapose, ± 3-angled, often with a lax spiral twist, 2.5–3.5 mm in diam. **Inflorescence** variable, ranging from a simple, digitate, head-like cluster of spikelets to a compound anthela. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** linear, 5 × 0.8 mm, 10–30-flowered. **Glumes** minute, boat-shaped, 0.6–0.8 mm long, keel not excurrent or excurrent into minute point. **Flowering time** Dec.–June. **Nutlet** obovate-elliptic, 0.6–0.8 × 0.3–0.4 mm, 3-angled, yellowish brown, surface finely reticulate or punctuculate. Marshy areas; Sub-Escarpment Savanna, Lower Karoo, Albany Thicket (Weltevreden and Koonap Heights E to Komga and from Kommadaggakop to Grahamstown).

20b Glumes awned
21a Glumes boat-shaped; awns recurved

haematocephalus C.B.Clarke

Perennial herb, tufted, 0.4–0.6 m high. **Leaf blades** 5 mm wide, flat. **Culm** scapose, 3-angled, 1.5 mm in diam. at middle. **Inflorescence** a compound anthela of ± spherical dense clusters of 20–40 spikelets, 25–125 mm in diam. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** strongly compressed, oblong, 3–6 × 1.8 mm. **Glumes** regularly and closely imbricate, boat-shaped, 1.5 mm long, keel excurrent into recurved awn. **Flowering time** Feb. **Nutlet** elliptical, 0.8 mm long, 3-angled, yellowish brown, surface minutely reticulate. Marshy places at high altitudes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (SSW of Ramatseliso E to Kokstad and from Fincham's Neck to Cala, Engcobo, and Mthatha).

21b Glumes lanceolate; awns straight

tenax Boeck.

Perennial herb, tufted, with persistent remains of old leaf-sheaths (often fire-scarred), 0.15–0.65 m high. **Leaf blades** 2.5 mm wide, inrolled when dry, tough. **Culm** scapose,

wiry, 0.8–1.3 mm in diam. at middle. **Inflorescence** variable, a simple or compound anthela of ± spherical clusters of up to 16 easily discernable, digitately arranged spikelets. **Subtending bracts** 3–6, leaf-like. **Spikelets** much compressed, linear, of varying lengths in same cluster, 5–8(–15) × 1.5 mm, 8–20-flowered. **Glumes** ± distant, lanceolate, 1.8–2.2 mm long, keel excurrent into small straight point. **Flowering time** Dec. **Nutlet** narrowly elliptical, ± 1 mm long, 3-angled, dark brown, surface puncticulate. Seasonally moist places near coast; Indian Ocean Coastal Belt, Albany Thicket (SW of Mkambati Nature Reserve S to Kwenxurha River Mouth).

18b Spikelets 1–few in a digitate cluster
22a Plants of dry to moist shaded situations; inflorescence bracts conspicuous, rather broad and flaccid with (usually) 3 longitudinal white stripes on upper surface

albostriatus Schrad.

Perennial herb, 0.17–0.76 m high, long-rhizomatous. **Leaf blades** 8–12 mm wide, flat, with 2 lateral, white, ± prominent nerves. **Culm** scapose, 3-angled, 1.2(–1.8) mm in diam. **Inflorescence** a compound anthela, of 8–24 slenderly stalked, digitate clusters of 1–several spikelets. **Subtending bracts** ± 8, broad, leaf-like, often with longitudinal white stripes on upper surface marking position of veins. **Spikelets** compressed, 4–8 (–20) × 1.5–1.8 mm, 8–24-flowered. **Glumes** not imbricate, lanceolate, 1.8–2.0 mm long, keel hardly excurrent. **Flowering time** (Aug.) Nov.–Mar. **Nutlet** elliptical, 1.5 mm long, 3-angled, brown, surface minutely reticulate. Scrub margins and forest interiors; Albany Thicket, Indigenous Forests (Ntsikeni Forest Reserve S, from Baziya Mtn to Port St Johns, from Boschberg to Qora River Mouth and from Enon to East London).

22b Plants of wet sunny situations; inflorescence bracts either inconspicuous or if large, then rigid
23a Glumes deeply boat-shaped, ± 1.5 mm long; nutlet 3-angled

pulcher Thunb.

Perennial herb, ± tufted, 0.30–0.76 m high. **Leaves** with sheaths inner part thin-textured, splitting early and leaving frayed membranous margins; blades 6–8 mm wide, flat. **Culm** scapose, acutely 3-angled, 2.8–3.8 mm in diam. **Inflorescence** a compound anthela, 50–125 mm in diam., spikelets 3–5 in a digitate cluster. **Subtending bracts** 3–6, leaf-like. **Spikelets** ± compressed, ovate, 3–5 × 2 mm, 8–12-flowered. **Glumes** imbricate, boat-shaped, 1.5–1.8 mm long, keel excurrent into minute, ± recurved point. **Flowering time** Sept.–June. **Nutlet** broadly elliptical, 0.8 mm long, 3-angled, whitish to light brown, surface minutely reticulate. Moist areas, frequently disturbed, along watercourses; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Bongolo and Rockwood to Port St Johns S, from Somerset East to Morgan Bay and from Suurberg in Greater Addo Elephant National Park to East London).

23b Glumes lanceolate, 2.0–2.2 mm long; nutlet ± spherical

sphaerospermus Schrad.

Perennial herb, 0.2–0.9 m high, ± long-rhizomatous. **Leaf blades** absent to well developed, ± 3 mm wide, flat. **Culm** scapose, 3-angled, 1.0–2.5 mm in diam. **Inflorescence** frequently pseudo-viviparous, a compound umbel, 25–150 mm in diam., spikelets in digitate clusters of 3–7. **Subtending bracts** 3–5, leaf-like. **Spikelets** much compressed, ovate to oblong, 4–12 × 2–3 mm, 16–30-flowered. **Glumes** not imbricate. **Flowering time** Sept.–June. **Nutlet** obtriangular to ± circular, ± 0.7 mm long,

obscurely 3-angled, brown, surface ± smooth when mature (at a younger stage surface appears muriculate and walls of lengthwise-elongated cells are visible under 10× magnification). Pan margins, marshy grasslands and watercourses; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Amadiba E to Mzamba River southwards, from Selborne to Kei River Mouth, from Kudu Kaya to East London and to Kromrivier).

17b Spikelets spicately arranged on ends of branches
24a Rhizomes bearing small swollen tubers; weeds of cultivation and disturbed places
25a Glumes yellow-brown at maturity, flanks strongly nervose

esculentus L.

Yellow nutsedge; *geeluintjie*, *watergras* (A)

Perennial herb, aerial parts deciduous, 0.12–1.00 m high, rhizomes slender. **Leaf blades** 5 mm wide, flat. **Culm** scapose, 3-angled, 1–5 mm in diam. **Inflorescence** a compound anthela, 50–150 mm in diam., with 4–12 spreading spikelets, spicately arranged on ends of stalks. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** compressed, oblong, 8–12 × 2.5 mm, 8–14-flowered. **Glumes** imbricate when young, bases distant at full maturity, lanceolate with obtuse apex, ± 2.8 mm long, keel excurrent into a minute point. **Flowering time** Nov.–Feb. **Nutlet** (mature ones seldom collected) obovate to elliptical, 1.3–1.5 × 0.7–0.9 mm, 3-angled, faces frequently sulcate, dark brown appearing grey, surface minutely reticulate. Irrigated areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Clydesdale S to Lily Vale, from Alice to Mazeppa Bay (3228BC) and from Louterwater to Varnam).

25b Glumes usually red at maturity, flanks obscurely nervose (with exception of nerves closely associated with keel)

rotundus L.

Purple nutsedge; *rooiuintjie* (A)

Perennial herb, aerial parts deciduous, 0.20–0.65 m high, long-rhizomatous, rhizomes slender, wiry, bearing small, fibrous, blackish tubers at intervals. **Leaf blades** 2.5–4.5 mm wide, flat. **Culm** scapose, 3-angled, 1–2 mm in diam. at middle. **Inflorescence** a compound anthela, very variable in size and degree of branching. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** compressed, linear-oblong, 7–10(–20) × 2 mm, 12–24-flowered. **Glumes** lanceolate, ± 2.8 mm long, keel excurrent into a minute point. **Flowering time** Feb. **Nutlet** (mature ones seldom collected) oblong to obovate, 1.5–1.7 × 0.8 mm, 3-angled, dark brown appearing grey, surface finely reticulate. Cultivated or disturbed, irrigated places; Sub-Escarpment Savanna, Albany Thicket (Alice S to Gletwyn and East London).

24b Rhizomes without tubers; not weeds
26a Mature spikelets very narrow, 0.5–0.8 mm wide

distans L.f.

Perennial herb, apparently long-rhizomatous, 0.5–1.4 m high. **Leaf blades** 4–8(–10) mm wide, flat. **Culm** scapose, 3-angled, 2–3 mm in diam. at middle. **Inflorescence** a very diffuse compound anthela, ± 100–200 mm in diam. **Subtending bracts** 3–6, overtopping inflorescence. **Spikelets** compressed, 10–20 × 0.5–0.8 mm, 10–20-flowered. **Glumes** distant, oblong, obtuse, ± 2.2 mm long. **Flowering time** Jan., Mar. **Nutlet** oblong, 1.8 × 0.6 mm, 3-angled, dark brown appearing grey, surface minutely reticulate. Moist places; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Port St Johns S to Alice, Rooikrantz Dam, Komga and Cintsa River Mouth).

26b Mature spikelets ≥ 1 mm wide
27a Leaf and bract margins serrated; glumes boat-shaped

dives Delile

Perennial herb, robust, ± tufted, up to 1.82 m high. **Leaf blades** 12–25 mm wide, flat to W-shaped, serrated on margins and major ribs. **Culm** scapose, 3-angled, 6–12 mm in diam. **Inflorescence** a large, dense, compound anthela, 150–300 mm in diam., of very many spikelets. **Subtending bracts** 4–8, leaf-like. **Spikelets** spreading at 90º, compressed, linear-lanceolate, 7–10 × 1.5–2.0 mm, 10–20-flowered. **Glumes** closely imbricate, boat-shaped, 2.2 mm long, keel excurrent into short awn. **Flowering time** Nov.–Mar. **Nutlet** elliptical, 1 mm long, 3-angled, brown, surface ± smooth. Marshy places at low altitudes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (near Coffee Bay E to Mkambati Nature Reserve S, from Buffalo River to Dwesa and from Sunridge Park to Shaw Bridge).

27b Leaf and bract margins at most finely scabrid; glumes oblong to lanceolate
28a Mature spikelets suberect, hardly spreading

fastigiatus Rottb.

Perennial herb, robust, tufted, 0.6–2.6 m high. **Leaf blades** 6–8 mm wide, flat. **Culm** scapose, obscurely 3-angled, 3–7 mm in diam. at middle. **Inflorescence** a ± compact, compound anthela, 70–150 mm in diam. **Subtending bracts** 3 or 4, suberect, leaf-like. **Spikelets** hardly spreading from axis, suberect, linear, 8–13(–23) × 1 mm, 8–20-flowered. **Glumes** closely imbricate, lanceolate, ± 3 mm long, keel excurrent into small point. **Flowering time** Nov.–Apr. **Nutlet** oblong-elliptical, ± 1.8 mm long, 3-angled, greyish, surface minutely reticulate to smooth. Marshy places; Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Aliwal North District, Kraai River E to Cedarville S, from Shiloh to between Kei and Mbashe rivers and from Suurberg to near Ghio Bridge).

28b Mature spikelets spreading at ± 90º
29a Robust plants; leaf blades 10–20 mm wide; margins of mature glumes inrolled, exposing spikelet axis

latifolius Poir.

Perennial herb, robust, 0.3–0.9 m high, long-rhizomatous. **Leaf blades** 10–20 mm wide, flat, margins smooth. **Culm** scapose, acutely 3-angled, 5 mm in diam. **Inflorescence** a dense, compound anthela, 150–300 mm in diam., stalks scabrid-hairy. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** spreading at ± 90º, compressed, 10–18 × 2.0–2.5 mm, 8–16-flowered. **Glumes** hardly imbricate, oblong, obtuse, 2.2 mm long, hardly keeled. **Flowering time** Oct. **Nutlet** obovate, 1.2 mm long, 3-angled, dark brown, surface minutely reticulate to smooth. Marshy places; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Clydesdale S, from Mthatha Falls E to Mtentu and Mbashe River).

29b Less robust plants; leaf blades 2–7 mm wide; margins of mature glumes not inrolled

longus L.

Rivierkweek, *dooiwortel* (A)

Perennial herb, 0.1–1.7 m high. **Leaf blades** 2–7 mm wide, flat. **Culm** scapose, 3-angled, 2–4 mm in diam. at middle. **Inflorescence** a ± open, compound anthela, 40–120 mm in diam. **Subtending bracts** 3, suberect, leaf-like. **Spikelets** compressed,

linear, 1.0–1.5 mm wide. **Glumes** lanceolate, 2.5 mm long, keel excurrent into a minute point. **Flowering time** Oct.–Apr. **Nutlet** narrowly elliptical, 1.3 mm long, dark brown appearing greyish, surface puncticulate or minutely reticulate (small white nutlets are infertile). Marshy places, watercourses.
Two varieties recognised:

C. longus L. var. **longus**
Indian Ocean Coastal Belt (Port St Johns to Mzamba River Mouth).

C. longus L. var. **tenuiflorus** (Rottb.) Boeck
Upper Karoo, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Oviston E to Lady Grey at Kraai River S, from Middelburg to Queenstown, from Van Rynevelds Pass Dam to Kei River Mouth and from Double Drift, Breakfast Vlei and Committees Drift to East London).

1b Spikelets disarticulating and falling entire from cushion on spike axis (formerly genus Mariscus*)*
30a Annuals

squarrosus L.
Annual herb, with fenugreek odour especially when dry, forming small tufts, up to 0.32 m high. **Leaf blades** 1.3–3.6 mm wide, V-shaped. **Culm** scapose, 3-angled, 0.5–2.0 mm in diam. **Inflorescence** a simple anthela of up to 7 spikes, sometimes contracted, spikes shortly cylindrical to ± spherical, 8–21 × 5–21 mm in diam. **Subtending bracts** 2–6, leaf-like. **Spikelets** densely packed, strongly compressed, ovate, 3.1–8.9 × 2.4–4.0 mm, 2–24-flowered. **Glumes** not imbricate, exposing fruits at maturity, lanceolate when flattened, excluding awn 1.0–2.1 mm long, keel excurrent into 0.4–1.8 mm long, recurved awn. **Stamens** 1. **Flowering time** Jan.–Mar. **Nutlet** obtriangular, 0.4–0.9 × 0.25–0.55 mm, 3-angled, dark grey-brown, surface puncticulate or minutely reticulate. Temporary moist sandy places; Drakensberg Grassland, Albany Thicket (Honey Nest Kloof, Bucklands).

30b Perennials
31a Basal leaf sheaths swollen to form small ovate pseudobulb
32a Keel of glume excurrent into a 1.0–1.5 mm long awn; glume apex plus awn conspicuously recurved

decurvatus (C.B.Clarke) C.Archer & Goetgh.
[= *Cyperus indecorus* Kunth var. *decurvatus* (C.B.Clarke) Kük., *Mariscus rehmannianus* C.B.Clarke]

Perennial herb, tufted, 0.1–0.5 m high, base pseudobulbous. **Leaf blades** 2.0–5.0 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 1.0–2.2 mm in diam. **Inflorescence** a simple anthela of 5–9 spikes, contracted to varying degrees to a head-like form, spikes shortly cylindrical, 10–20 × 11–28 mm. **Subtending bracts** 4–7, leaf-like. **Spikelets** slightly compressed, narrowly elliptic, (2.7–)6.2–12.5 × 0.6–3.3 mm, 2–5-flowered. **Glumes** imbricate, lanceolate with apex long-acuminate, ± recurved, 2.9–6.7 mm long, keel excurrent. **Flowering time** Feb., Mar. **Nutlet** narrowly elliptical, often curved, 1.5–2.4 × 0.4–0.7 mm, 3-angled, red-brown, surface minutely reticulate. Grasslands and savanna in dry sandy soils; Lower Karoo, Sub-Escarpment Grassland (Cathcart to Queenstown).

32b Keel of glume not or only shortly excurrent; glume apex not recurved
33a Spikelets of 1 or 2 flowers
34a Spikelets clustered in a dense, rounded (sessile) head

capensis (Steud.) Endl.

Perennial herb, tufted, 0.2–1.0 m high, base pseudobulbous. **Leaf blades** 1.7–3.4 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.6–1.9 mm in diam. **Inflorescence** a single, terminal head of 3–5 barely discernable spikes, 12–18 × 12–16 mm in diam. **Subtending bracts** 4–6, leaf-like. **Spikelets** narrowly ovate to lanceolate, 3.0–4.2 × 0.8–1.3 mm, 1-flowered. **Glumes** ovate when flattened, 3.1–4.2 mm long. **Flowering time** Dec., Jan. (Apr.). **Nutlet** narrowly elliptical, 1.5–2.7 × 0.8–1.0 mm, 3-angled, reddish brown, surface minutely reticulate. Dry sandy or rocky places, in grasslands and thicket; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket [Oviston Reserve E to Kokstad S, from Queenstown to Mzamba River Mouth, from Garsfontein Farm near Duncraggen to Kubusie River Valley (St Johns) and from Blue Water Bay to Trappes Valley].

34b Spikelets spicately arranged in a more open fashion, thus clusters usually cylindrical, frequently stalked (spicate)
35a Spikelets linear

indecorus Kunth

Perennial herb, tufted, 0.11–0.45 m high, base pseudobulbous. **Leaf blades** 1.5–4.1 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.6–2.2 mm in diam. **Inflorescence** an anthela of 2–9 shortly cylindrical spikes, each 9–22 × 6–14 mm. **Subtending bracts** 3–7, leaf-like. **Spikelets** laxly spaced, linear, 3.8–9.0 × 0.5–1.3 mm, 1–2-flowered. **Glumes** tightly imbricate, ovate when flattened, 2.5–5.1 mm long, keel non-excurrent. **Flowering time** Dec.–Apr. **Nutlet** narrowly elliptical to narrowly obovate, straight or ± curved, 1.3–2.4 × 0.4–0.7 mm, 3-angled, red-brown, surface puncticulate or finely reticulate. Dry sandy or rocky places, in grasslands and thicket.
Three varieties recognised:

C. indecorus Kunth var. **indecorus**

Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Mzimvubu River S, from Amherst Siding to Komga and Grahamstown).

C. indecorus Kunth var. **inflatus**

Albany Thicket (Cintsa River Mouth S to De Bega Heights).

C. indecorus Kunth var. **namaquensis**

Upper Karoo (Cliftonvale Farm).

35b Spikelets narrowly ovate, ovate or ovate-lanceolate
36a Spikelets ovate-lanceolate, 1.9–3.8 mm long, greenish

uitenhagensis (Steud.) C.Archer & Goetgh.
(= *Mariscus uitenhagensis* Steud.)

Perennial herb, tufted, up to 0.3 m high, base pseudobulbous. **Leaf blades** 0.8–3.2 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.9–2.0 mm in diam. **Inflorescence** a simple anthela of 4–6 spikes, spikes cylindrical, 8–13 × 5–9 mm. **Subtending bracts** 4–6, leaf-like. **Spikelets** densely crowded, spreading, ovate-lanceolate, 1.9–3.8 × 0.8–1.1 mm, 1-flowered. **Glumes**: fertile ovate when flattened, 2.1–4.0 mm long, keel not excurrent. **Flowering time** Oct.–Apr. **Nutlet** elliptical to narrowly obovate, 1.6–2.4 × 0.7–1.0 mm, 3-angled, reddish brown, surface puncticulate. Rocky outcrops

and shallow soils; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld [Sterkspruit Farm E to Malekgalonyane southwards, Queenstown S to Klipfontein and eastwards to Kubusie River Valley (St Johns) and from Zuurbron Kloof to Grahamstown and Humansdorp].

36b Spikelets ovate to narrowly ovate, 2.7–4.3 mm long, pale stramineous, sometimes with reddish markings

marlothii Boeck.

Perennial herb, tufted, 0.15–0.24 m high, base pseudobulbous. **Leaf blades** 1.1–3.0 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.7–2.5 mm in diam. **Inflorescence** an anthela of 3–7 spikes, often contracted to various degrees (sometimes to a multifid head), spikes shortly cylindrical, 10–13 × 5–8 mm. **Subtending bracts** 4–7, leaf-like. **Spikelets** densely crowded, ovate to narrowly ovate, 2.7–4.3 × 1.0–1.9 mm, terete to 3-angled, 1- or 2-flowered. **Glumes**: fertile ovate when flattened, 2.9–4.3 mm long, keel non-excurrent. **Flowering time** Dec., Jan. **Nutlet** elliptical to obovate, 1.6–2.3 × 0.8–1.4 mm, 3-angled, reddish brown, surface minutely reticulate. Rocky hills; Upper Karoo, Dry Highveld Grassland (Farm near Steynsburg).

33b Spikelets of 3 or more flowers
37a Spikelets strongly compressed laterally; glumes white

dubius Rottb.

Perennial herb, tufted, 0.04–0.40 m high, base a poorly-developed pseudobulb. **Leaf blades** 2.1–3.5 mm wide, V-shaped, ± flaccid. **Culm** scapose, obscurely 3-angled, 0.9–1.5 mm in diam. **Inflorescence** a single spike, 11–18 × 10–14 mm. **Subtending bracts** 4 or 5, leaf-like. **Spikelets** compressed, narrowly ovate, 3.6–9.7 × 1.1–3.0 mm, 6–10-flowered. **Glumes** tightly imbricate, ovate, 2.2–3.8 mm long, keel minutely excurrent. **Flowering time** Oct.–Apr. **Nutlet** obovate, 1.2–1.8 × 0.7–1.0 mm, sharply 3-angled, bright reddish brown, surface puncticulate to smooth. Shaded, sandy places mainly at low altitudes; Indian Ocean Coastal Belt, Albany Thicket (Mkambati Nature Reserve, Coffee Bay, Port St Johns, Mazeppa Bay, Dwesa, Kentani, Cintsa River Mouth S, and from Port Alfred to East London).

37b Spikelets not compressed; glumes green or reddish brown
38a Inflorescence a dense, rounded, sessile cluster of spikelets, frequently accompanied by stalked clusters; glumes reddish brown

pseudovestitus (C.B.Clarke) Kük.

Perennial herb, tufted, 0.15–0.50 m high, base pseudobulbous. **Leaf blades** 1.4–3.1 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.7–1.7 mm in diam. **Inflorescence** varying from a ± contracted anthela of 2–5 ± spherical spikes to a head. **Subtending bracts** 3 or 4, unequal in length, leaf-like. **Spikelets** 4.2–6.5(–9.0) × (1.0–)2.6–3.7 (–4.0) mm, 3–7-flowered. **Glumes** imbricate, ovate when flattened, 2.1–4.5 mm long, keel non-excurrent. **Flowering time** Oct., Dec. **Nutlet** elliptical to obovate, 1.6–2.6 × 0.7–1.3 mm, sharply 3-angled, dark brown to ± black, surface puncticulate. Grassy slopes or dry rock crevices; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Mzamba River Mouth S, from Alice to Cintsa River Mouth and from Coombs Vale and Trappes Valley to East London).

38b Inflorescence a dense, rounded, sessile cluster of spikelets not accompanied by stalked clusters; glumes green

austro-africanus C.Archer & Goetgh
(= *Mariscus dregeanus* Kunth)

Perennial herb, tufted, 0.19–0.60 m high, base pseudobulbous. **Leaf blades** 1.9–3.5 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 0.9–2.0 mm in diam. **Inflorescence** a head of 2–4 crowded spikes, 13–16 × 13–17 mm. **Subtending bracts** 3–6, leaf-like. **Spikelets** hardly compressed, ovate-lanceolate, 2.9–7.5 × (0.7–)1.1–1.8 mm, 3–5-flowered. **Glumes** ovate when flattened, 2.1–4.0 mm long, keel very shortly excurrent. **Flowering time** Dec., Mar. **Nutlet** narrowly elliptical to obovate, 1.1–2.2 × 0.6–1.0 mm, sharply 3-angled, reddish brown, surface puncticulate. Moist places, often scrub margins; Dry Highveld Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt, Albany Thicket (Boschberg E Cintsa River Mouth S, from Hankey E to Port Alfred and Overton Farm).

31b Basal leaf sheaths not swollen to form a narrow pseudobulb
39a Plant bases swollen into hard, spherical or vertically flattened corm-like structures usually ≤ 10 mm in diam.
40a Spikelets laterally compressed, > 6-flowered

congestus Vahl
Hedgehog sedge

Perennial herb, small tufts, 0.17–0.91 m high. **Leaf blades** 3.8–6.3 mm wide, V-shaped. **Culm** scapose, 1.4–3.4 mm in diam. **Inflorescence** a simple, broadly ovoid spike, a simple anthela or a compound anthela of up to 8 ± spherical spikes, spikes 19–42 × 17–43 mm. **Subtending bracts** 3–8, leaf-like. **Spikelets** ± very densely crowded, very narrowly ovate, 5–40 × 1.1–2.5 mm, 6–13-flowered. **Glumes** loosely imbricate, ovate when flattened, 2.5–4.8 mm long, keel non-excurrent. **Flowering time** Dec.–Apr. **Nutlet** elliptical 1.2–2.1 × 0.3–0.9 mm, 3-angled, dark purple-black, surface puncticulate. Seasonally to permanently moist places; widespread in all bioregions, except Mesic Highveld Grassland, Lower Karoo, Rainshadow Valley Karoo [Aliwal North E to Kokstad southwards, from Middelburg to Mkambati Nature Reserve, from Graaff-Reinet to Kei River Mouth, from Witelsbos to East London (3327BB) and from Storms River Mouth to Skoenmakerskop].

40b Spikelets not compressed, 1–3-flowered
41a Spikelets 0.4–1.0 mm wide; glumes light green or olive- to yellow-green

cyperoides (L.) Kuntze

Perennial herb, forming small tufts, 0.2–0.9 m high. **Leaf blades** 3.0–7.5 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 1.5–3.7 mm in diam. **Inflorescence** a terminal, simple anthela of 7–14 spikes, spikes cylindrical, 10–27 × 6 mm. **Subtending bracts** 6–9, leaf-like. **Spikelets** densely crowded, spreading or ± ascending, narrowly ovate, 2.1–3.6 × 0.7–1.0 mm, 3-angled or ± terete, 1-flowered. **Glumes** ovate-lanceolate when flattened, 2.3–3.9 mm long, keel non-excurrent. **Flowering time** (Oct.) Dec.–Apr. **Nutlet** narrowly elliptical, straight or slightly curved, 1.5–2.3 × 0.4–0.9 mm, 3-angled, light yellow-brown or reddish brown, surface puncticulate. Disturbed places, mainly in grassland.

Two subspecies recognised:

C. cyperoides (L.) Kuntze subsp. **cyperoides**
Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Clydesdale S, from Engcobo to Mzamba River Mouth and from Rooikrantz Dam to Cintsa River Mouth).

C. cyperoides (L.) Kuntze subsp. **pseudoflavus**
Albany Thicket (Cintsa River Mouth).

41b Spikelets 1.0–1.3 mm wide; glumes dark green, flanks often reddish brown-tinged

macrocarpus (Kunth) Boeck.
Perennial herb, forming small tufts, up to 0.7 m high. **Leaf blades** 3.4–8.3 mm wide, V-shaped. **Culm** scapose, obscurely 3-angled, 1.8–3.9 mm in diam. **Inflorescence** a terminal, simple anthela of 8–14 spreading-erect spikes, spikes shortly cylindrical, 12–29 × 7–19 mm. **Subtending bracts** 6–14, leaf-like. **Spikelets** densely crowded, narrowly ovate, 3.5–7.6 × 1.0–1.3 mm, 1–3-flowered. **Glumes** ovate when flattened, 2.6–4.6 mm long, keel non-excurrent or excurrent into very minute point. **Flowering time** Oct.–Jan. **Nutlet** obovate, 1.8–2.7 × 0.9–1.1 mm, 3-angled, yellow-brown, surface puncticulate or minutely reticulate. Coastal forest margins in sandy soils; Indigenous Forests (Port St Johns S, from Nahoon to Cintsa River Mouth and from Kasouga River and Kenton on Sea to Hamburg).

39b Plant bases hard and massive, not spherical or corm-like
42a Rhizomes (measured on older portion) very thin, 1–3 mm in diam.
43a Leaf blades subterete; inflorescence pseudolateral

durus Kunth
Perennial herb, up to 0.53 m high, long-rhizomatous. **Leaf blades** 1.3–1.9 mm wide, semi-terete with ± pungent apex. **Culm** scapose, obscurely 3-angled, 1.0–2.2 mm in diam. **Inflorescence** pseudolateral, an anthela of to 4 spikes, contracted, spikes ovoid, 10–26 × 9–22 mm. **Subtending bracts** 2–5, the largest erect, in line with culm, otherwise leaf-like**. Spikelets** densely packed, compressed, ovate-lanceolate, 5.2–9.3 × 1.6–2.9 mm, 4–7-flowered. **Glumes** 3.4–4.3 mm long, imbricate, spaced ± 1 mm apart, concave, ovate when flattened, keel non-excurrent or excurrent into minute point. **Flowering time** Sept.–Nov. **Nutlet** narrowly elliptical, 1.7–2.1 × 0.6–0.7 mm, ± 3-angled, brown, surface puncticulate or minutely reticulate. Marshy places near coast; Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Port Elizabeth E to East London and Humansdorp).

43b Leaf blades flat; inflorescence terminal

tabularis Schrad.
Dooiwortel (A)
Perennial herb, 0.07–0.32 m high, long-rhizomatous. **Leaf blades** 1.7–4.4 mm wide, flat to V-shaped. **Culm** scapose, 3-angled, 0.9–2.1 mm in diam. **Inflorescence** a simple anthela, expanded but sometimes contracted to varying degrees, of 3–9 spikes, spikes broadly ovoid to spherical, 8–19 × 8–18 mm. **Subtending bracts** 4–6, leaf-like. **Spikelets** densely crowded, ± compressed, narrowly ovate, 3.9–8.0 × 0.9–1.9 mm, 3–8-flowered. **Glumes** imbricate, ovate when flattened, 2.7–3.9 mm long, keel non-excurrent or excurrent into minute blunt point. **Flowering time** Oct.–Mar. (June). **Nutlet** oblong-elliptical, ± 1.5 × 0.7 mm, 3-angled, brown, surface minutely reticulate. Marshy places

at low altitudes; Lower Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Palmietfontein E to King William's Town S, from Port Elizabeth to Suurberg in Greater Addo Elephant National Park and to SE of Salem).

42b Rhizomes (measured on older portion) very thick, (5–)7–14 mm in diam.
44a Spikes of inflorescence > 2× as long as wide

thunbergii Vahl

Snyruigte (A)

Perennial herb, robust, tufted, 0.35–2.00 m high. **Leaf blades** 5.5–12.2 mm wide, V-shaped, margins serrated. **Culm** scapose, 3-angled, 2.9–10.5 mm in diam. **Inflorescence** a large, compound anthela of 6–13 often compound spikes, the largest long-cylindrical, 24–46 × 10–16 mm. **Subtending bracts** 5–14, leaf-like. **Spikelets** very densely crowded, compressed, linear to narrowly elliptic, 5.1–8.1 × 0.9–2.5 mm, 2–5-flowered. **Glumes** imbricate, ovate when flattened, 2.9–6.5 mm long, keel non-excurrent or excurrent into small point. **Flowering time** Sept., Oct., Jan. **Nutlet** narrowly elliptical, 1.8–2.7 × 0.5–0.7 mm, 3-angled, brown, surface puncticulate or minutely reticulate. Marshy places at low altitudes; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Baziya S, from Fairford Farm to Kobongaba, from Van Stadens River to Port Alfred and from Witelsbos to Humansdorp).

44b Spikes of inflorescence ± as long as wide
45a Rhizomes horizontal

solidus Kunth

Perennial herb, slender to robust, tufted, 0.36–2.00 m high. **Leaf blades** 1.7–14.5 mm wide, V-shaped or U-shaped. **Culm** scapose, 3-angled, 2.2–3.0 mm in diam. **Inflorescence** a compound or rarely simple anthela of dense spikes, shortly cylindrical or bullet-shaped, 12–34 × 7–32 mm. **Subtending bracts** 3–11, leaf-like. **Spikelets** densely spaced, ± compressed, lanceolate, 4.6–17.0 × 1.0–3.0 mm, 3–18-flowered. **Glumes** tightly imbricate, ovate when flattened, 2.8–4.8 mm long, keel. **Flowering time** Oct.–Dec. **Nutlet** narrowly obovate to narrowly elliptical, 1.4–2.5 × 0.4–0.7 mm, 3-angled, dark brown, surface minutely reticulate. Moist places; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Mbashe River between Mthatha and Idutywa E to Mzamba River Mouth S, from Toise River Station to Cintsa River Mouth and from Van Stadens River to East London).

45b Rhizomes vertical
46a Spikelets loosely arranged, 2–5-flowered; glumes reddish brown

owanii Boeck.

Perennial herb, tufted, up to 2.8 m high. **Leaf blades** 5.2–12.6 mm wide, V-shaped. **Culm** scapose, 3-angled, 2.2–5.0 mm in diam. **Inflorescence** a compound anthela of 7–11 spikes, spikes shortly cylindrical or elliptical, 17–25 × 12–23 mm. **Subtending bracts** 4–10, leaf-like. **Spikelets** ± compressed, lanceolate, 5.2–10.5 × 0.8–1.8 mm. **Glumes** imbricate, ovate when flattened, 2.5–4.0 mm long, keel non-excurrent or excurrent into very short point. **Flowering time** Sept.–Jan. **Nutlet** narrowly elliptical, 1.8–2.3 × 0.7–0.8 mm, 3-angled, dark brown, surface minutely reticulate. Moist glades and banks of watercourses in montane forest; Indigenous Forests (Bosberg E to Komga and from Brookhuizens Poort to Grahamstown).

46b Spikelets densely crowded, 1–3-flowered; glumes dark dull brown

vorsteri K.L.Wilson

Perennial herb, tufted, up to 0.9 m high. **Leaf blades** 7.0–14.4 mm wide, V-shaped. **Culm** scapose, 3-angled, 2.8–4.8 mm in diam. **Inflorescence** a compound anthela of 7–13 spreading spikes, spikes shortly cylindrical or bullet-shaped, 10–15 × 8–12 mm. **Subtending bracts** 7–13, leaf-like. **Spikelets** densely crowded, ± compressed, narrowly elliptical, 2.6–5.2 mm long, 1–3-flowered. **Glumes** imbricate, ovate when flattened, 2.6–4.0 mm long, spaced 0.9–1.4 mm apart, keel non-excurrent. **Flowering time** Oct.–Feb. **Nutlet** narrowly obovate to narrowly elliptical, 1.8–2.3 × 0.6–0.8 mm, 3-angled, dark brown, surface puncticulate or minutely reticulate. Banks of watercourses in mainly coastal forests; Indigenous Forests (Mkambati Nature Reserve, Port St Johns, Mtentu River and Mount Thomas).

DRACOSCIRPOIDES Muasya

Species 3, endemic to sthn Afr., moist to wet places, LIM, NW, G, M, S, FS, KZN, L, NC, EC.

Plants of moist montane grasslands; leaves and culms wiry

falsa (C.B.Clarke) Muasya
(= *Scirpus falsus* C.B.Clarke)

Perennial herb, tufted, 0.08–0.32 m high. **Leaf sheaths** greyish, semipersistent; blades longer than culm, inrolled (C-shaped), ± 0.8 mm wide. **Culm** scapose, ± terete, 1.8–2.0 mm in diam. at middle. **Inflorescence** a compound head 7–12 mm in diam., of several dense heads of spikelets, lowest 2(–more) mm apart. **Subtending bracts** 3 or 4, lowest suberect, with dilated, blackish red base partly enveloping inflorescence and extended leaf-like tip, remainder shorter and suberect or spreading. **Spikelets** ovate, 5–7 mm long. **Glumes** lanceolate, 4.5–5.5 mm long, keel excurrent into slightly recurved awn up to 1 mm long, flanks nervose, bright chestnut-red to dark blackish red, margins colourless. **Perianth** of 6 slender, antrorsely scabrous, white bristles, longer than nutlet. **Flowering time** Nov., Dec., Mar., Apr. **Nutlet** sessile, elliptic, beaked, 3 mm long, 3-angled, greyish brown, surface minutely reticulate. Moist rocky montane grassland; Drakensberg Grassland (Joubertspas E to Ben Macdhui, Naude's Neck and Kokstad S, from Katberg summit to Gaika's Kop).

Plants of montane wetlands; leaves and culms not wiry

ficinioides (Kunth) Muasya
(= *Scirpus ficinioides* Kunth)

Perennial herb, tufted, 0.47–1.13 m high, rhizomes hard, vertical. **Leaf blades** inrolled (C-shaped), 1.0–1.5 mm wide. **Culm** scapose, ± terete, 1.5–2.5 mm in diam. **Inflorescence** head-like, of 3–9 spikelets. **Subtending bracts** 2, lower erect, much longer than inflorescence, upper spreading, much shorter. **Spikelets** ovate, 3–5 mm long. **Glumes** boat-shaped, ovate, obtuse, ± 3 mm long, keel minutely excurrent, flanks nervose, straw-coloured with blackish red markings. **Perianth** of 5 or 6 slender, retrorsely scabrous, white bristles, longer than nutlet. **Flowering time** Nov.–Feb. **Nutlet** elliptic to obovate, beaked, ± 1.8 mm long, 3-angled, greyish brown, surface minutely reticulate. Montane wetlands; Drakensberg Grassland (Joubertspas E to Pitlochrie and S of Cedarville, southwards to Otto du Plessis Pass, Katberg Summit and Gaika's Kop).

ELEOCHARIS R.Br.

Species 200, ± cosmopolitan; ± 12 in sthn Afr., widespread.

1a Culms usually 3-angled, frequently twisted
2a Nutlet vase-shaped (broadly obovate with truncate apex, narrowed subapically into distinct short neck)

acutangula (Roxb.) Schult.

Perennial herb, tufted, 0.42–1.82 m high. **Leaf blades** absent. **Culm** scapose, 1–7 mm in diam. **Inflorescence** a single, terminal, oblong spikelet, 20–40 × 5 mm. **Subtending bract** 1, glume-like. **Glumes** ± loosely spirally imbricate at maturity, broadly oblong to orbicular when flattened, 5.0–5.2 × 2.4–5.0 mm, not keeled, central zone coriaceous, nervose, grey-green becoming pale, margins membranous, dark brown, becoming pale and wearing away with age. **Perianth** of (0–)6 retrorsely barbed or smooth whitish bristles, of variable length but shorter than nutlet. **Style branches** 3. **Flowering time** Jan. **Nutlet** excluding style base 1.4–2.0 × 1.2–1.6 mm, biconvex, glistening, stramineous to bright cinnamon-brown, crowned by persistent, broadly triangular, brown style base, surface trabeculate. Marshy grasslands; Indian Ocean Coastal Belt (near Kei River Mouth).

2b Nutlet urn-shaped (broadly elliptical with truncate apex, not narrowed subapically into neck)

variegata (Poir.) C.Presl

Perennial herb, tufted, 0.4–1.2 m high. **Leaf blades** absent. **Culm** scapose, non-septate, frequently twisted, 3-angled, 3–4 mm in diam. **Inflorescence** a single terminal spikelet 15–30 × 4 mm. **Subtending bract** 1, glume-like. **Glumes** loosely spirally imbricate at maturity, broadly oblong when flattened, 4.5–5.0 × 3.0 mm, not keeled, central zone coriaceous, nervose, glaucous green to pale, margins up to 1 mm wide, membranous with many small dark spots, easily fragmenting. **Perianth** variable, poorly developed or absent, or 7 or 8 fine, retrorsely barbed, whitish bristles 2× as long as nutlet. **Style branches** 2 or 3 in same inflorescence. **Flowering time** Dec. **Nutlet** 1.5–1.8 mm long, biconvex to ± 3-angled, glossy, pale to dark cinnamon-brown, surface ± smooth to longitudinally striate. Marshy places; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

1b Culms terete (but easily compressible), not twisted
3a Large robust plants; inflorescences frequently pseudo-viviparous; largest inflorescence 23–36 mm long

limosa (Schrad.) Schult.

Perennial herb, tufted, 0.3–0.8 m high. **Leaf sheaths** conspicuous, red; blades absent. **Culm** scapose, 2–6 mm in diam. **Inflorescence** a single, terminal, dense, oblong or ± lanceolate spikelet. **Subtending bract** 1, glume-like. **Glumes** broadly oblong when flattened, 4–5 mm long, not keeled, central zone inconspicuously nervose, pale stramineous with reddish streaks or larger markings, margins membranous. **Perianth** 5 or 6 linear, retrorsely barbed, brown bristles, as long as nutlet + style base. **Style branches** 3. **Flowering time** (July) Oct.–Mar. **Nutlet** obovate, 1.5–1.8 mm long, biconvex (obscurely 3-angled), yellowish to brown, crowned by persistent, high triangular style base, surface minutely reticulate. Marshy places; Dry Highveld Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Port St Johns to Mzamba S, from Mountain Zebra National Park to Kentani and from Kareedouw to Peddie).

3b Smaller plants; inflorescences never pseudo-viviparous; largest inflorescence < 20 mm long
4a Inflorescence ovate, < 6 mm long; nutlet excluding style base ± 1 mm long

caduca (Delile) Schult.

Annual herb, tufted, 0.05–0.15 m high. **Leaf blades** absent. **Culm** scapose, terete, ridged, 0.8–1.2 mm in diam. **Inflorescence** a single, terminal, ovate spikelet, 2.0–5.5 × 1–2 mm, 4–8-flowered. **Subtending bract** 1, glume-like. **Glumes** broadly oblong when flattened, ± 2 mm long, keeled, keel non-excurrent. **Perianth** 6 or 7 whitish or reddish brown, barbate bristles of variable length, at least some longer than nutlet. **Style branches** 2. **Flowering time** Oct. **Nutlet** obovate, excluding style base 0.8–1.0 mm long, biconvex, shining, dark brown to black, crowned by persistent, triangular, whitish style base, surface smooth. Marshy grasslands; Indian Ocean Coastal Belt (Mzamba River Mouth).

4b Inflorescence elongated, the longest 15–20 mm long; nutlet excluding style base 1.6–1.8 mm long

dregeana Steud.

Perennial herb, 0.1–0.5 m high, long-rhizomatous. **Leaf blades** absent. **Culm** scapose, terete, 1–3 mm in diam. **Inflorescence** a single, terminal, lanceolate spikelet, the longest 15–20 mm long, many-flowered. **Subtending bract** 1, glume-like. **Glumes** broadly oblong when flattened, 2.5–3.0 mm long, keeled, keel non-excurrent. **Style branches** 2 or 3. **Perianth** 6 reddish brown, retrorsely barbate bristles. **Flowering time** Sept., Oct., Jan. **Nutlet** obovate, 1.5–1.8 × 1.0–1.2 mm, biconvex or obscurely 3-angled, light brown, crowned by persistent, triangular, whitish style base, surface smooth or minutely reticulate. Marshy places; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Aliwal North E to Langgewacht S, from Kompasberg Farm to Maclear, from Dohne to Kentani and from Southwell to Hamburg).

EPISCHOENUS C.B.Clarke

Species 8, sthn Afr., WC, EC, possibly also KZN.

Culm 4-angled or terete; nutlet stalked; style base hairy

quadrangularis (Boeck.) C.B.Clarke

Perennial herb, tufted, up to 0.60(–0.75) m high. **Leaf blades** absent or minute. **Culm** scapose, papillate, striate, 1.0–1.5 mm in diam. **Inflorescence** a much-reduced, linear raceme 12–37 mm long, with clusters of 1–3 sessile, erect spikelets at each of upper 2 or 3 nodes of culm. **Subtending bracts** erect, basal expanded part green or stramineous, broad, blade leaf-like, margins ciliate. **Spikelets** compressed, linear, 8–13 × 1.5–2.5 mm, with 1–4 male and 1 bisexual flower; thickened curved prolongation of axis above bisexual flower not adnate to subtending glume. **Glumes**: fertile lanceolate, ± 7 mm long, keel non-excurrent. **Perianth** absent. **Flowering time** Oct. **Nutlet** elliptical, including style base ± 2.5 mm long, 3-angled with ribs running down edges, bone-white. Moist places; Eastern Fynbos-Renosterveld, Albany Thicket (Joubertina E to Grahamstown and from Witelsbos to Hofmansbosch and Humansdorp).

Culm terete; nutlet not stalked; style base glabrous

adnatus Levyns
(including *Tetraria schonlandii* Turrill, known only from type and without fruit)

Perennial herb, densely tufted, erect or lax when in deep shade, up to 1.3 m high. **Leaf blades** absent or minute. **Culm** scapose, wiry, striate, ± 0.8 mm in diam. **Inflorescence** a much-reduced, linear panicle 10–20 mm long, of 1 sessile or subsessile and 1 or 2 shortly stalked spikelets at each of upper (1)2 or 3 nodes of culm. **Subtending bracts** narrow, wiry, blade leaf-like, margins ciliate, lowest bract longer than inflorescence. **Spikelets** compressed, linear-lanceolate, 7–8 × 2 mm, with 1 or 2 male and 1 bisexual flower; thickened curved prolongation of axis above bisexual flower adnate to subtending glume. **Glumes**: fertile lanceolate, 6 mm long, keel non-excurrent to shortly excurrent. **Perianth** absent. **Flowering time** (Feb.) Apr.–July. **Nutlet** sessile, elliptical, including style base 2.5 mm long, obscurely 3-angled, bone-white, shining. Moist places; Eastern Fynbos-Renosterveld (Lottering E to Storms River Bridge and from Suurberg to Witelsbos).

FICINIA Schrad.

Species ± 60, Afr., mainly sthn Afr., N, LIM, M, S, FS, KZN, L, NC, WC, EC, mostly WC.

1a Stems freely branched above ground level; plants forming dense mats
2a Spikelets usually 1; glumes arranged in 2 rows, bases distant, exposing spikelet axis at maturity

angustifolia (Schrad.) Levyns
[= *F. longifolia* (Nees) C.B.Clarke, also including *F. capillifolia* (Schrad.) C.B.Clarke]

Perennial herb, procumbent, much branched, 0.1–0.4 m long. **Leaves** dimorphic, on flowering branches; blades narrowly V-shaped, ± 0.4 mm wide. **Culm** ± 4-angled, 0.5–0.7 mm in diam. **Inflorescence** of 1(2) spikelets. **Subtending bracts** 1, leaf-like, of variable length, very short to much longer than inflorescence. **Spikelets** elliptical to linear-lanceolate, 5–20 × 3 mm. **Glumes** arranged in 2 rows, bases imbricate when young, distant at maturity, exposing spikelet axis, lanceolate with rounded apex, ± 5 mm long, keel excurrent into awn up to 0.8 mm long. **Flowering time** Sept.–Nov. **Nutlet** narrowly obovate, including gynophore and stalk 2–3 mm long, 3-angled, brownish grey to reddish brown, surface smooth to minutely reticulate. **Gynophore** large, conspicuously lobed. Moist shaded slopes; Eastern Fynbos-Renosterveld (Kromrivierhoogte and Joubertina E to Witelsberg and Cockscomb).

2b Spikelets 1–6; glumes spirally arranged, bases imbricate

ramosissima Kunth
[including? *F. trichodes* (Schrad.) Benth. & Hook.f.]

Perennial herb, procumbent, much branched, 0.08–0.30 m long. **Leaves** dimorphic, on flowering branches; blades often short, falcate, flat to shallowly C-shaped with lower surface ridged and margins papillate, 0.5–1.0 mm wide. **Culm** flat to 4-angled, 0.4–0.7 mm in diam. **Inflorescence** a head-like cluster of 1–6 spikelets, or frequently lowermost spikelet(s) remote. **Subtending bracts** 2, lowest longer than inflorescence, leaf-like. **Spikelets** elliptical, ± 4.5 mm long. **Glumes** lanceolate, ± 4.5 mm long, keel excurrent into short, recurved, 0.4 mm long awn. **Flowering time** July–Oct. (plus

many sterile collections made throughout the year). **Nutlet** obovate, including gynophore ± 2 mm long, 3-angled (± spherical), reddish brown, surface ± smooth. **Gynophore** large, inconspicuously lobed. Rocky shaded places; Lower Karoo, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Kamdeboo Mountain E to Bruintjieshoogte S, from Upper Sapree River to Boknes Strand).

1b Plants tufted or long-rhizomatous
3a Margins and apex of young leaf blades entirely surrounded by conspicuous, white-frilled, scarious margins 0.5–1.0 mm wide (wearing away and becoming brownish in age)

truncata (Thunb.) Schrad.

Perennial herb, 0.1–0.3 m high. **Leaf blades** parallel-sided, flat, 1.5–2.0 mm wide, truncate, thick, upper surface ribbed. **Culm** terete, ridged, 1 mm in diam. **Inflorescence** a dense subglobose head, 8.0–12.5 mm in diam., of 6–15 spikelets. **Subtending bracts** 2 or 3, lowest up to 10 mm long, shorter than to slightly longer than inflorescence, dilated at base, leaf-like, spreading. **Spikelets** ovate to lanceolate, up to ± 7 mm long. **Glumes** ± boat-shaped, 3.5 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** July–Oct., Dec., Mar. **Nutlet** obovate, including gynophore and stalk 2 mm long, 3-angled, reddish brown, surface smooth to minutely reticulate. **Gynophore** large, lobed. Limestone outcrops at coast; Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (near Van Stadens River; and Gamtoos River Valley E to Kenton-on-Sea).

3b Margins and apex of young leaf blades without white scarious margins
4a Inflorescence pseudolateral; subtending bract rigid, erect, culm-like
5a Inflorescence composed of many densely aggregated spikelets; style branches 3

nodosa (Rottb.) Goetgh., Muasya & D.A.Simpson

Perennial herb, rush-like, tufted, 0.3–1.2 m high. **Leaf blades** absent. **Culm** compressed-terete, 1.8–4.0 mm in diam. **Inflorescence** a head, 5–20 × 5–20 mm, of many closely aggregated, sessile spikelets. **Subtending bract** longer than inflorescence. **Spikelets** ovate, 4–6 mm long. **Glumes** all fertile, narrowly obovate to oblanceolate, 2.0–2.7 × 1.2–1.5 mm, often folded about keel. **Style branches** 3. **Flowering time** Aug., Oct.–Apr., July. **Nutlet** elliptic to oblanceolate, including gynophore ± 1.4 mm long, 3-angled (± plano-convex), dark brown, shining, surface ± smooth. **Gynophore** distinct, with 2 lobes. Coastal dunes and troughs, streamsides, marshes; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Mendu, Kei and Nxaxo river mouths southwards along coast, from Kabeljouws River to East London and from Robhoek to Cape Recife).

5b Inflorescence composed of few to ± 15 easily discernable spikelets; style branches 2

lateralis (Vahl) Kunth

Perennial herb, tufted, 0.1–0.4 m high, rhizomes vertical, deeply buried. **Leaf blades** absent. **Culm** curved or erect, rigid, ridged, 0.5–0.8 mm in diam. **Inflorescence** a head, 6–10 mm in diam., of few to ± 15 spikelets. **Subtending bracts** 1, erect, culm-like, rigid. **Spikelets** elliptic, up to 5 mm long. **Glumes** boat-shaped, obtuse, 2–3 mm long, keel non-excurrent. **Style branches** 2. **Flowering time** Aug.–May, July. **Nutlet** obovate, including gynophore 1.2–1.6 mm long, biconvex, dark reddish brown, surface minutely reticulate. **Gynophore** relatively large, margins toothed. Semi-fixed dunes; Indian

Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Nahoon to Nxaxo River Mouth S, from Gamtoos- E to Fish River Mouth and from Bloubaai to Emerald Hill).

4b Inflorescence terminal or terminal and lateral
6a Glume margins deeply fimbriate in terminal $^{2}/_{3}$

laciniata (Thunb.) Nees

Perennial herb, tufted, 0.25–0.27 m high. **Leaf blades** flat, 1.0–1.2 mm wide. **Culm** ± terete, 1.0–1.2 mm in diam. **Inflorescence** a dense subglobose head, 8–12 mm in diam., of many sessile spikelets, or with lowermost few spikelets distant. **Subtending bracts** 2, suberect to spreading, leaf-like. **Spikelets** elliptic, ± 5 mm long. **Glumes** boat-shaped, ± 3.2 mm long, keel not excurrent. **Flowering time** Aug.–Dec. **Nutlet** obovate, including gynophore 2 mm long, 3-angled (± globose), reddish brown appearing grey, surface minutely transversely ridged. **Gynophore** large, lobed. Grasslands near coast; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Xolobeni, Mzamba River Mouth and Dwesa S, from Uitenhage District to East London).

6b Glume margins ± entire
7a More than lower $^{3}/_{4}$ of inflorescence enveloped by dilated bases of subtending bracts
8a Inflorescence ± globose; leaves ± 1 mm wide

capitella (Thunb.) Nees

Perennial herb, tufted, 0.15–0.37 m high. **Leaf blades** shorter than culms, flat to C-shaped, ± 1 mm wide. **Culm** ridged, terete, ± 1 mm in diam. **Inflorescence** a terminal, compact, globose head, 4–8 mm in diam. **Subtending bracts** 3 or 4, erect, with dilated, ± orbicular, shining blackish and yellow bases enveloping lower $^{3}/_{4}$ of inflorescence and extended leaf-like apex up to 40 mm long. **Spikelets** up to 6-flowered. **Glumes** linear-lanceolate, ± 4 × ± 2 mm, keel excurrent into awn up to 0.5 mm long. **Flowering time** Aug. **Nutlet** obovate to elliptic, conspicuously beaked, including gynophore (1.3–)2.2 mm long, dark reddish brown, surface finely reticulate. **Gynophore** large, margins ± lobed. Sandy flats; Albany Thicket (Klipfontein Farm).

8b Inflorescence elongated; leaves up to 2 mm wide

ixioides Nees

Perennial herb, tufted, up to 0.3 m high. **Leaves** with sheaths with conspicuous whitish or brown-flecked, scarious ligules; blades lax, flat. **Culm** ridged, ± 1 mm in diam. **Inflorescence** a terminal, compact, oblong head, up to 12 × ± 6 mm, ± completely enveloped by dilated bract bases. **Subtending bracts** 2, bases dilated, blackish with scarious white or brown-flecked margins, apices forming 2 free lobes, one on either side of keel, with erect, rigid, extended blade-like apex up to 40 mm long. **Spikelet bracts (glumes)** lanceolate-acuminate, ± 7 × ± 2 mm, keel excurrent into ± 1 mm long, scabrid awn. **Flowering time** Oct.–Dec. **Nutlet** obovate, including gynophore ± 2.5 mm long, shallowly 3-angled, reddish brown, surface minutely reticulate. **Gynophore** relatively small, lobed. Marshy and damp places in mountains; Eastern Fynbos-Renosterveld (Formosa Peak, Kougakop and Cockscomb).

7b Less than lower $^1/_2$ of inflorescence enveloped by dilated bases of subtending bracts
9a Inflorescence cone-like
10a Leaf sheath margins very conspicuous, thin, scarious, white to light brown; inflorescence oblong, not echinate in appearance

deusta (P.J.Bergius) Levyns

Perennial herb, robust, tufted, 0.15–0.90 m high. **Leaves** with sheaths with conspicuous whitish scarious ligules; blades rigid, terete, with narrow lengthwise groove along upper surface, 1.2 mm wide. **Culm** rigid, terete, 1–2 mm in diam. **Inflorescence** a terminal head, 15–55 × 5–10 mm. **Subtending bracts** 2, bases dilated with scarious pale margins, apices acute to obtuse. **Spikelet bracts (glumes)** lanceolate, 9–11 mm long, keel not excurrent to excurrent into 1.5 mm long awn. **Flowering time** Mar., Dec., July. **Nutlet** obovate, including stalk and gynophore up to 7 mm long, shallowly 3-angled to C-shaped (nutlet may be curved laterally about axis of inflorescence), dark greyish to reddish brown, surface minutely reticulate. **Gynophore** large, margins lobed. Sandy slopes and flats; Albany Thicket, Eastern Fynbos-Renosterveld (Witteberg Mts, N of Worlds View Farm S to Slang River Mouth).

10b Leaf sheath margins inconspicuous, membranous, reddish; inflorescence ± obovate, echinate in appearance

nigrescens (Schrad.) J.Raynal

Perennial herb, tufted, 0.07–0.60 m high. **Leaves** with sheaths pale brown to red; blades lax, flat or infolded and slightly curved, 0.5–2.0 mm wide. **Culm** wiry or rigid, filiform to 1 mm in diam. **Inflorescence** a terminal, head (spike of spikelets), ± 20 × 50 mm. **Subtending bracts** suberect, filiform, dilated bases with margins tapering gradually to meet extended apex, up to 100 mm long. **Spikelet bracts** with recurved apices, light to dark brown or with pale yellowish margins and a dark central area. **Spikelets** 1–7-flowered. **Glumes** linear-acuminate, ± 4.5 mm long, keel scabrid in upper $^1/_2$. **Flowering time** Aug., Oct., Nov., Apr.–July. **Nutlet** narrowly elliptic, including gynophore ± 2.5 mm long, dark brown, surface minutely reticulate. **Gynophore** large, margins lobed. Rocky slopes and flats; Upper Karoo, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna (Cradock E to Bruintjieshoogte S, from Witteberg Mts to Grahamstown).

9b Inflorescence not cone-like
11a Inflorescence terminal and lateral
12a Spikelets arranged in 2–5 sessile, ± spherical aggregations

bulbosa (L.) Nees

Perennial herb, tufted, 0.10–0.35 m high, frequently 'stoloniferous'. **Leaves** with sheaths with conspicuous, white, scarious margins (sometimes inconspicuous); blades shorter than culms, 0.5 mm wide, ± flat. **Culm** terete, 1 mm in diam. **Inflorescence** spicate, of 2–5 sessile, ± spherical aggregations 4–19 mm apart, each of 4–10 spikelets, 8–10 mm in diam. **Subtending bracts** 25–100 mm long, leaf-like, longer than inflorescence. **Spikelets** ovate, 3–5 mm long. **Glumes** boat-shaped, keel excurrent into ± 0.8 mm long awn. **Flowering time** Sept.–Nov., Apr., June. **Nutlet** obovate, including gynophore 1.5 mm long, 3-angled, dark reddish brown, surface minutely reticulate. **Gynophore** small, toothed. Unconsolidated sand at low altitudes; Eastern Fynbos-Renosterveld, Albany Thicket (Maitland and Sundays River Mouth E to Kenton on Sea S, from Aston Bay to campus of Nelson Mandela Metropolitan University).

12b Spikelets arranged in a panicle, or spikelets spicately arranged
13a Spikelets arranged in a panicle

compasbergensis Drège

Perennial herb, tufted, robust, up to 0.7 m high. **Leaf blades** 0.8–1.2 mm wide at middle, channelled (C-shaped), narrowed and ± solid towards apex. **Culm** ridged, terete, 1.0–1.2 mmin diam. **Inflorescence** a slender, oblong, interrupted panicle, 35–45 × 10–15 mm. **Subtending bracts** erect, longer than inflorescence, with slightly dilated, lanceolate bases, leaf-like. **Spikelets** narrowly elliptical, 8–15 mm long, of several, rather loosely packed glumes. **Glumes** lanceolate, keel excurrent into 0.2–0.5 mm long awn. **Flowering time** Sept.–Dec., Mar., June. **Nutlet** elliptic, including gynophore ± 2.5 mm long, 3-angled, dark reddish brown, shining, surface smooth. **Gynophore** relatively large, lobed. Rocky mountain peaks and slopes at high altitudes; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (SW of Lucernvale and Kompasberg, S to Graaff-Reinet and Kougakop).

13b Spikelets spicately arranged
14a Spikelets linear, spaced 1–2 mm apart in a smallish cluster at apex of culm

fascicularis Nees

Perennial herb, tufted, 0.15–0.50 m high. **Leaf blades** very short, setaceous, ± 0.3 mm wide. **Culm** lax, terete, with a lengthwise groove, ± 0.7 mm in diam. **Inflorescence** untidy, a much-reduced spike of spikelets, up to 15 × 10 mm. **Subtending bracts** 2, erect, setaceous, lower longer than inflorescence. **Spikelets** up to 8 × 2 mm. **Glumes** broadly lanceolate, ± 3 mm long, keel excurrent into awn up to 0.5 mm long. **Flowering time** Aug.–Nov., Jan., Apr., May, July. **Nutlet** obovate, including gynophore ± 1.8 mm long, 3-angled, dark reddish brown, surface minutely reticulate. **Gynophore** relatively large, lobed. Moist rocky shaded places; Indian Ocean Coastal Belt, Dry Highveld Grassland, Albany Thicket, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Imizizi Location southwards, from Boschberg to King William's Town, from Storms River Bridge to Grahamstown and from Witelsbos to Humansdorp).

14b Spikelets elliptic, spaced 3–6 mm apart usually in a long,
± secund spike on upper part of culm

secunda (Vahl) Kunth

Perennial herb, long-rhizomatous or tufted, 0.15–0.50 m high. **Leaves** with sheath margins white or brown, often much lacerated; blades ± as long as culm, channelled (C-shaped), narrowing and becoming solid towards apex, 0.6 mm wide. **Culm** terete, ± 1.2 mm in diam. **Inflorescence** a simple, ± secund spike 50–125 mm long, in which the sessile mostly solitary spikelets are spaced 3–6 mm apart. **Subtending bracts** similar to leaves, longer than spike. **Spikelets** elliptic, 5–6 mm long. **Glumes** boat-shaped, 3–4 mm long, keel non-excurrent. **Flowering time** Oct.? **Nutlet** obovate-elliptic, including gynophore ± 2.2 mm long, 3-angled, black, surface rugose. **Gynophore** large, margins lobed. Sandy flats and slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Uitenhage District).

11b Inflorescence composed of 1–several sessile spikelets
15a Bracts subtending inflorescence conspicuous, with bases broadened, partly enveloping inflorescence, and rigid leaf-like extended apex
16a Inflorescence oblong; leaves $^1/_5$–$^1/_4$ length of culm

dunensis Levyns

Perennial herb, tufted or long-rhizomatous, 0.25–0.50 m high. **Leaf blades** filiform, ± 1 mm wide, flat or C-shaped, margins scabrid. **Culm** ± terete, 0.8 mm in diam. **Inflorescence** a terminal, compact, elliptic to oblong head, up to 6 × 4 mm. **Subtending bracts** 2, erect, with dilated, shining yellow-brown to dark reddish brown bases and leaf-like apex up to 18 mm long. **Spikelets** ± 5 mm long, up to 5-flowered. **Glumes** boat-shaped, ± 6 × ± 4 mm, keel shortly excurrent. **Flowering time** Aug.–Oct., July. **Nutlet** elliptic to obovate, including gynophore 2.5–3.2 mm, ± 3-angled, dark brown to black, surface minutely reticulate. **Gynophore** large, margins lobed. Sandy flats; Eastern Fynbos-Renosterveld, Albany Thicket (Assegaaibos E to Walmer and Port Elizabeth, S to Jeffreys Bay and Cape St Francis).

16b Inflorescence broadly ovate; leaves ≥ $^1/_2$ length of culm
17a Nutlet grey, or reddish brown mottled with darker colour; gynophore large ($^1/_3$–$^1/_2$ length of exposed portion of nutlet)

arenicola T.H.Arnold & Gordon-Gray

Perennial herb, tufted to long-rhizomatous, up to 0.3 m high. **Leaf blades** erect, rigid, succulent, up to 3 mm wide, flat or C-shaped. **Culm** ridged, terete, up to 2 mm in diam. **Inflorescence** a terminal, compact head, up to 15 × 12 mm. **Subtending bracts** 2(3), suberect, with bases dilated, partly enveloping inflorescence, with rigid blade-like apex up to 50 mm long. **Spikelets** up to 6-flowered. **Glumes** ovate, ± 5 × 2 mm, keels excurrent. **Flowering time** Aug.–Dec., June, July. **Nutlet** obovate to elliptical, including gynophore ± 2 mm long, 3-angled to globose, surface minutely reticulate. Sandy places at low altitude; Albany Thicket, Eastern Fynbos-Renosterveld (Van Stadens River Mouth E to Kleinemonde River S, from Cape St Francis to campus of Nelson Mandela Metropolitan University).

Two varieties recognised:

[E]F. arenicola T.H.Arnold & Gordon-Gray var. **arenicola**

Gynophore large, 2-lobed.

[E]F. arenicola T.H.Arnold & Gordon-Gray var. **erecta**

Relatively small gynophore and lobes minute or absent.

17b Nutlet brown to dark reddish black; gynophore small ($^1/_{16}$–$^1/_{10}$ length of exposed portion of nutlet)

indica (Lam.) Pfeiff.

Perennial herb, tufted or long-rhizomatous, 0.2–0.4(–1.0) m high, stoloniferous. **Leaf blades** rigid, crescentiform (C-shaped), up to 1 mm wide, or lax, flattened, up to 4 mm wide. **Culm** ridged, terete, 1.0–1.5 mm in diam. **Inflorescence** a terminal, compact, obovate to globose, dark reddish black head, 8–11 × 7–11 mm. **Subtending bracts** 2–5, erect to spreading, with dilated bases enveloping $^1/_2$–$^2/_3$ of inflorescence, and rigid leaf-like apex up to 40 mm long. **Spikelets** ovate, ± 6 mm long. **Glumes** ovate, ± 4 × ± 2 mm, apex obtuse, recurved, keel excurrent. **Flowering time** Aug., Sept., Nov. **Nutlet** obovate, including gynophore 1.8–2.0 mm long, faintly 3-angled, surface smooth

to minutely reticulate. **Gynophore** small, margins lobed or lobes absent. Sandy flats and lower slopes; Eastern Fynbos-Renosterveld (Joubertina E to Assegaaibos Station, Suurberg Pass and Witelsbos).

15b Bracts subtending inflorescence inconspicuous, or broadened bases not enveloping inflorescence, and extended apex not rigid
18a Plants long-rhizomatous

repens (Nees) Kunth

Perennial herb, long-rhizomatous, 0.1–0.4 m high. **Leaves** with sheaths tubular, membranous, reddish brown; blades absent. **Culm** ridged, terete, ± 1 mm in diam. **Inflorescence** head-like, of 3–8(–15) sessile spikelets, up to 10 mm in diam. **Subtending bracts** inconspicuous. **Spikelets** elliptic, 4–6(–10) × 2 mm, many-flowered. **Glumes** boat-shaped, obtuse, 1.8–2.0 mm long, keel non-excurrent to excurrent into minute point. **Flowering time** Oct., Nov., Jan., Mar.–May, July. **Nutlet** obovate, including gynophore ± 1.5 mm long, 3-angled, dark brown, shining, surface ± smooth. **Gynophore** relatively small to minute, margins lobed. Sandy flats mostly near coast; Albany Thicket, Eastern Fynbos-Renosterveld (Bulura River Mouth S, from Gamtoos River Mouth to Kleinemonde).

18b Plants tufted
19a Leaf blades absent or very short
20a Glumes membranous, light brown to blackish

acuminata (Nees) Nees
(including? *F. filiculmea* B.L.Burtt)

Perennial herb, tufted, 0.15–0.70 m high. **Leaf blades** absent to short, inrolled (C-shaped), 0.5–0.8 mm wide. **Culm** lax or erect, ridged, ± filiform (with 1 lengthwise channel, 0.4–1.0 mm in diam. **Inflorescence** a head of to 30 spikelets. **Subtending bracts** 2, suberect, very short to longer than inflorescence, leaf-like. **Spikelets** 4–6 mm long, 3–12-flowered. **Glumes** oblong, 3–4 mm long, keel minutely excurrent. **Flowering time** Aug., Oct., Nov., Jan., Feb. **Nutlet** obovate, ± 1.8 mm long, 3-angled (± globose), dark reddish brown, surface smooth or minutely reticulate. **Gynophore** relatively large, distinctly lobed. Sloping rocky places in mountains; Drakensberg Grassland, Eastern Fynbos-Renosterveld, Rainshadow Valley Karoo, Albany Thicket (Naude's Neck S to Dordrecht and Queenstown, from Grahamstown to Humansdorp).

20b Glumes chartaceous, yellowish white, usually spotted with red or with more continuous patches of dark red

trispicata (L.f.) Druce
(= *F. sylvatica* Kunth, and including *F. leiocarpa* Nees)

Perennial herb, tufted, 0.25–0.55 m high. **Leaves** with sheaths dark red; blades absent. **Culm** lax, ± terete to 4-angled, 0.6–1.2 mm in diam. **Inflorescence** a head of 1–5 (–8) sessile spikelets, up to 8 mm in diam. **Subtending bracts** 2, inconspicuous, erect or spreading, lower up to 5 mm long. **Spikelets** oblong, 4–8 × 2.0–2.5 mm, many-flowered. **Glumes** ovate, 2 mm long, keel non-excurrent or minutely excurrent. **Flowering time** Oct.–Feb., June, July. **Nutlet** elliptical, 2 mm long, ± plano-convex, appearing greyish, surface minutely reticulate. **Gynophore** minute to relatively large, margins lobed. Shaded rocky moist places at low altitude; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Qora River Mouth S, from Storms River Bridge to Longmore Forest Reserve and from Kromrivier Forest Reserve to Tsitsikamma Coastal Park).

19b Leaf blades well developed
21a Spikelets few
22a Leaf bases breaking up into soft whitish matted fibres, sheath margins scarious, usually much lacerated

tristachya (Rottb.) Nees
(including? *F. albicans* Nees)

Perennial herb, tufted, up to 0.09 m high. **Leaves** with bases breaking up into soft whitish matted fibres; upper sheath margins ± conspicuous, scarious, often much lacerated, white; blades filiform, 0.3 mm wide. **Culm** terete, 0.5 mm in diam. **Inflorescence** of 3–few sessile spikelets. **Subtending bracts** 2, lower erect, base hardly broadened; blade leaf-like, longer than inflorescence, upper spreading or reflexed, much shorter. **Spikelets** ovate, 5 × 3 mm. **Glumes** boat-shaped, 2.5 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** Aug., Oct.–May. **Nutlet** elliptic, 1.8 mm long, yellowish brown, shining, surface minutely reticulate. **Gynophore** relatively large, margins lobed. Dry stony slopes in shallow soils; Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna, Albany Thicket (Joubertina E to Salem and to Humansdorp).

22b Leaf bases not breaking up into fibres, sheath margins membranous, only slightly lacerated

stolonifera Boeck.
(= *F. filiformis* of many authors, and including *F. nana* B.L.Burtt)

Perennial herb, tufted, 0.03–0.48 m high, 'stoloniferous'. **Leaf blades** rigid, inrolled (C-shaped), ± 0.5 mm wide. **Culm** ridged, rigid, ± 0.5 mm in diam. **Inflorescence** a head of 1–6 spikelets, 3–10 mm in diam. **Subtending bracts** 1(2), lower erect with base broadened, membranous, white, leaf-like blade longer than inflorescence, upper spreading, much shorter. **Spikelets** ovate, 4–7 × 2–3 mm, 3–8-flowered. **Glumes** boat-shaped, 2–3 mm long, keel non-excurrent. **Flowering time** Oct.–Apr. **Nutlet** broadly elliptic to obovoid, including gynophore ± 2 mm long, obscurely 3-angled (± spherical), greyish black, surface minutely reticulate. **Gynophore** relatively large, margins lobed. Mostly shallow soils in grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Morriston E to Mkambati Nature Reserve S, from Boschberg to Dohne and from Smitskraal Southwell).

21b Spikelets many
23a Mature spikelets ovate, 1.5–2.0 mm wide

gracilis Schrad.
(including *F. undosa* B.L.Burtt and? *F. dasystachys* C.B.Clarke)

Perennial herb, tufted, 0.15–0.45 m high. **Leaf blades** shorter than culms, channelled (C-shaped). **Culm** ridged, terete, 0.8–1.2 mm in diam. **Inflorescence** dense, head-like, of many spikelets, 6–15 mm in diam. **Subtending bracts** 2(3), lower suberect with only slightly dilated base and extended, rigid, leaf-like blade, upper spreading, much shorter. **Spikelets** ovate, ± 4–7 × 1.5–2.0 mm, 3–many-flowered. **Glumes** boat-shaped, ± 3 mm long. **Flowering time** Aug.–Jan., Mar., Apr., July. **Nutlet** obovate, including gynophore 1.8–2.2 mm long, 3-angled, surface minutely reticulate to minutely transversely lineolate. **Gynophore** small, margins lobed or entire. Dry rocky grassland; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Joubertspas E to Inungi Pass southwards, from Middelburg to Bizana and S to Kwenxurha River Mouth, from Kougakop to Spadona Halt and from Hofmansbosch to Humansdorp).

23b Mature spikelets broadly ovate, 4–5 mm wide

cinnamomea C.B.Clarke (poorly known)

Perennial herb, tufted, 0.1–0.4 m high. **Leaves** with bases breaking up into soft brown fibres; blades flat or inrolled, ± 0.5 mm wide. **Culm** terete, 0.5–1.0 mm in diam. **Inflorescence** a head of up to 10(–more) spikelets. **Subtending bracts** 2, lower suberect, base slightly dilated, dark reddish black, leaf-like blade very long (30–130 mm). **Spikelets** broadly ovate, 6 × 4–5 mm long. **Glumes** lanceolate, 3.5–4.0 mm long, keel excurrent into awn up to 0.5 mm long. **Flowering time** Nov.–Feb. **Nutlet** obovate, including gynophore 1.8–2.0 mm long, 3-angled, dark reddish brown or greyish black, surface minutely reticulate. **Gynophore** relatively large, margins lobed. Grasslands at high altitudes; Mesic Highveld Grassland, Drakensberg Grassland (Aliwal North District, Witteberg Mts).

FIMBRISTYLIS Vahl

Species ± 300, ± cosmopolitan in warm and temperate regions; ± 8 in sthn Afr., widespread, except in L.

1a Style branches 2; nutlets biconvex
2a Glumes glabrous

dichotoma (L.) Vahl

Annual or perennial herb, forming small tufts, 0.28–1.26 m high. **Leaf blades** 1.3–4.1 mm wide, flat to ± U-shaped, apex obtuse. **Culm** scapose, 3-angled to ± flattened, 0.8–1.5 mm in diam. **Inflorescence** a compound anthela, up to 150 × 100 mm, of > 70 spikelets. **Subtending bracts** 2(3) or 4, leaf-like. **Spikelets** elliptic to elliptic-lanceolate, 4–11 × 2–3 mm. **Glumes**: fertile broadly ovate to orbicular, 2.0–3.5 × 1.7–3.3 mm, keel excurrent into short awn. **Style**: undivided portion flattened in plane of nutlet, margins fringed with hairs. **Flowering time** Oct.–May (July). **Nutlet** ± orbicular, 0.90–1.24 × 0.65–0.95 mm, surface trabeculate. Disturbed places, lower altitude moist grasslands; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Katkop E to Clydesdale S, from Engcobo to Mkambati Nature Reserve and from Kentani to Rooikrantz Dam).
F. × *dregeana* Kunth, a putative hybrid between this species and *F. ferruginea*.

2b Glumes grey-pubescent on backs in upper $^{1}/_{2}$

ferruginea (L.) Vahl

Perennial herb, tufted, 0.1–0.8 m high. **Leaf blades** 1.2–2.3 mm wide. **Culm** scapose, 3-angled, 1.2–1.5 mm in diam. **Inflorescence** up to 73 × 34 mm, a compound or simple anthela of 4–16 spikelets. **Subtending bracts** 2–4, leaf-like. **Spikelets** elliptic, 6–17 × 3–5 mm. **Glumes**: fertile broadly ovate to orbicular, 3.2–4.9 × 2.7–4.9 mm, keel excurrent into minute point. **Style**: undivided portion ribbon-like, flattened in plane of nutlet, margins long-villous in upper $^{2}/_{3}$. **Flowering time** Oct., Jan.–Apr., July. **Nutlet** obovate to ± orbicular, 1.25–1.70 × 0.7–1.3 mm, yellow, surface faintly reticulate. Marshy areas in grassland, coastal; Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Port St Johns to Mzamba River Mouth S, from Pirie to Bulura River Mouth and from Fish River Mouth to East London).

1b Style branches 3; nutlets 3-angled
3a Plant bases packed in uniseriate fashion on rhizome

complanata (Retz.) Link

Perennial herb, rhizomatous, sometimes ± tufted, 0.10–0.79 m high. **Leaves** variable, $^1/_4$–equalling culm length; blades 0.9–4.5 mm wide, slightly incurved. **Culm** scapose, flattened, up to 3 mm in diam. **Inflorescence** variable, up to 70 × 55 mm, of ± 40 solitary or paired spikelets. **Subtending bracts** 2–4, usually 2 well developed, leaf-like. **Spikelets** elliptic-oblong, 4–9 × 1.0–2.2 mm. **Glumes**: fertile ovate, 2.2–3.6 × 1.6–3.6 mm, keel excurrent into small awn. **Flowering time** (July) Oct.–Mar. **Nutlet** obovate, 0.70–1.15 × 0.40–0.75 mm, pale yellow, surface trabeculate. Marshy places in grasslands, in full sun; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Overbeek Farm S, from Amadiba to Mzamba River Mouth, from Katberg to Morgan Bay and from Van Stadens Flower Reserve to Grahamstown)).

3b Plants tufted
4a Leaf blades well developed; inflorescence branched

cymosa R.Br.
(= *F. obtusifolia* auctt. non (Lam.) Kunth)

Perennial herb, 0.67–0.90 m high. **Leaves** stiff, ± succulent, $^1/_4$–$^1/_2$ culm length; blades 2.7–4.2 mm wide, slightly incurved. **Culm** scapose, slightly flattened, ± 1.8 mm in diam. **Inflorescence** variable, up to 60 × 52 mm, a compound anthela of 1 central head with ± 8 branches, each bearing ≥ 1 heads, often contracted to a group of heads; spikelets many, dense. **Subtending bracts** 2–5, 3 well-developed, leaf-like. **Spikelets** ovate becoming elliptic-oblong to oblong, 3–8 × 1.2–2.5 mm. **Glumes**: fertile oblong, 1.6–2.4 × 1.2–1.7 mm, keel terminating subapically. **Style branches** 3. **Flowering time** Apr. **Nutlet** obovate, 0.60–0.85 × 0.5–0.7 mm, 3-angled, dark brown to ± black, surface reticulate to smooth. Moist coastal grasslands, or seasonally inundated areas; Albany Thicket (Bulura River Mouth).

4b Leaf blades ± 5 mm long; inflorescence with 1 head of 2–9 sessile or subsessile spikelets

variegata Gordon-Gray

Perennial herb, tufted, up to 0.45 m high. **Leaf blades** reduced, ± 5 mm long. **Culm** scapose, rounded to ± flattened, 0.8–1.0 mm in diam. **Inflorescence** up to 12 × 11 mm, with 1 head of 2–9 closely packed, sessile or subsessile spikelets. **Subtending bracts** 2 or 3, up to 3 mm long, glume-like. **Spikelets** narrowly ovate to elliptic, 6.0–8.2 × 2.2–3.1 mm. **Glumes**: fertile 3.5–3.9 × 2.3–2.6 mm, keel excurrent into 0.5 mm long awn. **Style branches** 3. **Flowering time** Dec., Jan. **Nutlet** obovate, 1.1–1.3 × 0.7–0.8 mm, 3-angled, surface faintly striated. Moist places at coast; Indian Ocean Coastal Belt (Sea View and Mkambati Nature Reserve).

FUIRENA Rottb.

Species ± 30, ± cosmopolitan in warm areas; ± 12 in sthn Afr., widespread.

1a Hairs of glumes of uniform length, short
2a Rhizome slender, 1.5–2.0 mm in diam.; nutlet with slender stalk 0.4 mm long; epidermal cells of nutlet pericarp transversely elongate (length:width ratio > 2×)

tenuis P.L.Forbes

Perennial herb, up to 0.16 m high, long-rhizomatous, rhizome slender. **Leaf blades** ± 2 mm wide, V-shaped. **Culm** nodose, 3-angled, ± 1 mm in diam. **Inflorescence** a pseudolateral head of few spikelets, up to ± 12 mm in diam. **Bracts**: lowest erect, overtopping inflorescence. **Spikelets** ovate or elliptical, excl. awns up to 8.5 × 3.0 mm. **Glumes**: fertile ± lanceolate, incl. awn 4.0–4.5 mm long, keel excurrent into a straight awn up to 1.2 mm long. **Perianth**: outer whorl of 3 retrorsely barbed bristles; inner whorl of 3 stalked, aristate scales ± equalling nutlet length, blade margins toothed, arista retrorsely barbed. **Flowering time** Jan., Feb. **Nutlet** broadly elliptical, narrowly stalked, incl. stalk ± 2 mm long, 3-angled, pale yellow, surface trabeculate; pericarp epidermal cells transversely elongate. Moist places in grasslands; Drakensberg Grassland (Barkly East and Beestekraal-se-Loop).

2b Rhizome, if present, > 2 mm in diam.; nutlet stalk < 0.4 mm long, usually stout; epidermal cells of nutlet pericarp ± square or slightly transversely elongate (length:width ratio < 2×)
3a Epidermal cells of nutlet pericarp large (visible with 10× lens) with deeply and closely rippled end walls

coerulescens Steud.

Perennial herb, 0.25–0.98 m high. **Leaf blades** 2–5 mm wide. **Culm** nodose, sharply 3-angled, 1–3 mm in diam. near base. **Inflorescence** a terminal cluster of up to 12 sessile or shortly stalked spikelets, up to ± 17 mm in diam. **Subtending bracts** of 2 unequal, lower overtopping spikelets. **Spikelets** narrowly ovate, excl. awns 6–15 (–19) × (2.5–)3.0–4.0 mm. **Glumes**: fertile lanceolate, incl. awn 3.5–5.0 mm long, keel excurrent into ± 1.2 mm long awn. **Perianth**: outer whorl of 3 bristles or absent; inner whorl of 3 scales, or bristles or absent, scales stalked. **Flowering time** Jan., Apr., Aug., Oct., Dec. **Nutlet** broadly obovate, incl. beak and stalk 1.3–1.6 × 0.7–0.9 mm, 3-angled, surface reticulate. Marshy areas in grasslands; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Aliwal North to Martindell Farm, from Mountain Zebra National Park to Komga and Port Elizabeth).

3b Epidermal cells of nutlet pericarp smaller (usually not visible with 10× lens) with straight or sinuous end walls
4a Inner perianth whorl of 3 bristles; awns of glumes 0.2–0.6(–1.0) mm long; rhizome usually absent, rarely poorly developed

stricta Steud.

Perennial herb, tufted, 0.30–0.75 m high. **Leaf blades** very short, 3–4 mm wide, ± V-shaped. **Culm** nodose, 3-angled, 1.0–1.8 mm in diam. below inflorescence. **Inflorescence** a slender panicle of 1–few, sessile or shortly stalked clusters of spikelets, each of ± 1–10 spikelets, ≤ 80 mm long. **Subtending bracts** inconspicuous, short, leaf-like. **Spikelets** ovate to oblong, up to 12 × 3 mm. **Glumes** lanceolate (ovate when flattened), incl. awn ± 2.5 mm long, keel excurrent into minute point or awn 0.5 mm long. **Perianth**: outer whorl of (0–)3 retrorsely barbed bristles. **Flowering time** Apr., Dec. **Nutlet** stalked, narrowly obovate, incl. beak and stalk ± 1.8 mm long, 3-angled, greenish yellow becoming reddish brown, surface smooth. Water or in marshy situations; Indian Ocean Coastal Belt (Msikaba Gorge to Sea View).

4b Inner perianth whorl absent or of 3 scales; awns of glumes (0.8–)1.0–3.0 mm long; rhizome present, elongated or contracted
5a Plants with indumentum of short patent hairs 0.1–0.2 mm long on all parts except towards base where glabrescent

pachyrrhiza Ridl.

Perennial herb, robust, ± tufted, up to 1 m high. **Leaf blades** up to 12 mm wide, flat. **Culm** nodose, 3-angled, ± 2 mm in diam. below inflorescence but ± entire culm concealed by wide, sheathing leaf bases. **Inflorescence** a narrow, diffuse panicle up to 200 mm long. **Subtending bracts** leaf-like. **Spikelets** squarrose, elliptical, 7–12 × 4–5 mm. **Glumes** lanceolate (ovate when flattened), incl. awn up to 8 mm long. **Perianth**: outer whorl absent; inner whorl of scales differentiated into stalk, blade and scabrid arista. **Flowering time** Jan.–Mar. **Nutlet** obovate, incl. stalk and beak ± 1.8 mm long, 3-angled, dark brown, surface ± smooth; pericarp epidermal cells granular, subelliptic in obscurely vertical series. Marshy areas, in full sun; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Clydesdale to SSW of Bizana and to Kei River Mouth).

5b Plants with indumentum limited to small portions e.g. inflorescence, culm apex, nodes, midribs and margins of blades, partly or completely covering sheaths and ligules; if indumentum more extensive then hairs long
6a Inner perianth whorl of 3 scales; nutlet 1.6–2.5 mm long

ecklonii Nees

Perennial herb, long-rhizomatous, 0.38–0.75 m high. **Leaf blades** 3–6 mm wide, flat or V-shaped. **Culm** nodose, 3-angled, 1.2–1.5 mm in diam. below inflorescence (much of culm concealed by wide sheathing leaf bases). **Inflorescence** an apical cluster of up to ± 10 sessile or shortly stalked spikelets. **Subtending bracts** spreading or reflexed. **Spikelets** ± squarrose, elliptical, 7–13 mm long. **Glumes**: fertile lanceolate, ± 4 mm long, keel excurrent into 1–2 mm long, recurved awn. **Perianth**: outer whorl absent 0; inner whorl of scales differentiated into stalk, blade with toothed margins and arista. **Flowering time** Dec.–Feb. **Nutlet** ± sessile, obovate, white, surface smooth; pericarp epidermal cells very small. Marshy areas at low altitudes, in full sun; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Mkambati Nature Reserve S to Kei River Mouth, from Yarrow to Grahamstown and Alexandria Forest).

6b Inner perianth whorl usually absent; nutlet 1.0–1.6(–1.8) mm long

pubescens (Poir.) Kunth

Perennial herb, tufted to long-rhizomatous, 0.15–1.00 m high. **Leaf blades** 2.5–5.0 mm wide, flat or V-shaped. **Culm** nodose, 3-angled, 1.0–1.5 mm in diam. below inflorescence. **Inflorescence** variable, in 2 or 3 loose, subterminal spikes. **Subtending bracts** erect. **Spikelets** elliptical, up to 12.5(–18.0) × 4 mm. **Glumes** lanceolate, 1.0–1.6 (–1.8) mm long, keel excurrent into ± 1.5 mm long awn. **Perianth**: outer whorl absent; inner whorl absent. **Flowering time** Sept.–Feb. **Nutlet** obovate, 1.0–1.6(–1.8) mm long, 3-angled, white to greyish (small opaque white nutlets are infertile), surface smooth, often irregularly tuberculate; pericarp epidermal cells minute, rectangular. Moist places, in grasslands. Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Mount Currie S, from Queenstown to Mkambati Nature Reserve, from Katberg to Keiskammahoek and S to East London).

1b Hairs of glumes short with few to many long straight hairs intermingled on all, many, or on few basal glumes only

hirsuta (P.J.Bergius) P.L.Forbes

Perennial herb, tufted or long-rhizomatous, 0.45–1.09 m high. **Leaves** with sheaths hirsute to glabrous; blades well developed at upper nodes, ± 4 mm wide. **Culm** nodose, ± terete, 0.8–1.2 in diam. below inflorescence. **Inflorescence** terminal, of 1–3 heads, 2nd and 3rd heads ± sessile; heads globose, (6–)15(–20) mm, congested. **Subtending bracts** 2 or 3, unequal, leaf-like. **Spikelets** squarrose, ovate, excl. projecting awns 6–8 × 3–4 mm. **Glumes**: fertile oblong, oblong-obovate, incl. awn ± 5 mm long, keel excurrent into 1.5–2.0 mm long awn. **Perianth**: outer whorl of 3 antrorsely hairy bristles or absent; inner whorl of 3 stalked, aristate scales. **Flowering time** Jan.–Dec. **Nutlet** stalked, broadly obovate, ± 1.3 mm long incl. beak and stalk, 3-angled, dark yellow; pericarp epidermal cells very small. Wetlands at low altitudes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Bisi to Bizana SW, from Amadiba to Mkweni River Mouth, from Menziesberg to Kei River Mouth, Kareedouw to East London and from Oudebosch to Humansdorp).

HELLMUTHIA Steud.

Species 1, endemic to sthn Afr., along coast, WC, EC.

membranacea (Thunb.) R.W.Haines & Lye

Perennial herb, tufted or culms arranged in uniseriate row, up to 0.9 m high. **Leaves** with sheaths with sloping, membranous mouth; blades short or absent. **Culm** scapose, ± terete, 1.0–2.5 mm in diam. **Inflorescence** capitate, of 1–10 elliptical-cylindric, obtuse spikes 10–30 × 6–10 mm, lengths variable within inflorescence. **Subtending bracts** usually 3(2–5) erect, leaf-like, shorter or longer than inflorescence. **Spikelet bracts** many, closely imbricate, spirally arranged, broadly ovate, 7–9 × 4–5 mm, with central blackish area and broad, light brown, lacerated, membranous margins. **Spikelets** concealed by bracts, elliptical to lanceolate, dorsiventrally compressed. **Perianth** absent. **Stamens** 3. **Style** short; branches 3, long. **Flowering time** Feb.–Oct. **Nutlet** stalked, obovate, 2.2–2.6 × 2.0–2.2 mm, flattened, greyish, surface minutely papillose. Unconsolidated sand near coast; Albany Thicket (Sundays River Mouth, Port Elizabeth District and Springmount, Alexandria District).

ISOLEPIS R.Br.

Species ± 60, widely distributed in temperate and subtropical parts of the world; ± 30 in sthn Afr., mainly WC, also in N, B, LIM, NW, G, M, S, FS, KZN, L, NC, EC.

1a Spikelets flattened; glumes distichously arranged

levynsiana Muasya & D.A.Simpson

[= *Cyperus tenellus* L.f., *I. tenella* (L.f.) Muasya & D.A.Simpson, nom. illeg.]

Annual herb, tufted, up to 0.15 m high. **Leaf blades** hair-like. **Culm** scapose, ± terete, 0.3 mm in diam. **Inflorescence** terminal, of 1 spikelet or a digitate cluster of 2–few spikelets. **Subtending bracts** 1 or 2, erect to suberect, hair-like. **Spikelets** flattened, oblong, variable in size, 6–15 × 1.8–2.2 mm, 3–20-flowered. **Glumes** ovate, boat-shaped, 1.8 mm long, keel non-excurrent or excurrent into minute blunt point. **Style branches** 3. **Flowering time** Aug.–Nov. (Apr., June). **Nutlet** elliptical, 1.0–1.2 mm

long, 3-angled, light brown, surface minutely tuberculate. Temporarily moist or wet places; Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Hogsback, Grahamstown, Coombs Dam and Humansdorp).

1b Spikelets round; glumes spirally arranged
2a Stems branching profusely, forming tangled mats
3a Style branches 2
4a Epidermis of nutlet pericarp minutely reticulate
5a Culms (peduncles) 1 only at stem nodes

fluitans (L.) R.Br.
(incl. *I. inyangensis* Muasya & Goetgh.)

Perennial herb, mat-forming, 0.06–1.06 m long. **Leaf blades** 0.2–1.1 mm wide. **Culm (peduncle)** ± terete, 0.3–1.0 mm in diam. **Inflorescence** with culms (peduncles) single from upper few stem nodes, each bearing 1 terminal spikelet. **Subtending bract** very small, glume-like. **Spikelets** ovate to cylindric-lanceolate, 2.4–9.4 × 0.7–2.7 mm, 4–28-flowered. **Glumes** ovate, 1.5–3.4 × 0.5–1.3 mm, keel not excurrent or excurrent into minute point. **Style branches** 2. **Flowering time** Dec.–May. **Nutlet** broadly obovate, 0.8–1.8 × 0.5–1.2 mm, biconvex, yellow-brown, surface minutely reticulate. Moist places or emergent in pools; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Dry Highveld Grassland (Ntsikeni S, from Otto du Plessis Pass E to Msikaba Gorge, from Boschberg to Amatole Basin and to Grahamstown).

5b Culms (peduncles) many (> 10) at stem nodes

ludwigii (Steud.) Kunth

Perennial herb, mat-forming, up to 0.13 m high. **Leaf blades** 0.3–0.6 mm wide. **Culm (peduncle)** 0.3–0.7 mm in diam. **Inflorescence** with culms (peduncles) clustered at upper stem nodes, each bearing 1 terminal spikelet. **Subtending bract** very small, glume-like. **Spikelets** ovate to cylindric-lanceolate, 2.6–8.0 × 1.0–1.8 mm, 6–19-flowered. **Glumes** ovate, 1.5–2.8 × 0.6–1.0 mm, keel excurrent into minute point. **Style branches** 2. **Flowering time** Oct., Nov., Feb. **Nutlet** elliptical to broadly obovate, 0.8–1.8 × 0.4–0.9 mm, biconvex, whitish to reddish brown, surface minutely reticulate. Mainly in seepages and on edges of ponds at low altitudes; Drakensberg Grassland, Albany Thicket,Eastern Fynbos-Renosterveld (Kabaku Hills to King William's Town, from Suurberg in Greater Addo Elephant National Park to Grahamstown and Coombs Dam).

4b Epidermis of nutlet pericarp finely striate lengthwise

striata (Nees) Kunth
Watergras (A)

Perennial herb, mat-forming, up to 0.2 m long. **Leaf blades** 0.3–1.2 mm wide. **Culm (peduncle)** 0.5–1.5 mm in diam. **Inflorescence** with culms (peduncles) 1–several at upper few stem nodes, each bearing 1 terminal spikelet; bract sheaths dark chestnut-red. **Subtending bract** very small, glume-like. **Spikelets** ovate, 3.5–8.2 × 1.3–2.5 mm, 4–12-flowered. **Glumes** ovate, 2.6–4.5 × 0.7–1.6 mm, keel excurrent into minute point. **Style branches** 2. **Flowering time** Aug. **Nutlet** elliptical, 1.5–1.9 × 0.7–1.1 mm, biconvex, whitish to brown, surface finely striate lengthwise. Emergent in pools; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Lottering River, Swartkops River, Coldspring, Kleinplaas).

3b Style branches 3

tenuissima (Nees) Kunth

Perennial (probably short-lived) herb, mat-forming, 0.01–0.05 m long. **Leaf blades** 0.1–0.3 mm wide. **Culm (peduncle)** hair-like, 0.2–0.3 mm in diam. **Inflorescence** with culms (peduncles) 1–few at stem nodes, each bearing 1 terminal spikelet. **Subtending bract** very short or just overtopping spikelet. **Spikelets** elliptical, 1.5–3.1 × 0.8–1.5 mm, 4–12-flowered. **Glumes** boat-shaped, 1.1–1.6 × 0.4–0.7 mm, keel excurrent into minute point. **Style branches** 3. **Flowering time** Dec. **Nutlet** elliptical, 0.6–1.0 × 0.4–0.6 mm, 3-angled, brown, surface smooth. Emergent in pools; Albany Thicket (Enon).

2b Plants tufted or long-rhizomatous
6a Epidermis of nutlet pericarp trabeculate
7a Leaf blade reduced, < 5 mm long

costata Hochst. ex A.Rich.

Perennial herb, tufted, 0.10–0.65 m high. **Leaf blades** much reduced, < 5 mm long. **Culm** 0.3–1.3 mm in diam. **Inflorescence** a terminal (pseudolateral when young) head of 1–25 spikelets, frequently pseudo-viviparous, culms bending to substrate and rooting from head in stolon-like fashion. **Subtending bract** very short, glume-like or with longer blade. **Spikelets** ovate, 1.4–5.5 × 0.7–2.1 mm, 4–31-flowered. **Glumes** boat-shaped, 1.0–2.1 × 0.4–0.9 mm, keel non-excurrent or excurrent into minute point. **Style branches** 3. **Flowering time** Sept.–Feb. **Nutlet** broadly elliptical, 0.7–1.3 × 0.4–0.8 mm, 3-angled, pearl-white, surface trabeculate. Moist places, along watercourses; in all bioregions, except Lower Karoo, Rainshadow Valley Karoo and Albany Thicket (Beddgelert E Kokstad, from Grootfontein to Port St Johns, from Mountain Zebra National Park to Komga and to Witelsbos).

7b Leaf blade well developed, > 5 mm long
8a Long-rhizomatous perennials
9a Rhizome fleshy, 1–2 mm in diam., white

angelica B.L.Burtt

Perennial herb, 0.03–0.08 m high, long-rhizomatous. **Leaf blades** filiform, 0.2–0.7 mm wide. **Culm** filiform, 0.2–0.7 mm in diam. **Inflorescence** a terminal head of 1–3 spikelets. **Subtending bract** suberect, overtopping head. **Spikelets** ovate, 2.9–6.5 × 1.1–2.3 mm, 7–20-flowered. **Glumes** boat-shaped, 2.0–2.7 × 0.8–1.2 mm, keel excurrent into 0.1–0.5 mm awn. **Style branches** 3. **Flowering time** Dec., Jan. **Nutlet** elliptical, 1.0–1.4 × 0.6–0.9 mm, 3-angled, reddish brown, surface trabeculate. Moist places; Upper Karoo, Drakensberg Grassland (Ben Macdhui to Naude's Neck and from Kompasberg Farm to Otto du Plessis Pass).

9b Rhizome wiry, 0.5 mm in diam., brown

diabolica (Steud.) Schrad.

Perennial herb, up to 0.36 m high, long-rhizomatous. **Leaf blades** 0.4–1.0 mm wide. **Culm** filiform, 0.4–1.1 mm in diam. **Inflorescence** a terminal head of 2–10 spikelets. **Subtending bract** suberect. **Spikelets** elliptical, 3.2–9.8 ×1.2–2.6 mm, 9–50-flowered. **Glumes** boat-shaped, 1.8–2.5 × 0.7–1.2 mm, keel non-excurrent or excurrent into 0.1 mm long awn. **Style branches** 3. **Flowering time** Sept.–Nov. **Nutlet** elliptical, 0.8–1.3 × 0.5–0.8 mm, 3-angled, reddish brown, surface trabeculate. Moist or wet, often disturbed places; Drakensberg Grassland, Albany Thicket, Indian Ocean Coast-

al Belt, Eastern Fynbos-Renosterveld (Bedford, Turpin Dam to Kei River Mouth, from Olifantskop Pass to Springs Nature Reserve and to Humansdorp).

8b Tufted annuals

setacea (L.) R.Br.

Annual herb, tufted, 0.02–0.91 m high. **Leaf blades** capillary to filiform, 0.1–0.7 mm wide. **Culm** filiform, 0.2–0.8 mm in diam. **Inflorescence** a terminal head of 1–4 spikelets. **Subtending bract** erect to suberect, filiform. **Spikelets** ovate, 1.7–6.5 × 0.5–2.5 mm, 4–35-flowered. **Glumes** boat-shaped, 1.0–2.5 × 0.4–1.0 mm, keel ± non-excurrent. **Style branches** 3. **Flowering time** Aug.–Apr. **Nutlet** broadly elliptical, 0.7–1.3 × 0.4–0.9 mm, 3-angled, dark brown, surface trabeculate. Temporarily moist places mostly at high altitudes; Upper Karoo, Mesic Highveld Grassland, Drakensberg Grassland, Albany Thicket (Venterstad E to Mavis Bank Farm, from Hofmeyr District to Grootfontein Farm, from Mountain Zebra National Park to Katberg Pass and from Botha's River Valley to Port Alfred).

6b Epidermis of nutlet pericarp with other patterning, not trabeculate
10a Perennials

prolifera (Rottb.) R.Br.

Perennial herb, tufted, 0.1–0.5 m high. **Leaf blades** absent or minute. **Culm** terete, 0.4–2.5 mm in diam. **Inflorescence** a terminal head of 1–35 spikelets, frequently pseudoviviparous, culms bending to substrate and rooting from head in stolon-like fashion. **Subtending bract** erect or suberect, very short. **Spikelets** of irregular lengths in head, oblong, 3.1–12 × 1.1–2.4 mm, 9–31-flowered. **Glumes** lanceolate, 1.6–3.0 × 0.7–1.2 mm, keel excurrent into minute point. **Style branches** 3. **Flowering time** Aug.–Apr. **Nutlet** elliptical, 0.7–1.2 × 0.5–0.7 mm, 3-angled, light yellow to golden-brown, surface minutely reticulate. Moist places, mostly at low altitudes; Dry Highveld Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Port St Johns and Dwesa S, from Lottering State Forest to Hopewell and to Tsitsikamma).

10b Annuals
11a Epidermis of nutlet pericarp coarsely reticulate

sororia Kunth

Annual herb, tufted, up to 0.15 m high. **Leaf blades** filiform, 0.1–0.5 mm wide. **Culm** filiform, 0.2–0.5 mm in diam. **Inflorescence** a terminal head of 1–3 spikelets. **Subtending bract** suberect, very short. **Spikelets** ovate, 1.7–5.8 × 2 mm, 7–23-flowered. **Glumes** boat-shaped, 1.2–1.5 × 0.6–1.0 mm, keel excurrent into minute point. **Style branches** 2. **Flowering time** Dec. **Nutlet** very broadly elliptic, 0.7–0.9 × 0.5–0.7 mm, biconvex (± spherical), brown, surface coarsely reticulate, cells transversely elongated. Temporarily moist places; Albany Thicket (Krompoort Farm).

11b Epidermis of nutlet pericarp finely reticulate, papillose, tuberculate or finely rugose
12a Nutlet broadly obovate

cernua (Vahl) Roem. & Schult.

Annual herb, tufted, 0.05–0.20 m high. **Leaf blades** absent, or if present, setaceous, very short. **Culm** filiform, 0.2–1.0 mm in diam. **Inflorescence** a terminal head of 1–4 spikelets. **Subtending bract** suberect, very short. **Spikelets** ovate, 1.4–9.0 × 1.0–2.4 mm, 4–27-flowered. **Glumes** ovate, 0.8–2.1 × 0.4–1.6 mm, keel excurrent into minute point.

Style branches 2 (var. *setiformis*) or 3 (var. *cernua*). **Flowering time** July–Mar. **Nutlet** broadly obovate, 0.5–1.2 × 0.4–1.0 mm, biconvex (var. *setiformis*) or 3-angled (var. *cernua*), brown or black, surface tuberculate (var. *setiformis*) or finely reticulate (var. *cernua*). Moist places.

I. cernua (Vahl) Roem. & Schult. var. **cernua**

All bioregions, except Upper Karoo, Mesic Highveld Grassland, Lower Karoo, Rainshadow Valley Karoo (Joubertspas to Martindell Farm S to Queenstown, from Van Rynevelds Pass Dam E to Kentani, Krompoort Farm to Keiskamma River Mouth and to Aasvoëlkrans).

I. cernua (Vahl) Roem. & Schult. var. **setiformis**

Eastern Fynbos-Renosterveld (Port Elizabeth).

12b Nutlet narrowly obovate, elliptic to ± oblong
13a Culm filiform to hair-like
14a Glumes boat-shaped (± curved around nutlets)
15a Keel of glume excurrent into (0.3–)0.5(–2.1) mm long, recurved awn

incomtula Nees

Annual herb, tufted, often entire plant red-coloured, 0.02–0.08 m high. **Leaf blades** filiform, 0.3–0.6 mm wide, shorter than culms. **Culm** filiform, 0.2–0.5 mm in diam. **Inflorescence** a terminal head of 1–10 spikelets. **Subtending bract** suberect to reflexed, very short to well-developed. **Spikelets** minutely squarrose, ovate, 2.5–6.8 mm, 7–24-flowered. **Glumes** boat-shaped, 1.9–4.1 × 0.7–1.1 mm, keel excurrent into 0.3–2.1 mm long awn. **Style branches** 3. **Flowering time** Oct. **Nutlet** broadly obovate, 0.5–0.8 × 0.4–0.6 mm, 3-angled, brown, surface papillose. Temporary moist places in shallow sandy soils; Albany Thicket (near Port Elizabeth).

15b Keel of glume non-excurrent or excurrent into a minute point
16a Flanks of glume usually strongly nervose; nerves closely set

marginata (Thunb.) A.Dietr.

Annual herb, tufted, 0.03–0.15(–0.22) m high. **Leaf blades** filiform, shorter than culms. **Culm** filiform, ± 0.4 mm in diam. **Inflorescence** a terminal head of 1–several spikelets. **Subtending bract** conspicuous, suberect to spreading, filiform. **Spikelets** ovate, 4–6 × 1.5–2.0 mm, many-flowered. **Glumes** boat-shaped, 1.5 mm long, keel non-excurrent or excurrent into minute blunt tip. **Style branches** 3. **Flowering time** Sept.–Nov. **Nutlet** with minute gynophore-like structure at base, elliptical, 1 × 0.7 mm, 3-angled, dark brown, orange or yellow, surface minutely papillose. Temporary moist places, sandy; Eastern Fynbos-Renosterveld, Albany Thicket (Van Stadens River Mouth E to Kasouga River Mouth S, from Slang River near mouth to campus of Nelson Mandela Metropolitan University).

16b Flanks of glume delicately nervose; nerves distant, separated by membranous tissue

sepulcralis Steud.

Annual herb, tufted, 0.08–0.15 m high. **Leaf blades** filiform, 0.1–0.4 mm wide. **Culm** filiform, 0.1–0.6 mm in diam. **Inflorescence** a terminal head of 1–5 spikelets. **Subtending bracts** very short to well developed, if developed, erect(–spreading), filiform. **Spikelets** ovate, 1.3–4.9 × 0.7–2.0 mm, 7–32-flowered. **Glumes** boat-shaped, 0.7–1.3 × 0.2–0.6 mm, keel non-excurrent or excurrent into minute point. **Style branches** 3. **Flowering time** (July) Oct.–Feb. **Nutlet** elliptical, 0.5–0.8 × 0.3–0.4 mm, 3-angled, dark brown, surface minutely papillose. Temporary moist places, often shaded; Upper

Karoo, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Houtbosfontein Mtn to Clydesdale, from Blue Gum House Farm to Keiskammahoek and from Suurberg Inn to Grahamstown).

14b Glumes lanceolate, not curved around nutlets

karroica (C.B.Clarke) J.Raynal

Annual herb, tufted, up to 0.09 m high. **Leaf blades** filiform, 0.1–0.3 mm wide. **Culm** 0.2–0.3 mm in diam. **Inflorescence** a terminal head of 1–3 spikelets. **Subtending bract** inconspicuous, glume-like, to well developed with filiform blade. **Spikelets** echinate, oblong to ovate, 1.5–7.5 × 1.0–2.2 mm, 4–55-flowered. **Glumes** lanceolate, 1.3–1.6 × 0.4–0.7 mm, keel excurrent into minute, ± straight point. **Style branches** 3. **Flowering time** Jan., Feb., May. **Nutlet** narrowly obovoid to elliptical, 0.6–0.8 × 0.4–0.5 mm, 3-angled, blackish, surface minutely papillose. Temporary moist places; Upper Karoo, Dry Highveld Grassland (S from Schoombee to Mountain Zebra National Park).

13b Culm soft, spongy, ± 1.5(–2.2) mm in diam.

natans (Thunb.) A.Dietr.

Annual herb, tufted, 0.05–0.30 m high. **Leaf blades** 0.2–2.1 mm wide, ± flaccid. **Culm** filiform to terete, 0.3–1.5(–2.2) mm in diam. **Inflorescence** a terminal head of 1–9 spikelets. **Subtending bract** short to well developed, erect to spreading. **Spikelets** ovate, 2.1–6.1 × 1.3–2.0 mm, 8–55-flowered. **Glumes** boat-shaped, 1.0–1.8 × 0.4–0.7 mm, keel non-excurrent or excurrent into minute point. **Style branches** 3. **Flowering time** Sept.–Apr. **Nutlet** obovate to elliptical, 0.7–1.0 × 0.4–0.6 mm, dark brown, surface minutely papillose. Semi-aquatic in wet places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Baziya Mount to inland of Mkambati Nature Reserve S, from Seymour to near Komga, from Howison's Poort to Coombs Dam and S to near mouth of Slang River).

KYLLINGA Rottb.

Species ± 60, ± cosmopolitan in warm moist areas; ± 13 in sthn Afr., widespread.

1a Inflorescence lax, of 6–20 spikelets, usually several spikelets replaced by vegetative shoots (pseudo-viviparous)

pauciflora Ridl.

Perennial herb, tufted or long-rhizomatous, 0.08–0.60 m high. **Leaf blades** 1.5–2.0 mm wide, flat. **Culm** scapose, 3-angled, 0.8–1.0 mm in diam. in middle. **Inflorescence** of 1 spike, lax, with ≤ 15 spikelets, pseudo-viviparous. **Subtending bracts** 3, short, leaf-like, lowest erect, others spreading. **Spikelets** ovate-lanceolate, 3.40–6.54 mm, 2-flowered, lower bisexual, upper male. **Glumes**: fertile with keel glabrous or slightly spinulose, excurrent into pointed, slightly recurved, 0.20–0.72 mm long awn. **Flowering time** Jan. **Nutlet** obovate, golden-brown. Marshy places in grasslands, in full sun; Drakensberg Grassland (Amatole Mts).

1b Inflorescence dense, of > 20 spikelets, occasionally accompanied by a vegetative shoot
2a Plants long-rhizomatous, if culms in a uniseriate row, then bases not clothed in fibrous remain of old leaf sheaths
3a Rhizome very thin (± 1 mm in diam.); glume flanks dark reddish brown

pulchella Kunth

Perennial herb, long-rhizomatous, 0.07–0.43 m high. **Leaf blades** 2 mm wide, flat, ± flaccid. **Culm** scapose, 3-angled, 1.0–1.5 mm in diam. **Inflorescence** of 1–3 spikes,

middle spike ovate, up to 16 × 10 mm. **Subtending bracts** 3 or 4, leaf-like, lowest erect, long, others shorter, spreading. **Spikelets** ovate-lanceolate, 3–5 mm long, spreading, 3–5-flowered, lower 2–4 bisexual, upper male. **Glumes**: fertile with keel wingless, glabrous or with few hairs, excurrent into short awn. **Flowering time** Dec.–May. **Nutlet** elliptical to obovate, biconvex, chestnut-brown. Marshy places in grasslands, in full sun; Sub-Escarpment Grassland, Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna (Kokstad S to NNE of Tarkastad, from Mountain Zebra National Park to near Komga).

3b Rhizome thick (> 2 mm in diam.) when alive; glume flanks pale (golden-brown, green or white)
4a Culm produced at every 2nd node of rhizome; bracts long (up to 290 mm), spreading

elatior Kunth

Perennial herb, 0.25–0.87 m high, long-rhizomatous. **Leaf blades** 2–6 mm wide. **Culm** scapose, 3-angled, 1.5–3.0 mm in diam. **Inflorescence** of 1–3 spikes, dense, central spike cylindric, 7–20 × 5–13 mm, lateral smaller. **Subtending bracts** 4–6, spaced at short intervals below inflorescence, up to 290 mm long, spreading at 90º to culm. **Spikelets** many, ovate-lanceolate, 2.7–4.5 mm long, 2-flowered, lowermost bisexual, upper male. **Glumes**: fertile with keel wingless, glabrous or with 1–4 hairs, excurrent into slender, acuminate, recurved, 0.28–0.59 mm long awn. **Flowering time** Oct.–Feb. **Nutlet** obovate, ± 1 mm long, biconvex, red-brown, later black. Damp shaded situations on forest margins at low altitudes; Indigenous Forests (Port St Johns S, from Zele to Komga and Kei River Mouth and from Kudu Kaya to East London).

4b Culms usually produced at every node of rhizome; bracts short (< 120 mm), erect, later reflexed
5a Rhizome scales short, not imbricate; culms ± 10 mm distant

erecta Schumach.

Perennial herb, 0.05–0.55 m high, long-rhizomatous, rhizome scales short, not imbricate. **Leaf blades** 1.5–3.0 mm wide, flat. **Culm** scapose, terete to 3-angled, 0.8–1.5 mm in diam. in middle. **Inflorescence** of 1 spike, globose to ovoid, 4–8 mm wide, compact. **Subtending bracts** 3, lowest erect, later reflexed. **Spikelets** many, ovate-lanceolate, 2–4 mm long, 2- or 3-flowered, lowermost bisexual, upper male. **Glumes**: fertile with keel glabrous or with 1 or 2 scabrid hairs, excurrent into acute, recurved, 0.2–0.5 mm long awn. **Flowering time** Sept.–May. **Nutlet** elliptical to obovate, biconvex, yellow to black. Marshy places in grasslands, in full sun; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Cala E to Mthatha, from Toise River Station to Selbourne and from Grahamstown to Riet River Mouth).

5b Rhizome scales imbricate; culms ± approximate

melanosperma Nees

Perennial herb, 0.17–1.00 m high, culms ± close together on horizontal rhizome, rhizome scales imbricate. **Leaf blades** 3–4 mm wide, flat. **Culm** scapose, 3-angled, 1.0–2.2 mm in diam. in middle. **Inflorescence** a single spike, ovoid-cylindric to subglobose, 5–14 × 6–10 mm, dense. **Subtending bracts** 3, or 3 + 1 very small bract, relatively short, erect, later reflexed, stiff. **Spikelets** many, ovate-lanceolate, 3.0–5.5 mm long, 2-flowered, lower bisexual, upper male. **Glumes**: fertile with keel wingless, glabrous or sparsely scabrid, excurrent into slender, acuminate, slightly recurved, 0.25–0.70 mm long awn. **Flowering time** Oct., Feb. **Nutlet** small, obovate, ± 1 mm long, biconvex, golden, turning bright red-orange, later black. Marshy places in grasslands, in full sun; Drakensberg Grassland (Gaika's Kop and Stutterheim).

2b Plants tufted or culms in a uniseriate row, bases woody, swollen, clothed in ± fibrous remains of leaf sheaths
6a Inflorescence elongated; stamens 2

odorata Vahl

Perennial herb, tufted or with short row of sheathed culm-bases, 0.2–0.5 m high. **Leaf blades** 2–4 mm wide. **Culm** scapose, 3-angled, 1.0–1.2 mm in diam. in middle. **Inflorescence** of 1–3 dense spikes; central cylindric, 8–16 × 5–7 mm; lateral small, globose to cylindric. **Subtending bracts** 3 or 4, leaf-like. **Spikelets** many, broadly ovate, 2.47–2.52 mm long, 1-flowered. **Glumes**: fertile with keel wingless, smooth or with 1 or 2 hairs, lower glume with keel slightly excurrent. **Flowering time** Apr. **Nutlet** broadly obovate with truncate apex, yellow to red-brown, later black. Somewhat disturbed places on forest margins; Indigenous Forests (Port St Johns).

6b Inflorescence ovoid to spherical; stamens 3
7a Inflorescence golden-green; spikelets usually markedly winged, ciliate

alata Nees

Perennial herb, tufted, with a short row of sheathed culm-bases, 0.10–0.61 m high. **Leaf blades** 1.2–4.2 mm wide, flat or V-shaped, flaccid. **Culm** scapose, 0.7–1.5 mm in diam. **Inflorescence** up to 14 mm in diam. **Subtending bracts** (2)3 or 4, spreading. **Spikelets** many, ovate-lanceolate, ± 6 mm long, 2-flowered, both flowers bisexual or upper male. **Glumes**: fertile with keel winged, wing narrow in young specimens, up to 0.85 mm wide in older, ciliate, awn slender, 0.27–1.20 mm long. **Flowering time** (Nov.) Feb.–Apr. **Nutlet** obovate, biconvex, yellow turning red-brown. Seasonally moist grassland and savanna, in full sun; Dry Highveld Grassland, Upper Karoo, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Steynsburg E to Bizana District southwards, from Mountain Zebra National Park to Kei River Mouth and from Port Elizabeth to Port Alfred).

7b Inflorescence white; spikelets not markedly winged or ciliate

alba Nees

Perennial herb, tufted or with a short row of sheathed culm-bases, 0.10–0.52 m high. **Leaf blades** 2–5 mm wide, flat or V-shaped, flaccid. **Culm** scapose, 3-angled, 1 mm in diam. **Inflorescence** of 1 spike, dense, globose to broadly elliptic, up to 15 mm in diam. **Subtending bracts** 2–5 (usually 3), spreading, later reflexed. **Spikelets** many, ovate-lanceolate, up to 6.37 mm long, 2-flowered, both flowers bisexual or upper male. **Glumes**: fertile with keel variably winged, wing up to 1 mm wide, glabrous or ciliate, keel hardly excurrent or excurrent into straight awn up to 0.86 mm long. **Flowering time** Jan. **Nutlet** elliptical, golden, later red-brown to black. Moist sandy grassland; Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket (Aliwal North S to Queenstown District to Port Elizabeth and Grahamstown).

MARISCUS Vahl see **CYPERUS** L.

PSEUDOSCHOENUS (C.B.Clarke) Oteng-Yeb.

Species 1, interior of sthn Afr., N, FS, L, NC, WC, EC.

inanis (Thunb.) Oteng-Yeb.

Matjiesgoed, *matjiesriet* (A)

Perennial herb, 0.76–2.50 m high, long-rhizomatous, rhizome up to 20 mm in diam. **Leaves** with sheaths ± black; blades absent. **Culm** scapose, terete, up to 6 mm in diam.

Inflorescence a ± erect, narrow, elongated, branched panicle up to 150 × 38 mm. **Subtending bract** erect, sheathing, scale-like. **Spikelets** lanceolate-oblong, up to 12 × 2 mm, 12–24-flowered. **Glumes** lanceolate, ± 2.5–3.0 mm long, keel excurrent into awn up to 0.5 mm long. **Perianth** of 3–5 retrorsely scabrid bristles. **Flowering time** Oct.–Mar. **Nutlet** narrowly elliptical, ± 2.2–2.5 mm long (incl. beak), 3-angled, greyish brown, surface smooth (minutely reticulate). Marshy places in grasslands; Upper Karroo, Dry Highveld Grassland, Sub-Escarpment Grassland, Drakensberg Grassland (Oviston, Aliwal North District, Graaff-Reinet District, Gordonville Farm, Grootfontein, Mountain Zebra National Park, Queenstown District, Shiloh and Swart Kei River, Tarkastad District, Mount Hope Farm).

PYCREUS P.Beauv.

Species ± 70, ± cosmopolitan in warm moist areas; ± 15 in sthn Afr., N, B, LIM, NW, M, S, FS, KZN, L, NC, WC, EC.

1a Nutlet transversely muricate (see also P. unioloides*)*
2a Perennials

macranthus (Boeck.) C.B.Clarke

Perennial herb, long-rhizomatous, 0.05–0.76 m high. **Leaf blades** 2–4(–5) mm wide, flat, V-shaped or inrolled. **Culm** scapose, 3-angled, 1–2(–5) mm in diam. **Inflorescence** ± head-like, of 2–20 sessile or subsessile spikelets, often with 1 or 2 stalked clusters of sessile or subsessile spikelets added. **Subtending bracts** 2 or 3, leaf-like, erect to spreading. **Spikelets** often of unequal lengths in same head, compressed, lanceolate to linear, 5(–25) × 4.0–5.5 mm. **Glumes** ovate, lanceolate, 3–5 mm long, keel non-excurrent. **Flowering time** Dec., Jan., Apr., June. **Nutlet** obovate, 1.5 × 1 mm, biconvex (± spherical), black, surface transversely muricate, cells elongated lengthwise. Moist to marshy places, mostly in grasslands; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Maclear, uMzimkhulu and Bizana districts, Amatole Mts, Toise River Station, Stutterheim & Dohne, King William's Town, Amabele).

2b Annuals

rehmannianus C.B.Clarke

(occasionally regarded as a synonym of *P. flavescens*)

Annual herb, tufted, 0.12–0.25 m high. **Leaf blades** 1.2–1.8 mm wide, flat or V-shaped. **Culm** scapose, 0.8–1.5 mm in diam. **Inflorescence** ± head-like, 19–50 mm in diam., of 7–22 sessile or subsessile spikelets, often with 1–several, long-stalked clusters of spicately arranged spikelets added. **Subtending bracts** 3, erect to spreading, leaf-like. **Spikelets** compressed, linear-lanceolate, 5–11 × 2.2–3.0 mm. **Glumes** ovate, boat-shaped, 2.2 mm long, keel non-excurrent. **Flowering time** May. **Nutlet** obovate, incl. beak ± 1.2 mm long, biconvex (± spherical), shining black, surface transversely muriculate, cells elongated lengthwise. Temporary moist places; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad, Maclear District, Mthatha District, Nyutura).

1b Nutlet puncticulate or minutely reticulate
3a Plant stoloniferous; glumes sulcate (with discolorous linear to elliptical depression on each side of keel)

mundii Nees

Perennial herb, stems branching freely to form mat-like growth, often growing over water 0.15–0.76 m high. **Leaf blades** 2–4 mm wide, flat to V-shaped. **Culm** scapose,

3-angled, 0.8–1.5 mm in diam. **Inflorescence** a simple or compound anthela, occasionally reduced to 1 head, stalked clusters of ± 3–7 spicately arranged spikelets. **Subtending bracts** 3 or 4, lowest 50–100 mm long, leaf-like. **Spikelets** compressed, ovate to linear, 7–15 × 3 mm. **Glumes** lanceolate, 2.2–3.2 mm long, keel non-excurrent. **Flowering time** Oct.–Mar. **Nutlet** narrowly to broadly obovate, 1.0–1.6 mm long, biconvex (± 4-angled), dark reddish brown, surface puncticulate. Wet places; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland (Queenstown District, Lusikisiki District, Port St Johns, Alice, Toise River Station, Stutterheim District).

3b Plant rhizomatous or tufted; glumes not sulcate
4a Leaf blades and involucral bracts semi-terete (± C-shaped), ± filiform or wiry
5a Spikelets linear-lanceolate, 2.0–2.5 mm wide

cooperi C.B.Clarke

Perennial herb, forming large tufts, old leaf sheaths persisting as soft blackish fibres at base of plant, 0.25–0.35 m high. **Leaf blades** ± 1.2 mm in diam., semi-terete (± C-shaped), wiry. **Culm** scapose, 1.0–1.5 mm in diam. **Inflorescence** occasionally head-like, a compound anthela of several shortly stalked (occasionally long-stalked) clusters of spicately arranged spikelets. **Subtending bracts** 3, lowest much longer than inflorescence, leaf-like (wiry). **Spikelets** ± compressed, linear-lanceolate, 8–12 × 2.0–2.5 mm. **Glumes** closely imbricate, ± lanceolate, 3.0–3.8 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** Nov., Dec. **Nutlet** obovate, apiculate, 1.3 × 0.8 mm, hardly compressed, brown. Moist places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Maclear District, Houtbosfontein, Bizana District, Hogsback).

5b Spikelets ovate-lanceolate, 4–5 mm wide

nigricans (Steud.) C.B.Clarke

Perennial herb, tufted, up to 0.6 m high, old leaf sheaths persisting as soft brown to black fibres at base of plant. **Leaf blades** shorter than culm, ± 0.8 mm in diam., semi-terete (± C-shaped). **Culm** scapose, 3-angled, 0.8–1.0 mm in diam. **Inflorescence** head-like, of 2–8 sessile or subsessile spikelets. **Subtending bracts** 3, lowest longer than inflorescence, erect to suberect, leaf-like (wiry). **Spikelets** ± compressed, of variable length in same inflorescence, ovate-lanceolate, 8–16 × 4–5 mm. **Glumes** imbricate, lanceolate, 4–5 mm long, keel non-excurrent. **Flowering time** Sept., Feb. **Nutlet** broadly obovate, incl. beak 1.3–1.8 × 1 mm, biconvex, dark reddish brown to ± black, surface minutely reticulate. Moist places; Indian Ocean Coastal Belt, Drakensberg Grassland (Mkambati Nature Reserve, Amatole Mts).

4b Leaf blades and involucral bracts flat to V-shaped (occasionally inrolled, appearing C-shaped)
6a Spikelets linear-lanceolate
7a Inflorescence a dense head-like cluster of very many spikelets, often with 1–few spreading, stalked brush-like clusters added

polystachyos (Rottb.) P.Beauv.

Perennial herb, tufted, 0.15–1.10 m high. **Leaf blades** 1–5 mm wide. **Culm** scapose, 3-angled, 1–3 mm in diam. **Inflorescence** head-like, of many, densely packed, sessile

or subsessile spikelets. **Subtending bracts** 3–5, lowest 50–150 mm long, leaf-like. **Spikelets** compressed, 6–18 × 1.5–2.0 mm. **Glumes** closely imbricate, lanceolate, 1.5–2.0 mm long, keel excurrent into minute point. **Flowering time** Oct.–May. **Nutlet** oblong, 0.8–1.2 × 0.3–0.5 mm, lenticular, reddish brown appearing grey, surface puncticulate. Moist places, mostly at lower altitudes; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve and Gonubie Nature Reserve southwards to Sandflats, from Groendal Wilderness Reserve and Swartkops E to Grahamstown, Alexandria District, Fish River Mouth and East London District, also Tsitsikamma Coastal National Park).

7b Inflorescence an anthela, spikelets spicately arranged

intactus (Vahl) J.Raynal

Perennial herb, forming small tufts, 0.30–0.65 m high. **Leaf blades** 2.5–5.0 mm wide, flat, flaccid. **Culm** scapose, 3-angled, 0.7–3.0 mm in diam. **Inflorescence** a compound anthela, stalks short to long, with few spicately arranged spikelets at ends of stalks. **Subtending bracts** leaf-like, spreading, the largest 150–400 mm long. **Spikelets** linear-lanceolate, 9–18 × 2.2–2.5 mm. **Glumes** distant, lanceolate, 2.8–3.5 mm long, keel excurrent into minute point. **Flowering time** Dec. **Nutlet** ± oblong, 1.8 × 1 mm, biconvex (irregularly 3-angled), reddish brown, surface puncticulate. Moist places; Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Mkambati Nature Reserve, Port St Johns, The Haven, Qora River Mouth, Kei River Mouth).

6b Spikelets ovate
8a Old leaf bases persisting as soft blackish fibres at base of plant

oakfortensis C.B.Clarke

Perennial herb, tufted, 0.12–0.63 m high, old leaf bases persisting as soft blackish fibres at base of plant. **Leaf blades** 3.0–4.2 mm wide, flat to V-shaped. **Culm** scapose, 3-angled, 1.2–1.8 mm in diam. **Inflorescence** occasionally head-like, a compound anthela of several shortly stalked (occasionally long-stalked) clusters of spicately arranged spikelets. **Subtending bracts** 3. **Spikelets** compressed, ovate, 6–11 × 3.2 mm. **Glumes** boat-shaped, ± 3 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** Oct. **Nutlet** elliptical to broadly obovate, 1.0–1.2 mm long, biconvex (± 4-angled), dark brown, surface reticulate. Moist places; Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Mkambati Nature Reserve, Bizana District, Komga, Kentani).

8b Old leaf bases not persisting as soft blackish fibres
9a Rhizome stout (± 3–5 mm in diam.), vertical to subvertical

nitidus (Lam.) J.Raynal

Perennial herb, 0.2–0.5 m high, long-rhizomatous, leaves typically with sheaths underground and only blades emerging from substrate. **Leaf blades** 2–5 mm wide, flat. **Culm** scapose, 3-angled, 1.8–2.2 mm in diam. **Inflorescence** occasionally head-like, an anthela of shortly stalked (occasionally long-stalked) clusters of 3–9 spicately arranged spikelets. **Subtending bracts** 3 or 4, lowest 75–200 mm long, longer than inflorescence, leaf-like. **Spikelets** compressed, oblong-lanceolate, 8–18 × 3–4 mm. **Glumes** lanceolate with obtuse apex, 3.2–3.8 mm long, keel non-excurrent. **Flowering time** Oct., Nov. **Nutlet** obovate, 1.2 × 0.6–0.7 mm, biconvex, dark reddish brown, surface minutely reticulate. Marshy places; Indian Ocean Coastal Belt, Sub-Escarpment Savanna,

Eastern Fynbos-Renosterveld, Albany Thicket (Mkambati Nature Reserve to Mzamba River Mouth, Kentani, Kareedouw, Suurberg, Van Stadens Mts, Port Elizabeth aqueducts, Howison's Poort, Grahamstown).

9b Rhizome slender, ± horizontal
10a Glume bases gaping at maturity

chrysanthus (Boeck.) C.B.Clarke

Perennial herb, up to 0.75 m high, long-rhizomatous, rhizome slender, ≤ 1.5 mm in diam. **Leaf blades** 4–5 mm wide. **Culm** scapose, 3-angled, 3 mm in diam. **Inflorescence** a simple anthela of shortly to long-stalked clusters of 6–16 spicately arranged spikelets. **Subtending bracts** 3 or 4, lowest 75–200 mm, leaf-like. **Spikelets** much compressed, when mature with bases of glumes ± distant, exposing rachis, oblong-lanceolate, 10–24 × 4 mm. **Glumes** lanceolate, 3.5 mm long, keel excurrent into minute point or awn up to 0.2(–0.5) mm long. **Flowering time** Mar. **Nutlet** obovate, 1.5 mm long, biconvex (irregularly sulcate), dark reddish brown, surface minutely reticulate. Moist places; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Msikaba River, near Alice).

10b Glume bases ± imbricate at maturity
11a Spikelets 2.5 mm wide; glume flanks dark reddish brown to ± black

betschuanus (Boeck.) C.B.Clarke

Perennial herb, up to 0.22 m high, long-rhizomatous, rhizome slender, ≤ 1.5 mm in diam. **Leaf blades** shorter than culms, sometimes very short or absent, 1.2–1.8 mm wide, flat or inrolled. **Culm** scapose, 3-angled, 1.0–1.3 mm in diam. **Inflorescence** head-like, of 3–10 sessile or subsessile spikelets, occasionally with 1–few, stalked clusters of spikelets added. **Subtending bracts** 3, lowest 50–100 mm long, erect, leaf-like. **Spikelets** compressed, oblong-lanceolate, 7–14 × 2.5 mm. **Glumes** ± imbricate, lanceolate, 2.0–3.5 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** Jan. **Nutlet** narrowly obovate, 1.3–1.6 mm long, biconvex (or irregularly 4-angled), dark reddish brown, surface minutely reticulate. Moist places; Drakensberg Grassland (Amatole Mts).

11b Spikelets 4 mm wide; glume flanks golden yellowish brown, occasionally lightly tinged with red

unioloides (R.Br.) Urb.

Perennial herb, tufted, 0.35–0.70 m high. **Leaf blades** 2–6 mm wide. **Culm** scapose, sharply 3-angled, 0.8–1.8 mm in diam. **Inflorescence** head-like, of 3–10 sessile or subsessile spikelets, often with 1–few shortly or long-stalked clusters of 4–10 spicately arranged spikelets added. **Subtending bracts** 3, lowest 75–250 mm long, leaf-like, largest 80–350 mm long. **Spikelets** compressed, ovate, 8–17 × 4–5 mm. **Glumes** broadly lanceolate, 3–4 mm long, keel non-excurrent or excurrent into minute blunt point. **Flowering time** Dec.–Feb. **Nutlet** broadly obovate, 0.8–1.0 × 0.7–0.8 mm, biconvex, dark reddish brown, surface minutely reticulate, cells slightly elongated lengthwise. Moist places; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Mount Fletcher and uMzimkhulu districts, Cedarville, Baziya, between Mthatha and St. Johns Rivers, Klipplaat River, Stutterheim, Kei River Mouth).

RHYNCHOSPORA Vahl

Species ± 250, cosmopolitan, mainly Americas; ± 8 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, WC, EC.

1a Inflorescence of (1–)several globose heads; glumes pale golden-brown (whitish green when young)

holoschoenoides (Rich.) Herter

Perennial herb, 0.27–1.21 m high, long-rhizomatous. **Leaf blades** 2.5–3.5 mm wide. **Culm** nodose, 3-angled, 1.8 mm in diam. **Inflorescence** an anthela, heads 8–15 mm in diam., with many crowded spikelets. **Subtending bracts** 3, lowermost erect, leaf-like. **Spikelets** lanceolate, 4–5 mm long, ± 3-flowered, lower 1 or 2 flowers bisexual, upper 1 or 2 flowers male. **Glumes**: fertile lanceolate, 4–5 mm long, keel non-excurrent or excurrent into very short awn. **Perianth** of 6 antrorsely scabrid light brown bristles longer than nutlet, persistent on nutlet after dispersal. **Flowering time** Dec., Jan. **Nutlet** obovate, excluding style base 2 mm long, biconvex, brown, shoulders antrorsely scabrid, crowned with persistent, whitish, scabrid style base, surface very finely rugose. Moist places at low altitude; Indian Ocean Coastal Belt (Transkei Coast: between Port St Johns and Msikaba Rivers, Msikaba, Mkambati Nature Reserve).

1b Inflorescence paniculate; glumes light to dark reddish brown
2a Large robust plants; leaf blades 6–18 mm wide

spectabilis Hochst.

Perennial herb, tufted, robust, 1.0–1.8 m high. **Leaf blades** 6–18 mm wide, flat. **Culm** nodose, 3-angled, 2–3 mm in diam. just below inflorescence. **Inflorescence** an oblong panicle up to 300 mm long, individual units corymb-like, of dense clusters of many spikelets. **Subtending bracts** 1 per node, leaf-like but with margins scabrid. **Spikelets** lanceolate, 10 mm long, ± 4-flowered, lowermost flower bisexual, upper 3 male. **Glumes**: fertile lanceolate, ± 10 mm long, keel minutely excurrent. **Perianth** of (5)6 antrorsely scabrid light brown bristles longer than nutlet, persistent on nutlet after dispersal. **Flowering time** Nov. **Nutlet** elliptical, excluding style base 5 × 3 mm, biconvex (irregularly sulcate), brown, crowned with persistent overgrown whitish style base, surface minutely reticulate. Marshy places; Indian Ocean Coastal Belt (Transkei Coast: Cutweni, Mkambati Nature Reserve).

2b Slender plants; leaf blades ≤ 3 mm wide
3a Units of inflorescence dense, clusters of spikelets corymb-like, wider than high

barrosiana Guagl.

Perennial herb, tufted, 0.3–1.0 m high. **Leaf blades** flat. **Culm** nodose, 3-angled, 1.25–1.50 mm in diam. at middle. **Inflorescence** terminal, of clusters of many spikelets. **Subtending bracts** of 1–3 terminal, corymb-like units, conspicuous, longer than inflorescence, leaf-like. **Spikelets** lanceolate to elliptical, 4.5–5.3(–8.0) × (1.6–)2.2–2.5 mm. **Glumes**: fertile boat-shaped, 2.7–3.0 mm long, midrib non-excurrent or excurrent into awn up to 0.6 mm long. **Perianth** of 6 brownish, antrorsely scabrid bristles, shorter or longer than nutlet (excluding style base), persistent on nutlet after dispersal. **Flowering time** Nov. **Nutlet** elliptical to obovate, excluding style base 1.8–2.0 × 1.0–1.2 mm, biconvex, yellow-brown to chestnut-brown, crowned with persistent, whitish to greyish style base, surface transversely rugose. Marshy places in grassland; Indian Ocean Coastal Belt (Transkei Coast: Tracor, Mkambati Nature Reserve, Mateku, Bizana District, Sea View).

3b Units of inflorescence lax, clusters of spikelets usually longer than wide

brownii Roem. & Schult.

Perennial herb, tufted, 0.5–1.3 m high. **Leaf blades** 1–3 mm wide, flat. **Culm** nodose, 3-angled, ± 1.25 mm in diam. **Inflorescence** a slender panicle of discrete units from upper 3–5 culm nodes, non-corymb-like, of few spikelets. **Bracts** 1 per node, leaf-like, inconspicuous. **Spikelets** elliptical, 3–6 × 1.2–2.1 mm. **Glumes**: fertile boat-shaped, 3.0–4.4 mm long, awn up to 0.6 mm long. **Perianth** of 6 bristles, shorter or longer than nutlet, persistent on nutlet after dispersal. **Flowering time** Nov.–May. **Nutlet** elliptical to obovate, excluding style base 2.0–2.2 × 1.2–2.0 mm, biconvex, yellow-brown to chestnut-brown, surface transversely rugose. Marshy places in grassland, ± at lower altitudes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Engcobo E to Msikaba, Mkambati Nature Reserve southwards, from Amatole Mts E to Kei River Mouth and from Storms River Forest Reserve to Howison's Poort and Grahamstown).

SCHOENOPLECTUS (Rchb.) Palla

Species ± 50, widely distributed in tropical and temperate regions; ± 18 in sthn Afr., widespread.

1a Annuals
2a Nutlets transversely rugose

leucanthus (Boeck.) J.Raynal

Annual herb, tufted, often ± prostrate, 0.02–0.1(–0.3) m high. **Leaf blades** absent to very short. **Culm** scapose, terete, 0.5–0.8 mm in diam. at middle. **Inflorescence** pseudolateral, up to 10 × 10 mm, a digitate cluster of 1–few spikelets. **Subtending bract** erect, continuing line of culm. **Spikelets** ovate, 3.5–5.0 × 1.5 mm (elongating in fruit but lower glumes abscising in age succession). **Glumes** ± boat-shaped, 1.5–1.8 mm long, keel non-excurrent or excurrent into ± 0.2 mm long awn. **Style branches** 3. **Perianth** absent. **Flowering time** Jan. **Nutlet** obovate, ± 1.2 × 1 mm, 3-angled, orange-brown to dark brown, surface transversely rugose (appearing muricate when young). Temporary moist places; Albany Thicket (Greater Addo Elephant National Park).

2b Nutlets ± smooth

pulchellus (Kunth) J.Raynal

Annual (or short-lived perennial?) herb, tufted, up to 0.3 m high. **Leaf blades** absent or uppermost up to 8 mm long. **Culm** scapose, ± terete, ± 1 mm in diam. **Inflorescence** pseudolateral, anthelate, of 4 or 5 unequally stalked clusters of spikelets (longest stalk ± 10 mm). **Subtending bract** erect, appearing as a continuation of culm, 40–130 mm long. **Spikelets** ovate to elliptic-ovate, 3.5–4.5 × 1.5–2.0 mm, many-flowered. **Glumes** boat-shaped, 1.4–1.7 × 0.9–1.5 mm, keel non-excurrent to excurrent into minute point. **Style branches** 3. **Perianth** absent (minute). **Flowering time** Jan. **Nutlet** ± obpyriform, incl. beak 0.7–1.0 mm × 0.5–0.6 mm, sharply 3-angled, shining blackish, surface ± smooth. Moist places; Albany Thicket (Bathurst District, near Fish River).

1b Perennials
3a Style branches 2
4a Culm sharply 3-angled

***triqueter** (L.) Palla

Perennial herb, up to 1.52 m high, long-rhizomatous (occasionally tufted). **Leaf blades** on upper sheaths well developed, up to 120 mm long. **Culm** scapose, sharply 3-angled,

3–7 mm in diam. at middle. **Inflorescence** pseudolateral, head-like, of 1–10 spikelets. **Subtending bract** erect, appearing as a continuation of culm, longer than inflorescence. **Spikelets** elliptical, 6–12 × 5–7 mm. **Glumes** ovate, 3–4 mm long, keel excurrent into awn up to 0.5(–1.0) mm long. **Style branches** 2. **Perianth** of 3–5 retrorsely barbed, brown bristles, usually longer than nutlet. **Flowering time** July, Jan. **Nutlet** elliptical to obovate, excluding beak 2.2–2.8 × (1.2–)1.5–1.8 mm, plano-convex, greyish brown to blackish, surface minutely reticulate. Marshy places; Upper Karoo, Albany Thicket (Aliwal North, Bushman's River Mouth).

4b Culm ± terete
5a Perianth bristles retrorsely barbed

***tabernaemontani** (C.C.Gmel.) Palla

Perennial herb, 0.8–2.0 m high, long-rhizomatous, occasionally tufted. **Leaf blades** absent or uppermost 1 or 2 very short, 10–15 mm long. **Culm** scapose, spongy (easily compressible), ± 10 mm in diam. at middle. **Inflorescence** pseudolateral, a simple or compound anthela, of few to several stalked and sessile clusters of spikelets, occasionally reduced and head-like. **Subtending bract** erect, appearing as a continuation of culm, shorter than inflorescence. **Spikelets** elliptical, 5–20 × 2–5 mm, many-flowered. **Glumes** ovate to oblong-ovate, 3–4 × 1.7–2.5 mm, keel excurrent into 0.25–0.50 mm long awn. **Style branches** 2. **Perianth** of 5 or 6 bristles, 2.3–2.9 mm long. **Flowering time** Dec., Jan. **Nutlet** obovate, incl. beak 2.4–3.0 × 1.3–1.8 mm, plano-convex, greyish brown to blackish; surface minutely reticulate. Marshy places; Upper Karoo, Sub-Escarpment Savanna (Grootfontein, Albany District, Strowan Farm).

5b Perianth bristles plumose

scirpoides (Schrad.) Browning

Perennial herb, 1–2(–3) m high, long-rhizomatous or tufted. **Leaf blades** absent. **Culm** scapose, terete, spongy, ± 7 mm in diam. **Inflorescence** pseudolateral, a compound anthela of many stalked clusters of spikelets each individually stalked. **Subtending bract** inconspicuous or well-developed, erect continuing line of culm, rigid with a spine-like tip, shorter or longer than inflorescence. **Spikelets** elliptical, 8–22 × 3–4 mm, lengthening with age. **Glumes**: fertile ovate to oblong-ovate, 3–4 × 2.5–3.0 mm, keel excurrent into minute recurved awn. **Style branches** 2. **Perianth** of 4 or 5 brown bristles, slightly longer than nutlet. **Flowering time** July. **Nutlet** broadly obovate, incl. beak 2.3–2.7 × 1.3–1.7 mm, plano-convex, black, surface very finely reticulate. Marginal to tidal estuaries and pans (halophyte); Indian Ocean Coastal Belt, Albany Thicket (Xolobeni, Kei River Mouth, Swartkops River Estuary).

3b Style branches 3
6a Basal (erect) bract much shorter than inflorescence

brachyceras (A.Rich.) Lye

Perennial herb, tufted, 0.5–1.6 m high. **Leaf blades** absent. **Culm** scapose, ± terete, 2–6 mm in diam. below inflorescence. **Inflorescence** pseudolateral, an anthela of 1–10 unequally stalked clusters of sessile spikelets, occasionally reduced, head-like. **Subtending bract** ± inconspicuous, erect, 15–35 mm long, much shorter than inflorescence. **Spikelets** ovate to cylindric, 5–8(–10) × 2–3 mm, many-flowered. **Glumes** boat-shaped, 3–4 × 2.0–2.5 mm, keel excurrent into 0.25–1.00 mm long awn. **Style branches** 3.

Perianth absent. **Flowering time** Dec. **Nutlet** obovate to broadly obovate, excluding beak 1.1–1.7 × 1.2 mm long, 3-angled, shining, dark brown or black, surface smooth or faintly rugulose. Marshy places in grasslands; Drakensberg Grassland (Mount Currie, Amatole Mts).

6b Basal (erect) bract greatly overtopping inflorescence
7a Epidermis of nutlet pericarp smooth (to very faintly rugulose)
8a Glumes lanceolate, 2.8–4.5 mm long

decipiens (Nees) J.Raynal

Perennial herb, 0.25–0.90 m high, long-rhizomatous or tufted. **Leaf blades** absent. **Culm** scapose, terete, 1.5–4.0 mm in diam. **Inflorescence** pseudolateral, an anthela of 1–3 unequally stalked clusters of 1–6 digitately arranged spikelets. **Subtending bract** erect, continuing line of culm, 20–90 mm long. **Spikelets** lanceolate, 5–10 × 3–5 mm, many-flowered. **Glumes** with keel excurrent. **Style branches** 3. **Perianth** of (0–)6 unequal, delicate, retrorsely scabrid bristles, 0.1–1.2 mm long. **Flowering time** Sept.–Apr. **Nutlet** obovate, excluding beak 1.3–1.9 mm × 0.9–1.3 mm, 3-angled, shining, dark brown. Marshy places at higher altitudes; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Oviston Reserve E to New England Station southwards, from Queenstown to Graaff-Reinet and Cookhouse, and from Greater Addo Elephant National Park to Port Elizabeth and Grahamstown).

8b Glumes boat-shaped, 1.9–2.8 mm long

paludicola (Kunth) J.Raynal

Steekbiesie, *steekrietjie* (A)

Perennial herb, tufted, 0.35–0.91 m high. **Leaf blades** absent. **Culms** scapose, ± terete, 2–3 mm in diam. **Inflorescence** pseudolateral, head-like, of many spikelets, or an anthela of 1–5 unequally stalked clusters of spikelets. **Subtending bract** erect, continuing line of culm, longer than inflorescence. **Spikelets** ovate, 4–6 × 2–3 mm, many-flowered. **Glumes** keel excurrent into 0.5 mm long awn. **Style branches** 3. **Perianth** of 5 or 6 retrorsely scabrid bristles. **Flowering time** Oct.–Mar. **Nutlet** broadly obovate, excluding beak 1.2–1.7 × 0.8–1.3 mm, 3-angled, shining black, surface smooth to very faintly rugulose. Marshy places; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Clydesdale and Kokstad southwards, from Lusikisiki to Port St Johns, from Somerset East to Morgan Bay and from Suurberg in Greater Addo Elephant National Park to Grahamstown).

7b Epidermis of nutlet pericarp muricate

muriculatus (Kük.) Browning

Perennial herb, tufted, 0.18–0.90 m high. **Leaf blades** absent. **Culms** scapose, terete, 1–2 mm in diam. **Inflorescence** pseudolateral, head-like, of many digitately arranged spikelets or an anthela of 1–5 shortly stalked clusters of spikelets. **Subtending bract** erect, 20–80 mm long, longer than inflorescence. **Spikelets** ovate, 4–6(–10) × 2–3 mm, many-flowered. **Glumes** boat-shaped, 2.3–2.6 × 1.5–2.3 mm, keel excurrent into awn up to 0.5 mm long. **Style branches** 3. **Perianth** absent. **Flowering time** Dec., Jan. **Nutlet** broadly elliptical to obovate, incl. beak 1.2–1.8 mm × 0.9–1.2 mm, 3-angled,

shining black, surface transversely muricate. Marshy places, mostly high altitude grasslands; Sub-Escarpment Grassland (Willeary Farm to Mount Currie and Kokstad, from W of Elliot to Lady Frere).

SCHOENOXIPHIUM Nees

Species ± 12, few in tropical Africa, widespread in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, WC, EC.

1a Inflorescence reduced, with 1st order female spikelets sessile on main axis

filiforme Kük.

Perennial herb, 0.16–0.30 m high, sparsely tufted to long-rhizomatous. **Leaf blades** shorter than culm, rigid, folded or inrolled (V- or C-shaped), ± 0.6 mm wide. **Culm** filiform, ± 3-angled, smooth, ± 0.8 mm in diam. **Inflorescence** 25–30 mm long. **Subtending bracts**: lowest ± inconspicuous, with sheath absent, base expanded, membranous and short leaf-like blade. **Spikelet bracts (glumes)**: female lanceolate, acuminate, 3.3–4.3 × 1.2–1.4 mm, golden-brown. **Perigynium** spreading at maturity, ± equalling bract, oblong-elliptic, ± 4 × 0.8–1.0 mm, 3-angled, nervose, green with rostrum margins golden-brown. **Rachilla** within 1st order female spikelets decreasing in complexity upwards, branched at base and bearing a variable number of 2nd order female and 1 male spikelet or absent. **Flowering time** Dec.–Mar. **Nutlet** oblong-elliptic, 2.5 × 0.9 mm, 3-angled, laterally concave. Seasonally wet alpine meadows; Drakensberg Grassland (Ben Macdhui to Doodmanskrans Mtn, S from Otto du Plessis Pass to Valetta Farm and to Groot Winterberg).

1b Inflorescence more complexly branched (paniculate)
2a Bracts subtending inflorescence branches not sheathing culm
3a Plants of low altitudes; leaf blades 2.0–4.5 mm wide

altum Kukkonen

Perennial herb, sparsely tufted, 0.50–0.75 m high. **Leaf blades** 3.0–4.5 mm wide, V-shaped. **Culm** nodose, 3-angled, 0.5–1.5 mm in diam. **Inflorescence** an interrupted panicle, branches ± 10, apical co-florescence 40–50 × 8–12 mm. **Subtending bracts**: lowest with sheath absent. **Spikelet bracts (glumes)**: female shorter than perigynium, lanceolate, 5–6 mm long. **Perigynium** shortly stalked, narrowly elliptic, 6.0–7.6 mm long (including 1.9–2.7 mm long rostrum), 3-angled, nervose, green. **Rachilla** 3.8–4.5 mm long. **Flowering time** Oct. **Nutlet** narrowly elliptic, 3.6–4.3 × 0.9–1.1 mm. Forest margins; Indigenous Forests (73 km W of Humansdorp).

3b Plants of high altitudes; leaf blades 1.0–1.5 mm wide

basutorum Turrill

Perennial herb, tufted, 0.30–0.51 m high. **Leaf blades** 1.0–1.5 mm wide, V-shaped. **Culm** nodose, 3-angled, 0.5–1.0 mm in diam. **Inflorescence** an interrupted panicle, apical co-florescence 25–45 × 7–15 mm. **Subtending bracts**: lowest with sheath absent. **Spikelet bracts (glumes)**: female shorter than perigynium, ovate, 5.7–6.3 × 0.8–1.0 mm. **Perigynium** narrowly elliptic, 6.5–7.0 × 0.8–1.0 mm (including 1.6–1.8 mm long rostrum), 3-angled, nervose, green, with rostrum margins golden-brown. **Flowering time** Dec. **Nutlet** narrowly elliptic, 4.5 × 0.7 mm. Rocky grasslands; Drakensberg Grassland (Qacha's Neck, Elandsberg).

2b Bracts subtending inflorescence branches sheathing culm for 10–60 mm
4a Robust plants, 0.3–1.2 m high; leaves 4.0–8.5 mm wide
5a Perigynium 3.2–4.5 mm long

rufum Nees
(including *S. dregeanum* Kunth = *S. burkei* C.B.Clarke)

Perennial herb, 0.3–0.9 m high. **Leaf blades** 4–6 mm wide, flat to V-shaped. **Culm** nodose, 3-angled, 1.5–2.0 mm in diam. **Inflorescence** an interrupted panicle, apical co-florescence ± 35 × 15 mm. **Subtending bracts**: lowest with sheath ± 30 mm long. **Spikelet bracts (glumes)**: female ovate, 3–4 × 1.6 mm, scabrid awn up to 2.5 mm long. **Perigynium** shortly stalked, elliptic, ± 4.5 × 1.6 mm (including ± 1 mm long rostrum), 3-angled, nervose, golden-brown. **Flowering time** Aug., Nov.–Feb., Apr. **Nutlet** elliptic, ± 2.8 × 1.5 mm, 3-angled, crowned by semi-persistent style base. Steep rocky slopes or in scrub-type vegetation on banks of watercourses in grasslands; Drakensberg Grassland; Sub-Escarpment Grassland (Joubertspas E to Kokstad southwards, from NW of Middelburg to Barkly Pass and from Mountain Zebra National Park to Donga Range).

5b Perigynium 5.4–9.0 mm long
6a Plants occurring on forest margins

lanceum (Thunb.) Kük.

Perennial herb, tufted, robust, 0.7–1.2 m high. **Leaf blades** 6.0–8.5 mm wide, flat to V-shaped. **Culm** nodose, 3-angled, 1.4–2.6 mm in diam. **Inflorescence** a large interrupted panicle, apical co-florescence ± 120 × 20 mm. **Subtending bracts**: lowest with sheath ± 60 mm long. **Spikelet bracts (glumes)**: female lanceolate, 6–8 × 0.7–1.1 mm, light brown to golden-brown. **Perigynium** stalked, narrowly oblong, 6–7 × 0.7–1.1 mm (including 0.9–1.5 mm long rostrum), nervose, green. **Flowering time** July. **Nutlet** narrowly oblong, ± 4 × 0.8 mm. Watercourses on forest margins; Indigenous Forests (Elandsbos River S to Witelsbos).

6b Plants occurring in rocky grassland

schweickerdtii Merxm. & Podlech

Perennial herb, tufted, robust, 1.2–1.4 m high. **Leaf blades** 7.5–12 mm wide, flat to V-shaped. **Culm** nodose, 3-angled, 2.5–5.0 mm in diam. **Inflorescence** an interrupted panicle, apical co-florescence 40–60 × 20–35 mm. **Subtending bracts**: lowest with sheath 50–60 mm long. **Spikelet bracts (glumes)**: female lanceolate, 5.6–8.4 × 1.8–2.0 mm, keel excurrent into long or short awn. **Perigynium** narrowly oblong, 5.6–9.0 × 0.7–2.0 mm (including 2–3 mm long rostrum), nervose, golden-brown. **Flowering time** Oct.–Dec. **Nutlet** linear-oblong, 4.2–5.2 × 0.6–1.6 mm, 3-angled. Steep rocky outcrops in grasslands; Drakensberg Grassland, Sub-Escarpment Grassland (cf. Satanna's Neck, above Mhlahlane Forest Station and Gaika's Kop).

4b Small or slender plants, 0.25–0.70 m high; leaves 0.5–4.0 mm wide
7a Plants 0.16–0.30 m high; culm ± 0.5 mm in diam.; leaves 0.5–1.2 mm wide

perdensum Kukkonen

Perennial herb, densely tufted, 0.25–0.30 m high. **Leaf blades** 0.5–1.2 mm wide, flat to V-shaped. **Culm** hidden among leaves, nodose, 2-angled below nodes, otherwise ± terete, 0.5–0.8 mm in diam. **Inflorescence** a slender interrupted panicle, apical co-florescence ± 10 mm long. **Subtending bracts**: lowest with sheath ± 28 mm long. **Spikelet bracts (glumes)**: female shorter than perigynium, ovate, 2–4 mm long, keel non-excurrent or excurrent into awn of variable length. **Perigynium** broadly elliptic,

± 2.7 × 1.7 mm (including 0.5 mm long rostrum), 3-angled, nervose, green. **Flowering time** Nov., Dec., Feb. **Nutlet** broadly elliptic, ± 2.2 × 1.7 mm. Steep rocky hillsides in grasslands; Drakensberg Grassland (WSW of Queenstown, near Ghulu Kop).

7b Plants 0.3–0.7 m high; culm 1.0–1.5 mm in diam.; leaves 2–4 mm wide
8a Perigynium stalked, 4.7–5.5 mm long, rostrum 1.5–2.0 mm long

lehmannii (Nees) Steud.

Perennial herb, sparsely tufted, 0.3–0.7 m high. **Leaf blades** 2.5–4.0 mm wide, flat to V-shaped. **Culm** nodose, 3-angled, 1.0–1.5 mm in diam. **Inflorescence** a slender interrupted panicle, apical co-florescence 7–25 × 5–7 mm. **Subtending bracts**: lowest with sheath ± 35 mm long. **Spikelet bracts (glumes)**: female shorter than perigynium, ovate, 2–3 × 0.9–1.8 mm, keel excurrent into 1.5–3.0 mm long awn. **Perigynium** stalked, lanceolate, 4.7–5.5 × 1.5–1.7 mm (including 1.5–2.0 mm long rostrum), 3-angled, nervose, green. **Flowering time** Aug.–Mar. **Nutlet** broadly elliptic, 2.5–3.2 × 1.4–1.5 mm, 3-angled. Forest margins and pathways, well shaded; Indigenous Forests (Pot River Berg to Insizwa, from Nqadu to Port St Johns, from Glen Avon to Morgans Bay and from Lottering to Fort Grey).

8b Perigynium ± sessile, 2.3–2.9 mm long, rostrum < 1 mm long

sparteum (Wahlenb.) C.B.Clarke
(including *S. bracteosum* Kukkonen, *S. caricoides* C.B.Clarke)

Perennial herb, sparsely tufted, 0.3–0.7(0.9) m high. **Leaf blades** 2–4 mm wide, V-shaped. **Culm** nodose, ridged, 3-angled, ± 1.0–1.5 mm in diam. **Inflorescence** a slender interrupted panicle, apical co-florescence 15–20 × 12–15 mm. **Subtending bracts**: lowest with sheath 10–35 mm long. **Spikelet bracts (glumes)**: female ovate, 3.0–4.5(5.4) × 1.0–1.7 mm. **Perigynium** broadly elliptic, 2.3–2.9 × 1.3–1.7 mm (including 0.1–0.8 mm long rostrum), 3-angled, nervose, green. **Flowering time** Aug.–Apr. **Nutlet** broadly elliptic, 1.9–2.3 × ± 1.6 mm, 3-angled. Rocky grasslands; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Joubertspas E to Bizana S, from Tiger Kloof to Mzamba River Estuary, from Mountain Zebra National Park to Komga, Joubertina to East London and to Humansdorp).

SCHOENUS L.

Species ± 100, widespread, but mainly Australia; 1 in sthn Afr., NW, M, FS, KZN, WC, EC.

nigricans L.

Black sedge

Perennial herb, tufted, 0.22–1.50 m high. **Leaves** with sheaths shining brown to blackish; blades 0.8–1.2 mm wide, channelled at base (C-shaped), solid, 3-angled towards apex. **Culm** scapose, terete, 1.0–1.7 mm in diam. **Inflorescence** head-like, ± 15 mm in diam., of up to 15 spikelets. **Subtending bracts** 2, erect, with brown, dilated bases partly enveloping inflorescence. **Spikelets** lanceolate, ± 12 mm long, lower 1–3 flowers bisexual, upper male. **Glumes** 2-ranked, lanceolate, 8–9 mm long, keel minutely scabrous towards apex, non-excurrent. **Perianth** of 3–5 minute bristles or absent. **Flowering time** July–Oct. **Nutlet** sessile or stalked, elliptic, 1.8 mm long, 3-angled, shining, white, surface smooth. Marshy places mainly near coast; Sub-Escarpment Savanna,

Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Komga to Kei River Mouth S, from Assegaaibos to Port Alfred and from Aston Bay to Sea View).

SCIRPOIDES Ség.

Species ± 5, cosmopolitan in temperate regions; ± 3 in sthn Afr., N, B, LIM, NW, M, FS, KZN, L, NC, WC, EC.

1a Leaf blades well developed

burkei (C.B.Clarke) Goetgh., Muasya & D.A.Simpson

Perennial herb, tufted, with hard stout bases, 0.45–0.75 m high. **Leaf blades** 1.2–1.8 mm wide, inrolled (C-shaped). **Culm** scapose, terete, smooth, 2.0–2.8(–4.0) mm in diam. at middle, ± 3-angled with scabrid angles below inflorescence. **Inflorescence** a compound umbel of 30–60 long-stalked, rounded clusters 7–10 mm in diam., each of 3–20 densely packed spikelets. **Subtending bracts** 4–8, much longer than inflorescence, leaf-like. **Spikelets** ovate, 3–4 × 2 mm. **Glumes** lanceolate, ± 2.2 mm long, keel excurrent into slightly recurved awn up to 0.5 mm long. **Flowering time** Dec. **Nutlet** elliptic to obovate, beaked, ± 0.8 mm long, 3-angled, black, surface minutely reticulate. Grasslands, especially in sandy disturbed places; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Willeary Farm SE to Port St Johns).

1b Leaf blades < 5 mm long
2a Inflorescence up to ± 25 mm in diam., of a single digitate cluster of 10–60 sessile spikelets

dioecus (Kunth) Browning

Perennial herb, tufted, 0.25–1.80 m high. **Leaf sheaths** dark reddish brown. **Culm** scapose, compressed-terete, 2–4 mm in diam., glabrous. **Inflorescence** a pseudolateral head, 5–25 mm in diam. **Subtending bract** 1, erect, sharply pointed, ± 30 mm longer than inflorescence. **Spikelets** oblong, up to 12 × 1.8 mm, on individual plants flowers either all male with abortive ovary, or all female with abortive anthers. **Glumes** broadly ovate when flattened, obtuse, 2.0–2.3 mm long, keel non-excurrent or excurrent into minute point. **Flowering time** July, Nov., Dec., Apr. **Nutlet** obovate, with small beak, 0.7–1.2 mm long, 3-angled, greyish brown at maturity, surface minutely reticulate. Marginal to brackish pans and lagoons; Upper Karoo, Albany Thicket (between Aliwal North and Kraai River S, from Middelburg to Tafelberg Station and from Graaff-Reinet S to Jansenville).

2b Inflorescence of 1–6 stalked plus 1 sessile clusters of spikelets, largest ± 10 mm in diam.

thunbergii (Schrad.) Soják

Perennial herb, tufted or with culms in a uniseriate row, 0.25–0.90 m high. **Leaf sheaths** up to 5, basal, tubular, with brown membranous sloping margins and inner sides contrasting with the green (stramineous when dry) outer sides and forming a distinctive pattern. **Leaf blades** absent (uppermost up to 5 mm long). **Culm** scapose, compressed-terete, 1.5–3.0 mm in diam. **Inflorescence** an open, pseudolateral anthela. **Subtending bracts** 2, ± inconspicuous. **Spikelets** ± ovate, 2–5 mm long. **Glumes** obovate, apex truncate, 1.8–2.5 mm long, keel shortly excurrent. **Flowering time** Oct.–Dec. **Nutlet** elliptic, shortly beaked, 0.8–0.9 mm long, 3-angled, dark reddish brown, surface minutely reticulate. Mostly littoral; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Kei River Mouth S, from Port Elizabeth to Port Alfred and S to Slang River Mouth).

SCLERIA P.J.Bergius

Species ± 250, ± cosmopolitan, in tropical and subtropical regions, except Europe, Mediterranean and Orient; 12 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, L, EC.

1a Inflorescence of terminal and lateral panicles (rarely a solitary terminal panicle); bracts foliaceous; hypogynium present
2a Leaf lamina abruptly narrowed towards apex (praemorse)

angusta Kunth

Perennial herb, long-rhizomatous, 1.37–1.98 m high. **Leaves** with sheaths glabrous or densely villous below mouth, mouth prolonged into deltoid-rounded tongue 2–5 mm long; blades unequally laterally praemorse distally, 6–16 mm wide. **Culm** nodose, glabrous below, hirsute above. **Inflorescence** paniculate. **Subtending bracts** foliaceous. **Male spikelets** sessile or subsessile, 3.5–4.0 mm long, glumes pale brown with reddish striae, keels and distal margins hispidulous. **Female glumes** 3.0–3.5 mm long, glabrescent or hispidulous on keels and distal margins, pale brown with darker reddish streaks. **Flowering time** Dec., Jan. **Nutlet** ovate to broadly elliptic, 2.3–3.5 mm long, shining, violet or purple, surface glabrous, smooth. **Hypogynium** obscurely 3-lobed with fimbriate margins, brown. Shaded places on swamp forest margins; Indigenous Forests (Mkambati Nature Reserve to Mzamba River Estuary).

2b Leaf lamina tapering smoothly towards apex
3a Nutlet epidermis patterned

natalensis C.B.Clarke

Perennial herb, tufted, 0.53–1.00 m high. **Leaves**: sheaths with mouths produced into deltoid-rounded tongue 2–5 mm long with membranous extension 1 mm long; blades ensiform, glabrous, 4–11 mm wide. **Culm** nodose, bases 2–4 mm in diam., glabrous. **Inflorescence** paniculate with terminal panicle 25–65 × 15–20 mm and smaller lateral panicles (1)2–4 per node at 2 or 3 nodes exserted 30–230 mm from sheaths. **Subtending bracts** foliaceous, ensiform. **Male spikelets** sessile or pedicellate, 4–6 mm long, glumes stramineous with fine reddish striae, glabrescent. **Female glumes** 4–5 mm long, awn ± 1 mm long. **Flowering time** (Aug.) Dec.–May. **Nutlet** broadly elliptic, shortly beaked, 2.5 mm long, obtusely 3-angled, brownish white, surface reticulate-lacunose to tuberculate-lacunose. **Hypogynium** obtusely 3-lobed, stramineous. Shaded moist forest margins; Indigenous Forests (Egoso Forest to Umtamvuna Pont, S to Witelsbos and Witteklipbos).

3b Nutlet epidermis smooth
4a Panicles lax, much branched; female glumes 6–7 mm long

greigiifolia (Ridl.) C.B.Clarke

Perennial herb, 1.15–2.15 m high, tufted or long-rhizomatous. **Leaves** mostly crowded towards base of culm; sheaths with concave mouths, margins minutely ciliate; blades 5–12 mm wide, tapering smoothly towards apex (rarely unequally laterally praemorse), glabrescent or hispidulous. **Culm** nodose, glabrous. **Inflorescence** with lax, copious, terminal panicle ± 150 mm long and smaller lateral panicles 4–7 per node. **Subtending bracts** foliaceous. **Male spikelets** sessile to shortly pedicellate, ± 5 mm long, glumes reddish black proximally, castaneous distally, midrib hispidulous, margins setulose-ciliate. **Female glumes** similarly coloured, shortly awned, hispidulous, margins setulose-ciliate, upper surface distally with dense, upward-pointing hairs. **Flowering time** Apr. **Nutlet** broadly ovate, strongly beaked, 6 mm long, laterally compressed, shining, pale or pinkish

brown. **Hypogynium** unlobed, brown. Margins of swamp forests, lakes or watercourses near coast, in full sun; Indian Ocean Coastal Belt, Indigenous Forests (Msikaba Gorge).

4b Panicles compact, spike-like; female glumes 7–11 mm long

melanomphala Kunth

Perennial herb, 0.6–1.8 m high, tufted or long-rhizomatous. **Leaf sheaths** with mouths produced into convex tongue with pale, membranous margins; blades 7–15(–20) mm wide, glabrescent or sparsely villous; **Culm** nodose, glabrous or glabrescent. **Inflorescence** with terminal, ± spiciform panicle 30–90 (–110) mm long, smaller ± spiciform lateral panicles (0)1–3 at (0)1–3 nodes, exserted up to 300 mm from sheaths. **Subtending bracts** foliaceous. **Male spikelets** sessile or subsessile, 10–12 mm long, glumes red-brown or blackish red, hispidulous or villous on midrib. **Female glumes** red-brown or blackish red with green, hispidulous or villous keels, shortly awned. **Flowering time** Nov.–Mar. **Nutlet** ovate, 4.0–5.3 mm long, shining, grey or brown proximally, blackish distally, surface glabrous or proximally sparsely hairy, smooth. **Hypogynium** obscurely 3-lobed or unlobed, pale brown. Marshes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Lupatana, Mkambati Nature Reserve, Port St Johns S to Dwesa and near Kei River Mouth).

1b Inflorescence terminal, branched or simple; bracts glumaceous or the lower subfoliaceous; hypogynium absent
5a Inflorescence much branched, branches thin and flexible

woodii C.B.Clarke

Perennial herb with aerial parts annual, 0.25–0.75 m high, tufted or long-rhizomatous, rhizome tuberous, strongly scented. **Leaves**: sheaths with truncate or concave, glabrescent to densely hirsute mouths; blades 1–3 mm wide, V-shaped, glabrous or glabrescent. **Culm** nodose, solitary or few, clustered, glabrous or glabrescent. **Inflorescence** paniculate, delicate, 80–200 mm long, glomerules 1–4 per branch, sessile, of 1–6 spikelets. **Subtending bracts** shorter than or exceeding glomerules, with scabrid awn 1–10 mm long. **Spikelets** 2.5–5.0 mm long. **Glumes** 2.5–4.5 mm long, glabrous, shortly awned, pale red with darker red striae. **Flowering time** Nov.–Mar. **Nutlet** ovate to broadly elliptic, 1.5–1.8 mm long, grey, surface glabrous, smooth, tuberculate or trabeculate, even on same plant. Seasonal marshes and seepages; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Lusi River Road S, from Aubigny to Mkambati Nature Reserve and from Dohne to Kentani).

5b Inflorescence simple or few-branched, branches stronger
6a Rhizome ± descending, very slender, terminating in a swollen tuber up to 10 mm long

dieterlenii Turrill

Perennial herb with annual aerial parts, up to 0.3 m high. Leaves: sheaths with truncate or concave, villous mouths; blades 1.0–2.5 mm wide, flanged V-shaped, glabrous or sparsely villous. **Culm** nodose, glabrous or sparsely villous. **Inflorescence** unbranched, rarely with 1 basal branch, 20–80 mm long, glomerules 3–8, of 1–8 sessile spikelets. **Subtending bracts** awned, shorter than or exceeding glomerules, lowermost subfoliaceous, 25–40 mm long. **Spikelets** 4–5 mm long. **Glumes** 2.5–4.5 mm long, sparsely or densely villous, shortly awned, orange-brown with red striae. **Flowering time** Dec., Jan. **Nutlet** subglobose, 1.3–1.8 mm long, grey with trabeculae light reddish gold-coloured, surface glabrous, trabeculate-verrucose. Mostly montane seasonal

marshes and banks of watercourses in full sun; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Katkop S to Pomona Farm and Mkambati Nature Reserve).

6b Rhizome ± horizontal, not swollen and tuberous
7a Glomerules (spikelet clusters) reflexed at maturity; glumes densely hirsute

distans Poir.

Perennial herb, with annual aerial parts, 0.19–0.59 m high. **Leaves**: sheaths with mouths truncate or convex, villous; blades 1.5–5.0 mm wide, flanged V-shaped, glabrous to villous. **Culm** nodose, glabrous or angles sparsely hirsute, bases sometimes thickened up to 7 mm in diam. **Inflorescence** unbranched, 25–85 mm long, glomerules 3–7, of 2–7 sessile or subsessile spikelets. **Subtending bracts** densely pale reddish or blackish ciliate, awned, 4–12 mm long. **Spikelets** 4–5 mm long. **Glumes** 2–5 mm long, awned, pale with red streaks. **Flowering time** Oct.–Dec. **Nutlet** ovate to broadly elliptic, 1.2–1.5 mm long, grey or grey-brown, surface glabrous, smooth or lightly tuberculate. Marshes in full sun; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Mtentu River Gorge S to Kei River Mouth).
May be confused with *S. aterrima* (Ridl.) Napper.

7b Glomerules (spikelet clusters) not reflexed at maturity; glumes glabrous or sparsely hairy
8a Culm bases distinctly swollen, bulb-like

bulbifera A.Rich.

Perennial herb with annual aerial parts, 0.2–0.6 m high, long-rhizomatous. **Leaves**: sheaths with mouth concave, truncate, or produced into short membranous tongue; blades 1–5(9) mm wide, flanged V-shaped, glabrous or hirsute. **Culm** nodose, woody, up to 12 mm in diam., glabrous or hairy above. **Inflorescence** unbranched or branched, 20–200 mm long, glomerules 3–17, of 1–12 sessile spikelets. **Subtending bracts** awned, equalling or up to 2× length of glomerule, or lowest subfoliaceous, up to 30 mm long. **Spikelets** 4.0–6.5 mm long. **Glumes** 2–5 mm long, awned, dark reddish brown. **Flowering time** Nov.–Feb. **Nutlet** broadly elliptic, 1.6–2.0 mm long, glabrous, grey or light brown, surface smooth or lightly or strongly tuberculate or trabeculate. Seasonally moist grasslands in full sun; Drakensberg Grassland, Indian Ocean Coastal Belt (Maclear to Kokstad, from Mtentu River Gorge to Mkambati Nature Reserve).

8b Culm bases not swollen
9a Culms ± clustered, rhizome with very short internodes; soft, short soboles sometimes present

dregeana Kunth

Perennial herb with annual aerial parts, ± tufted, 0.2–0.8 m high. **Leaves**: sheaths with mouth truncate, villous below; blades 1–3 mm wide, flanged V-shaped, glabrescent or hirsute. **Culm** nodose, glabrous or glabrescent. **Inflorescence** unbranched or branched, 10–100 mm long, glomerules 1–11 per branch, of 1–8 sessile or subsessile spikelets. **Subtending bracts** aristate, equalling glomerules or lowermost up to 35 mm long. **Spikelets** 4.5–6.0 mm long. **Glumes** 2.25–5.00 mm long, glabrous or sparsely ciliate, shortly awned, blackish red, red-brown or pale with red streaks. **Flowering time** Feb. **Nutlet** ovate, narrowly or broadly elliptic, 1.5–2.0 mm long, grey, surface glabrous, smooth or tuberculate or trabeculate towards apex, smooth at junction of stipe and body. Marshes and banks of watercourses in full sun; Drakensberg Grassland, Sub-Escarpment Savanna (Katberg to near Komga).

9b Culms 5–7 mm distant, arising in a ± straight series from a hard horizontal rhizome at least 2 mm in diam.

welwitschii C.B.Clarke

Perennial herb with annual aerial parts, up to 0.48 m high, long-rhizomatous. **Leaves**: sheaths with mouth produced into triangular or rounded, villous or glabrescent tongue 1–2 mm long; blades 2–3 mm wide, flanged V-shaped, glabrous to villous. **Culm** nodose, villous to glabrescent. **Inflorescence** branched or unbranched, (60–)150–250 mm long, drooping; glomerules (1–)3–8 per branch, of 1 or 2(–6) sessile spikelets. **Subtending bracts** shortly awned, shorter than glomerules. **Spikelets** 5–8 mm long. **Glumes** 3–5 mm long, glabrous or minutely hispidulous distally, shortly awned, pale stramineous with faint reddish streaks. **Flowering time** Feb. **Nutlet** elliptic to ovate, 1.5–1.8 mm long, grey, surface glabrous, smooth. Bogs or permanent marshes; Sub-Escarpment Grassland (N of Kokstad).

TETRARIA P.Beauv.

Species ± 50, few in Australia and New Zealand, few in tropical Africa, mainly sthn Afr., mostly WC, few extending through EC to KZN and M.

1a Culm scapose
2a Leaf sheaths and inflorescences viscid

compar (L.) T.Lestib.

Perennial herb, tufted, 0.20–0.75 m high. Leaves: sheaths entire, ridged, yellowish brown to red; blades thick, rigid, 1.0–1.2 mm wide, C-shaped. **Culm** ridged, terete, 1.2–1.8 mm in diam. **Inflorescence** head-like or a reduced, compact panicle of 1 or 2 (or more) sessile clusters at culm apex, of 6–15 erect spikelets (sometimes reduced to 1–3), 25–50 × 12.5 mm. **Subtending bracts** leaf-like, not dilated or sheathing at base, longer than spikelets. **Spikelets** flattened, lanceolate, 8.0–12.5 × 4 mm, with glumes ± 2-ranked. **Glumes**: fertile viscid, lanceolate, ± 7 mm long, keel non-excurrent. **Perianth** of 5 or 6 short, linear bristles. **Flowering time** Nov., Mar. **Nutlet** elliptic, excluding style base ± 3.5 mm long, obscurely 3-angled, light brown, crowned by large, conical, glabrous style base, surface with angles thickened, otherwise minutely trabeculate. Sandy flats; Eastern Fynbos-Renosterveld (near Joubertina).

2b Leaf sheaths and inflorescences not viscid
3a Spikelets large
4a Bases of bracts subtending inflorescence hardly dilated

brachyphylla Levyns

Perennial herb, tufted, up to 0.6 m high. Leaves: sheaths entire, ± smooth, shining, brownish red; blades ± 0.8 mm wide, shallowly C-shaped. **Culm** scapose, rigid, terete, ± 1.2 mm in diam. **Inflorescence** a reduced, compact panicle of 3–6 groups of erect spikelets at culm apex, each group of 1 sessile and 1 shortly stalked spikelet per branch. **Subtending bracts** blades leaf-like, longer than spikelets. **Spikelets** flattened, lanceolate, ± 10 mm long, with glumes ± 2-ranked. **Glumes**: fertile lanceolate, ± 6 mm long, keel non-excurrent or excurrent into minute point. **Perianth** of 5 or 6 short, linear bristles. **Flowering time** Aug. **Nutlet** elliptic, excluding style base ± 3 mm long, obscurely 3-angled, light brown, crowned by large, dark, conical, glabrous style base, surface with angles thickened, otherwise minutely trabeculate. Coastal dunes; Albany Thicket (Port Elizabeth).

4b Bases of bracts subtending inflorescence much dilated, with broad scarious margins

sp. A (= *Scharf* 1324)

Perennial herb, tufted, 0.4–0.6 m high. **Leaves**: sheaths reddish with broad, whitish, scarious, indurated margins; blades rigid, 1.0–1.8 mm wide, shallowly C-shaped, apex obtuse. **Culm** scapose, ridged, terete, 1.5–2.0 mm in diam. **Inflorescence** a reduced panicle of 3–6 groups of erect spikelets at culm apex, each group of 1 sessile and 1 shortly stalked spikelet. **Subtending bracts** with leaf-like blades. **Spikelets** ± flattened, lanceolate, ± 14 mm long. **Glumes**: fertile lanceolate, ± 11 mm long, keel non-excurrent. **Perianth** of 5 or 6 short, linear bristles. **Flowering time** Sept.–Nov., Jan., Feb., Apr.–June. **Nutlet** elliptic, excluding style base 4 mm long, light brown; style base large conical, surface minutely reticulate. Mountain slopes, fixed dunes, sandy soils; Albany Thicket, Eastern Fynbos-Renosterveld (Kromrivier to Bushman's River Poort and Hopewell S, from Kareedouw to Humansdorp).

3b Spikelets small
5a Spikelets 1-flowered

cuspidata (Rottb.) C.B.Clarke
[complex, including *T. galpinii* Schönland & Turrill (spikelets abnormal?)]

Perennial herb, tufted, 0.01–0.80 m high. Leaves: sheaths entire, dark red; blades 1.0–1.2 mm wide, C-shaped. **Culm** scapose, rigid, 1–2 mm in diam. **Inflorescence**: panicle reduced or highly branched, (20–)40–100 mm long, spikelets few to many. **Subtending bracts** with bases only slightly dilated, distinctively dark reddish brown, extended apex green, leaf-like. **Spikelets** ± flattened, broadly lanceolate, ± 6 mm long. **Glumes**: fertile lanceolate, ± 5 mm long, keel non-excurrent. **Perianth** absent. **Flowering time** all year. **Nutlet** broadly elliptic, excluding style base 1.5–1.8 mm long, 3-angled, light brown; style base high pyramidal hispid, surface minutely reticulate. Moist rocky slopes, watercourses; Drakensberg Grassland, Sub-Escarpment Savanna, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Bongolo Nek E to Mzamba southwards, from Koueveld Mts near Graaff-Reinet to Kei River Mouth, from Worlds View Farm to East London and from Witte Els Bosch to Cape St Francis and Humansdorp).

5b Spikelets 2-flowered

sylvatica (Nees) C.B.Clarke

Perennial herb, tufted, 0.3–0.7 m high. **Leaves**: sheaths reddish with broad, whitish, scarious, indurated margins; blades rigid, 1.25–1.50 mm wide, shallowly C-shaped, apex obtuse. **Culm** scapose, rigid, flattened-terete, up to 2.5 mm in diam. **Inflorescence** a panicle 30–50 × 8–15 mm. **Subtending bracts** with bases only slightly dilated, distinctively dark reddish brown, extended apex green, leaf-like. **Spikelets** ± flattened, ± 6 × 1.5 mm, lower male, upper bisexual. **Glumes**: fertile lanceolate, ± 5 mm long, keel non-excurrent. **Perianth** of several slender bristles or absent. **Flowering time** Aug., Sept. **Nutlet** elliptic, 2.8–3.0 mm long, 3-angled (± globose), yellowish; style base pyramidal hispid, surface with angles thickened, otherwise minutely reticulate. Coastal grasslands; Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Dwesa Forest Reserve to Kei River Mouth).

1b Culm nodose (or culm ± cryptic)
6a Sheaths of culm leaves dark brown to dark chestnut-red to black
7a Large plants; inflorescences large, branched; branches often pendulous
8a Spikelets ± 10 mm long, aggregated into dense rounded clusters ± 12–20 mm in diam.

bromoides (Lam.) Pfeiff.

Bergpalmiet (A)

Perennial herb, tufted, robust, with thickened hard bases, up to 2 m high. **Leaves**: sheaths reddish brown, old outer sheaths separating into net-like strips (cancellate); blades 2–4 mm wide, V-shaped. **Culm** terete, ± 4 mm in diam. **Inflorescence** an erect panicle, with 1–several, peduncled, dense, rounded clusters of spikelets from each node, clusters with many aristate secondary bracts. **Subtending bracts** sheathing culm, blade well developed at lower nodes. **Spikelets** lanceolate, ± 10 mm long; flowers 2, lower male, upper bisexual. **Glumes**: fertile lanceolate, 7 mm long, keel excurrent into 1 mm long awn. **Perianth** of 6 short, linear, ciliate bristles. **Flowering time** (Aug.) Nov.–Feb. **Nutlet** shortly stalked, elliptic, including stalk ± 4 mm long, yellowish brown; style base small, blackish, pyramidal, surface minutely reticulate. Mountain slopes, moist places; Eastern Fynbos-Renosterveld, Albany Thicket (Voorkloof, Louterwater, Suurberg in Greater Addo Elephant National Park and Waainek Farm S, from Witelsbos to Kromrivier Dam).

8b Spikelets (excluding long awns of lower sterile glumes)
± 7 mm long, aggregated into clusters of 1–4

involucrata (Rottb.) C.B.Clarke

Perennial herb, tufted, robust, hard bases thickened, up to 2.43 m high. **Leaves**: sheaths reddish brown, old outer sheaths cancellate; blades 2–4 mm wide, V-shaped. **Culm** nodose, terete, ± 4 mm in diam. **Inflorescence** a compound, often pendulous, ± diffuse panicle, with several peduncles from each node. **Subtending bracts** sheathing culm, blade well developed at lower nodes, dark brown. **Spikelets** elliptic. **Glumes**: sterile long-awned; fertile boat-shaped, ± 6.5 mm long, keel excurrent into ± 0.8 mm long awn. **Perianth** of 6 short, linear, ciliate bristles. **Flowering time** July–Oct., Apr., May. **Nutlet** elliptic, including stalk ± 4 mm long, yellowish; style base small, pyramidal, surface with angles thickened, otherwise minutely reticulate. Mountain slopes, in moist places; Eastern Fynbos-Renosterveld (Kareedouw Pass, Loerie, Otterford Forest Reserve and Witelsbos).

7b Small or slender plants
9a Backs of glumes scabrid
10a Leaves shorter than inflorescence; inflorescence
a slender panicle of many spikelets

capillacea (Thunb.) C.B.Clarke

Perennial herb, tufted, 0.30–0.45 m high. **Leaves**: sheaths chestnut-brown, old outer sheaths cancellate; blades setaceous, 0.5–1.0 mm wide. **Culm** nodose, terete, ± 1.2 mm in diam. **Inflorescence** a narrow, dense, erect panicle 100–150 × 8–12 mm. **Subtending bracts** sheathing culm, blade well developed at lowest node, dark brown to blackish. **Spikelets** narrowly elliptic, 6–7 mm long, 2-flowered, lower flower male, upper bisexual. **Glumes**: fertile distichous, lanceolate, ± 4.5 mm long, keel non-excurrent. **Perianth** absent. **Flowering time** Aug.–Feb., Apr., May. **Nutlet** ± 2.5 mm long, stalked, light brown; style base ± conical, surface wrinkled. Moist mountain slopes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Magwa to Mkambati Nature Reserve S, from Smutsberg, Joubertina, Kareedouw Pass and Patensie to Grahamstown and from Witelsbos to Humansdorp).

10b Leaves longer than inflorescence; inflorescence of few spikelets

pubescens Schönland & Turrill

Perennial herb, densely tufted, 0.03–0.08 m high. **Leaves**: sheaths golden-brown to reddish brown, old outer sheaths cancellate; blades 0.5 mm wide, C-shaped. **Culm** ± terete or 3-angled, 0.75 mm in diam. **Inflorescence** ± cryptic, a much-reduced panicle of (1–)3 sessile spikelets, 1 from each of uppermost nodes with lowermost remote from upper 2, ± 15 mm long. **Subtending bracts** sheathing culm, sheaths dark brown; blades leaf-like, green. **Spikelets** elliptic, 6–8 mm long; flowers 1 or 2, lower if present male, upper bisexual. **Glumes**: fertile lanceolate, 5.0–5.5 mm long, keel non-excurrent. **Flowering time** Apr. **Nutlet** obovate, ± 2.2 mm long, light greyish brown with large red spots in upper part; style base ± inconspicuous, surface hairy in upper part, otherwise minutely reticulate. Steep stony slopes; Albany Thicket (Skurwenek, Suurberg in Greater Addo Elephant National Park).

9b Backs of glumes glabrous
11a Glume margins with a dense, white, lanate fringe

fimbriolata (Nees) C.B.Clarke

Perennial herb, tufted, 0.3–0.4 m high. **Leaves**: sheaths light brown, old outer sheaths cancellate; blades setaceous, 0.5 mm wide, C-shaped. **Culm** nodose, ± filiform, 0.7 mm in diam. **Inflorescence** a narrow, interrupted, erect panicle 75–125 mm long, with 1 or 2 branches from each of upper (nearly all) nodes of culm, each sparsely re-branched and bearing a few spikelets. **Subtending bracts** sheathing culm, sheaths dark brown; blades leaf-like, green. **Spikelets** elliptic, 3.5 × 1.8 mm; flowers 2, lower male, upper bisexual. **Glumes**: fertile boat-shaped with obtuse apices, ± 3 mm long, keel non-excurrent. **Perianth** of ± 6 short, feathery, linear bristles. **Flowering time** Mar.–May. **Nutlet** elliptic, ± 2.2 mm long, mottled reddish brown; style base large, pyramidal, surface ± smooth. Mountain slopes; Albany Thicket, Eastern Fynbos-Renosterveld (Kromrivier, Groot Plaat and Waainek Farms, Walmer and Theescombe).

11b Glume margins glabrous or ciliolate
12a Inflorescence bracts conspicuous, bases broad, brown to blackish, partly enveloping clusters of spikelets, apices long-acuminate

fourcadei Turrill & Schönland

Perennial herb, tufted, with thickened hard bases, 0.5–0.8 m high. **Leaves**: sheaths dark brown to blackish, old outer sheaths cancellate; blades narrowly linear, 0.75 mm in diam., C-shaped. **Culm** nodose, erect, terete, 1.0–1.2 mm in diam. **Inflorescence** a reduced, slender, erect panicle with a short branch from each of upper few nodes, each sparsely re-branched and bearing a cluster of 2–4 spikelets. **Subtending bracts** sheathing culm, sheaths dark brown to blackish, extended tip leaf-like, green. **Spikelets** flattened, lanceolate, 9–11 mm long; flowers 2, bisexual. **Glumes**: fertile lanceolate, 8.0–8.5 mm long, keel excurrent into minute point. **Perianth** absent. **Flowering time** Nov.–Feb. (June). **Nutlet** elliptic, ± 4.5 mm long, light brown, shining; style base hairy pyramidal, surface hairy towards apex, ± wrinkled, minutely reticulate. Mountain slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Studtis, Kougakop to Cockscomb and Groendal Wilderness Reserve).

12b Inflorescence bracts inconspicuous
13a Flanks of fertile glumes appearing grey on upper part with well-defined marginal (–submarginal) brown stripe, keel non-excurrent

microstachys (Vahl) Pfeiff.

Perennial herb, tufted, 0.15–0.30 m high. **Leaves**: sheaths brownish, old outer sheaths cancellate; blades ± as long as culm, 1.5–1.8 mm wide. **Culm** nodose, obtusely 3-angled, 1.2–1.5 mm in diam. **Inflorescence** a ± dense, erect panicle 50–150 × 12–37 mm, with 1 or 2 branches from each of upper nodes of culm, each sparsely re-branched and bearing several spikelets. **Subtending bracts** sheathing culm, sheaths blackish; blades leaf-like, green. **Spikelets** ± lanceolate, 8–9 × 2.2 mm; flowers 2, lower male, upper bisexual. **Glumes**: fertile lanceolate, 7.0–8.8 mm long. **Perianth** ± 6 linear, scabrid bristles, slightly shorter than nutlet. **Flowering time** Oct., Nov. **Nutlet** 2.5–3.0 mm long, stalked, obovate, brown; style base small, pyramidal, surface hairy in upper part, minutely reticulate. Mountain slopes; Eastern Fynbos-Renosterveld (near Clarkson and Palmiet Vlei).

13b Flanks of fertile glumes brown (withering grey) without well-defined marginal stripe, keel excurrent into ± 1 mm long, slightly recurved awn

fasciata (Rottb.) C.B.Clarke

Perennial herb, tufted, 0.38–0.50 m high. **Leaves**: sheaths brown, old outer sheaths cancellate; blades setaceous, 0.7 mm wide, C-shaped. **Culm** nodose, terete, 1.0–1.2 mm in diam. **Inflorescence** a diffuse, slender panicle 100–200 mm long, with long, ± capillary branches, bearing few, solitary spikelets. **Subtending bracts** sheathing culm, sheaths dark brown to blackish, blade leaf-like, green. **Spikelets** lanceolate, 8–11 × 2 mm; flowers 2, lower male, upper bisexual. **Glumes**: fertile lanceolate, ± 7 mm long, keel excurrent into ± 1 mm long, slightly recurved awn. **Perianth** absent. **Flowering time** Aug. (very young), May. **Nutlet** (seldom collected) long-stalked, elliptic, including stalk ± 3.2 mm long, reddish brown; style base small, surface with angles thickened, wrinkled at top, otherwise minutely reticulate. Mountain slopes; Eastern Fynbos-Renosterveld (Hoëkop, Kromrivier and Armmansvriend).

6b Sheaths of culm leaves green (to light brown)
14a Inflorescence a dense panicle, spikelets many, closely packed
15a Spikelets lanceolate, 14–18 mm long

robusta (Kunth) C.B.Clarke
(including *T. compressa* Turrill)

Perennial herb, tufted, robust, 1.5–1.8 m high. **Leaves**: sheaths entire, firm; blades 6–8 mm wide, V-shaped. **Culm** nodose, 3-angled, 3.5–5.5 mm in diam. **Inflorescence** a dense, erect, compound panicle 300–450 × 25–37 mm, with 1 or 2 erect branches from each of upper nodes, bearing ± dense clusters of many spikelets. **Subtending bracts** sheathing culm; blades leaf-like, relatively short. **Spikelets** ± compressed, lanceolate, 14–18 mm long; flowers 2, lower male, upper bisexual. **Glumes**: fertile lanceolate, ± 13 mm long, keel excurrent into minute point. **Perianth** of variable number of small, linear, scabrid bristles. **Flowering time** (Oct.) Feb.–Apr. **Nutlet** elliptic, ± 5.5 mm long, shining, reddish brown, crowned by small style base, surface wrinkled. Moist slopes in deep soil; Albany Thicket, Eastern Fynbos-Renosterveld (Bakenkop, Cockscomb, Suurberg in Greater Addo Elephant National Park, Otterford, Frames Drift and Greenhills S to Kromrivier).

15b Spikelets elliptic, 7.0–8.5 mm long

secans C.B.Clarke

Bergklappers (A)

Perennial herb, tufted, robust, up to 2.5 m high. **Leaves**: sheaths entire, firm; blades abruptly narrowed above sheath to ± 2 mm wide with sharp, revolute margins. **Culm** nodose, 3-angled, 3.5–5.0 mm in diam. **Inflorescence** a dense, erect, compound panicle 300–400 × 12–25 mm, with 1 or 2 erect branches from each of upper nodes, bearing many clustered spikelets. **Subtending bracts** sheathing culm; blades leaf-like. **Spikelets** 2-flowered, lower male, upper bisexual. **Glumes**: sterile markedly long-awned; fertile lanceolate, 6–8 mm long, keel excurrent into minute point. **Perianth** of variable number of small, linear, scabrid bristles. **Flowering time** Aug., Sept., Dec., Mar.–May, July. **Nutlet** elliptic, ± 5.5 mm long, shining, reddish brown; style base small, surface wrinkled. Moist areas; Albany Thicket, Eastern Fynbos-Renosterveld (Hogsback S, from Bloukrans State Forest to Kareedouw Pass and Coldstream and from Witelsbos to Humansdorp).

14b Inflorescence a sparse panicle, spikelets 1–3 clustered together

triangularis (Boeck.) C.B.Clarke

Perennial herb, tufted, base mucilaginous within, up to 0.6 m high. **Leaves**: sheaths stout, not torn; blades ± 6 mm wide, margins apparently revolute above sheath, margins with cutting edges. **Culm** nodose, sharply 3-angled, 2–3 mm in diam. **Inflorescence** a narrow, erect panicle ± 250 × 25 mm, with 1 or 2 erect branches from each of upper nodes. **Subtending bracts** sheathing culm; blades leaf-like. **Spikelets** elliptic, 9–12 × 3–4 mm; flowers 2, lower male, upper bisexual. **Glumes**: sterile moderately long-awned; fertile boat-shaped, ± 9 mm long, keel excurrent into minute point. **Perianth** of variable number, scabrid bristles small, linear. **Flowering time** Jan.–May. **Nutlet** elliptic, ± 5.5 mm long, shining, reddish brown; style base small, surface wrinkled. Mountain slopes; Mesic Highveld Grassland, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Snowden Farm S, from Bosberg to Pirie and to Cockscomb).

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DIOSCOREACEAE

(Order Dioscoreales)

Compiled by C.L. Bredenkamp

DIOSCOREA L.

Yams

Species ± 600, ± cosmopolitan in warm regions; 16 in sthn Afr., widespread.

1a Mature leaves compound
2a Leaves digitately 3–5-foliolate, main vein single; male flower with 3 stamens and 3 staminodes; capsules 15–34 mm long (section Botryosicyos*)*

retusa Mast.

Dioecious climber, up to 3 m high; stems left-twining; tuber ± fusiform; hairs coarse, straight, brownish. **Leaves** petiolate and petiolulate, terminal leaflet 31–102 × 12–52 mm, ± elliptic, base cuneate, apex apiculate, margins undulate. **Male inflorescences** racemose, ± 76 mm long, pendent. **Male flowers** yellowish, conical-ovoid; filaments short; anthers transversely rotund; pistillode ± 1 mm long. **Female inflorescences** spicate, ± 160 mm long. **Female flowers** yellowish, tube urn-shaped; staminodes one per tepal, small; ovary ± 7.1 mm long; stigmatic surfaces recurved. **Flowering time** Dec., Jan. **Fruit** an elliptic-oblong capsule, 24 × 12 mm. **Seeds** brown, wing oblong-elliptic. Inland forests, dense bushveld in kloofs, watercourses; Indigenous Forests, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Weza State Forest S, from Cala to Port St Johns, Alice to Kentani, and Albany District to East London).

2b Leaves 3 foliolate, each with 3–7 main veins; male flowers with 6 stamens and without staminodes; capsules 31–58 mm long (section Lasiophyton*)*

dregeana (Kunth) T.Durand & Schinz

Wild yam; *ndiyaza* (S); *ingcolo* (X); *ilabatheca*, *isithundlathundla*, *udakwa* (Z)

Vine, ± 12 m high; stems left-twining, armed; tubers solitary, lobed or in a dense cluster; hairs sparse to velutinous. **Leaves** petiolate, terminal leaflet 180 × 150 mm, (broadly) obovate, base rounded, apex cuspidate, margins entire. **Male inflorescences** compound, ± 300 mm long; flowers in 2- or 3-flowered cymules. **Male flowers**: filaments at base of inner tepals; anthers 0.6 × 0.5 mm. **Female inflorescences** spicate, ± 140 mm long. **Female flowers** subpendent; tepals membranous, pubescent, each with basal staminode; ovary ± 6 mm long. **Flowering time** Oct.–Feb. **Fruit** a capsule, 50 × 27 mm. **Seeds**:

wing oblong. Inland forests, talus-like soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests (Mount Ayliff District E to Oribi Gorge, S to Ngomi Forest Reserve, Komga and Elliotdale Districts).

1b Mature leaves simple
3a Tubers several on roots from a perennial crown; stems dextrorse (turned towards the right) (section Cotynifoliae*)*

cotinifolia Kunth

Wild yam; *olifantsvoet* (A); *umtane* (X); *unyawo-lwendlovu* (Z)

Dioecious climber, 2–4 m high; stems wiry, unarmed; tubers ovoid; glabrous. **Leaves** opposite, petiolate, relatively small, widely ovate to cordiform, 7-veined, base cordate, apex shortly apiculate, margins entire. **Male inflorescences**: axillary racemes, flexuous, single or fascicled, up to 140 mm long; bracts brown. **Male flowers** 1–4 mm apart, urceolate, white; stamens 6, basal to tepals. **Female inflorescences** solitary, spicate, ± 100 mm long. **Female flowers** ± 16, pendent; perianth greenish white, cup-shaped ± 2 mm in in diam.; staminodes rudimentary; ovary ± 4 mm long; stigmatic surfaces recurved. **Flowering time** Oct.–Dec. **Fruit** a capsule, 30 × 20 mm, turbinate. **Seeds** distally winged. Inland forests, dense bushveld in kloofs, watercourses; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket (Mbashe River Bridge and Lusikisiki, S to King William's Town and Kentani, from Uitenhage to East London).

3b Tubers solitary; stems sinistrorse (turned towards the left)
4a Seeds bilaterally winged; leaf margins undulating; stamens 3 (section Rhacodophyllum*)*

rupicola Kunth

Impinyampinya, *inkwa* (Z)

Dioecious climber, up to 3.0 m high; tuber with 1–3 branches; glabrous. **Leaves** petiolate, hastate, 5–7-lobed, 140 × 110 mm, base obtuse to cordate, apex aristate, ± 2 mm long. **Male inflorescences**: racemes, ± 80 mm long, pendent. **Male flowers** ± 30; perianth yellowish green, campanulate; filaments ± 1.5 mm long; anthers transversely elliptic; staminodes absent. **Female inflorescences** spicate, ± 100 mm long. **Female flowers**: perianth yellowish green, rotate; staminodes 3; ovary ± 8–10 mm long; stigmatic surfaces bilabiate. **Flowering time** Nov.–Apr. **Fruit** a capsule, 30 × 20 mm, broadly ovoid. **Seeds** 2 per locule. Eastern and southern slopes, black doleritic soils, temperate rain forests; Indigenous Forests, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Mount Currie S to Tabankulu, from Maclear to Port St Johns, Hogsback to King William's Town and S to Jeffreys Bay).

4b Seeds not bilaterally winged, leaf margins not undulating; stamens 6
5a Seeds proximally winged; tuber with vertical crown and 1–4 basal branches; stem up to 2 mm in in diam., not tapering (section Perennia*)*

burchellii Baker

Dioecious climber, 1–2 m high; tuber with up to 4 horizontal branches, blackish brown. **Leaves** petiolate, ovate to narrowly ovate, 44 × 8 mm, 5–7-veined, base shallowly cordate, apex aristate, ± 1 mm long, margins entire. **Male inflorescences**: racemes single, ± 30 mm long, pendent. **Male flowers** ± 12; perianth creamy white, saucer-shaped, rotate; filaments attached to lobes of perianth, white, incurved; anthers introrse, yellow; pistillode vestigial. **Female inflorescences** spicate, ± 30 mm long. **Female flowers**:

buds globular; perianth greenish white, cup-shaped; staminodes rudimentary; ovary inferior, crowned with persistent perianth; style branches 3; stigmatic surfaces flared. **Flowering time** Feb.–June. **Fruit** a capsule, 28 × 14 mm, with straw-coloured sheen. S-facing slopes in dense macchia communities; Indigenous Forests, Eastern Fynbos-Renosterveld (Hogsback S to Humansdorp District).

diversifolia Griseb.

Wild yam

Dioecious climber, up to 2 m high; stems wiry, unarmed. **Leaves** alternate, petiolate, ± 55 × 47 mm, deeply to very deeply lobed, 7-veined, base obtuse to shallowly cordate, apex gradually becoming acute with arista up to 4 mm long. **Male inflorescences** racemes, flexuous, single or in axillary fascicles, up to 45 mm long; bracts brownish. **Male flowers** 1–2 mm apart, urceolate; stamens basal to each tepal, inflexed. **Flowering time** Dec.–Mar. Coastal bush, forest margins of coastal forest and thornveld; Indigenous Forests, Indian Ocean Coastal Belt (Engcobo Mtn E to Coffee Bay and Umtamvuna Pont, S to Kentani District and Kei River Mouth).

D. diversifolia (6 stamens), previously placed under Section *Rhacodophyllum*; broad, membranous wing of seeds regarded transitional between primitive state and seeds with equal wings e.g. in *D. rupicola* (Von Teichman und Logischen et al. 1975).

mundii Baker

Dioecious climber, ± 2 m high; stem solitary; tuber with 2 horizontal branches, corky, black. **Leaves** alternate, petiolate, up to 95 × 80 mm, broadly ovate, 7-veined, base deeply cordate, apex acuminate, mucronate, margins entire. **Male inflorescences** single or axillary fascicles, racemes up to 100 mm long, erect. **Male flowers** many, perianth greenish cream-coloured, funnel-shaped, lobes recurved; filaments attached to lip of cup, inner lower, ± 1 mm long, incurved; anthers introrse, yellow; pistillode rudimentary. **Female inflorescences** racemose, up to 80 mm long. **Female flowers**: perianth greenish, rotate; staminodes rudimentary; ovary inferior, crowned with persistent perianth; style branches 3; stigmatic surfaces flared. **Flowering time** Feb.–Apr. **Fruit** a capsule, 35 × 15 mm, with straw-coloured sheen. Coastal bush, along forest margins behind dunes; Eastern Fynbos-Renosterveld, Indigenous Forests (Nature's Valley).

[E]**stipulosa** Uline ex R.Knuth

Dioecious climber, up to 3 m high; stems, twining, tough, wiry, ribbed, scabrid, bracteate; tuber with finger-like horizontal branches, dark brown. **Leaves** alternate, stipulate, petiolate, up to 48 × 20 mm, ovate, 5–7-veined, base cordate, apex mucronate, margins entire. **Male inflorescences**: racemes up to 80 mm long, erect. **Male flowers** up to 20; perianth cream-coloured, funnel-shaped; bracts 2; filaments incurved; pistillode rudimentary. **Female inflorescences** racemose, up to 70 mm long, bracteate. **Female flowers**: perianth rotate; pale green; staminodes 6; ovary inferior ± 5 mm long; stigmatic surfaces bilobed, deflexed. **Flowering time** Dec., Jan. **Fruit** a capsule, 25 × 15 mm, yellowish brown. S-facing slopes, riverine bush; Drakensberg Grassland, Indigenous Forests (Amatole Mts, Seymour, Fort Beaufort, Hogsback).

5b Seeds distally winged; tuber bun-shaped, base entire or with bifurcating lobes; stem at base up to 20 mm in in diam., tapering (section Testudinaria*)*

brownii Schinz

Dioecious climber, 0.5–1.0 m high; stems solitary, erect; tuber with conical crown, 3–5 finger-like processes spreading from below and annually renewed. **Leaves** spirally

arranged, petiolate, lanceolate with basal auricles, up to 13 × 3.5 mm, 5–7-veined, apex cuspidate, margins entire. **Male inflorescences**: axillary, racemes of 1–3-flowered cymes, ± 70 mm long, ± erect. **Male flowers**: perianth segments 6, green, oblong; filaments ± 1 mm long; anthers 0.5 mm long; pistillode ± 1 mm long. **Female inflorescences** racemose, 40–50 mm long. **Female flowers**: perianth segments oblong, green with hyaline margins; staminodes rudimentary, adhering to base of tepal; ovary ± 5 mm long; stigmatic surfaces bilobed. **Flowering time** Dec., Jan. **Fruit** a capsule, 20 × 25 mm. Loam, in high grassland, forests; Sub-Escarpment Grassland, Indigenous Forests (Weza State Forest).

elephantipes (L'Hér.) Engl.

Elephant's foot; *olifantsvoet* (A); *t'naka* (?)

Dioecious climber, 0.5–3.0 m high; branches rigid, twining; tuber greyish brown, with 4–7-sided, tortoise-like plates of thick cork. **Leaves** alternate, exstipulate, petiolate, folded, very widely ovate, up to 20 × 18 mm, 5–7-veined, base rounded or slightly cordate, apex ± emarginate, mucronate, margins entire. **Male inflorescences**: panicles up to 150 mm long. **Male flowers** many; perianth mustard-coloured, funnel-shaped; anthers inserted at lip of perianth tube; filaments cream-coloured; pistillode rudimentary. **Female inflorescences**: racemes up to 80 mm long, up to 15-flowered. **Female flowers**: perianth mustard-coloured, funnel-shaped; staminodes rudimentary; ovary inferior ± 7 mm long; stigmatic surfaces bilobed, deflexed. **Flowering time** Nov.–Feb. **Fruit** a capsule 20 × 18 mm, light brown. Eastern aspect of drier, rocky slopes in karroid communities; Lower Karoo, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Graaff-Reinet SE to Pearston, from Willowmore SE to Sundays River, Grahamstown and to Humansdorp).

sylvatica Eckl.

Tortoise plant, forest elephant's foot; *skilpadknol*, *Hottentotsbrood* (A); *lunyawo-lwendlovu* (S); *iNgwevu*, *ufudu lwehlathi* (Z)

Dioecious climber, 1.5–10.0 m high; stems solitary with grey markings, twining; tubers adapted to habitat. **Leaves** alternate, petiolate, variable, cordiform to auriform, up to 75 × 63 mm, base deeply cordate, apex mucronate, margins ± entire. **Male inflorescences**: simple, up to 90 mm long. **Male flowers** many; filaments ± 1 mm long, attached to base of segments; pistillode rudimentary. **Female inflorescences** solitary, pendent racemes, up to 90 mm long. **Female flowers** ± 30; perianth yellowish green, rotate; staminodes rudimentary; inferior ovary 6–7 mm long; stigmatic surfaces bilobed, decurved. **Flowering time** Nov.–Mar. **Fruit** an oblong to obovate capsule. Sandy shales, fixed dunes in coastal bush, marginal forest; Dry Highveld Grassland, Indigenous Forests, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Somerset East E to Komga, southwards from Humansdorp to Port Elizabeth, Grahamstown and Port Alfred).

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DRACAENACEAE see RUSCACEAE

ERIOCAULACEAE

(Order Poales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

ERIOCAULON L.

Species 250–400, tropical and subtropical; 12 in sthn Afr., widespread, excluding WC.

Annuals, small, fast-growing pioneers, dying when habitat desiccates; capitula without coarse white setae, predominantly female, producing much seed; receptacle cylindrical

abyssinicum Hochst.

Caespitose, dome-shaped herb, rosulate-hydrophyte, 20–90 mm high. **Leaves** light green, linear-acuminate. **Capitula** dull blackish grey, loose, oblong-globose, ± 10 mm long; peduncle 45(–100) mm long; involucral bracts ± half as long as capitulum, reflexed with age, scarious; receptacle glabrous or rarely with few hairs. **Female flower** on short pedicel; sepals 3, free, subequal, lanceolate, not keeled, not winged, half folded, margins usually glabrous; petals 3, free, linear, subequal, smaller petal usually with rudimentary glands; ovary sessile, 3-locular; style typical. **Male flower**: sepals 3, connate below middle, free lobes triangular; lobes minute with apical black gland; petals rudimentary, grey; stamens 6; anthers black. **Flowering time** Feb. **Fruit** a trilobed capsule; locules globose. Wet places at low or high altitudes; Sub-Escarpment Grassland (Matatiele District).

Perennials, more robust plants; capitula sparsely to densely covered with short, coarse, white setae; receptacle globose to discoid.

africanum Hochst.

Caespitose herb, hydrophyte, 70–260 mm high. **Leaves** rosulate, linear-acuminate, 40–200 mm long. **Capitula** subglobose; involucral bracts rounded, glabrous, yellowish, reflexing at maturity. **Female flower**: sepals 3, free, boat-shaped, black with sparse white setae; petals 3, narrowly obovate, attenuate below, white, with an apical black gland and setose above; sepals black, deeply concave, margins erose or toothed; ovary 3-lobed; style short; stigmas 3. **Male flower** predominant; sepals 3, connate at base; lobes broad, black, sparsely and irregularly setose; petals 3, obovate, white, with apical black gland, densely setose above; stamens 6; anthers whitish. **Flowering time** Aug.–? **Fruit** a trilobed capsule. Riverbanks, seepage areas, shallow waters of lakes and pools; Indian Ocean Coastal Belt (Port Edward).

dregei Hochst.

Sekolana (SS)

Caespitose herb, hydrophyte, 55–170 mm high, forming colonies; rhizome compact, covered with white, multicellular hairs. **Leaves** rosulate, linear, up to 250 × 8 mm, apex

obtuse, with a small hardened knob. **Capitula** globose, usually covered with hard white setae, with male flowers predominating or sometimes entirely male; involucral bracts glabrous, reflexed, oblong. **Female flower**: sepals 3, black, boot-shaped, with a convex or toothed keel, margins tufted with white hairs; petals 3, spathulate, densely setose, with black glands; ovary 3-lobed. **Male flower**: sepals 3, setose at apex; petals 3, unequal in size, white, setose above with black gland; stamens 6; anthers black. **Flowering time** Sept.–Apr. **Fruit** a trilobed capsule. Rocky grassland and around springs; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Lusikisiki and Port Edward S to King William's Town).

sonderianum Körn

Caespitose, perennial herb, hydrophyte, 90–380 mm high. **Leaves** rosulate, linear, ± spongy at base, tapering to apiculate. **Capitula** covered with hard, white setae; involucral bracts oblong-obovate, whitish. **Female flowers**: sepals 3, free, unequal, boat-like, keeled, dark grey, sometimes expanded into wing; apex bearded with white hairs; petals 3, free, unequal, linear, yellowish, with or without black glands below apex; ovary trigonous; style with 3 filiform branches. **Male flower**: sepals 3, cuneate-obovate, connate below into a spathe, 2 lobes slightly keeled, greyish with olive-green spot on each side; apex bearded; petals 3, free, black, unequal, bearded with white hairs on inner surface; stamens 6; anthers black. **Flowering time** Sept.–Feb. Along streams in mountainous habitats; Sub-Escarpment Grassland, Indigenous Forests, Sub-Escarpment Savanna (Weza State Forest, Umtamvuna Nature Reserve and Mthatha District).

BROWN, N.E. 1897. Eriocauleae. *Flora capensis* 7: 51–59.
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DAHLGREN, R.M.T., CLIFFORD, H.T. & YEO, P.F. 1985. *The families of the monocotyledons*. Springer-Verlag, Berlin.
OBERMEYER, A.A. 1985. Eriocaulaceae. *Flora of southern Africa* 4,2: 9–21.
PHILLIPS, S.M. 1998. Eriocaulaceae of the Flora Zambesiaca area. *Kirkia* 17: 11–67.

ERIOSPERMACEAE see RUSCACEAE

FLAGELLARIACEAE

(Order Poales)

Compiled by F.M. Nonyane

FLAGELLARIA L.

Species 3, Asia, Africa and Fiji; 1 in sthn Afr., KZN, EC, coastal areas.

guineensis Schumach.

Climbing bamboo; *kanotgras* (A); *ugonothi* (Z)

Perennial climber, 0.2–15.0 m high, stout herbaceous stem. **Leaves** elongate-lanceolate, tendril-tipped; sheaths open to middle, with thin membranous margins overlapping but never connate to top, base rounded. **Inflorescence** a terminal panicle, pyramidal; branches ascending, lower ones subtended by leafy bracts, upper ones bractless. **Flowers** whitish or pale yellowish, subsessile along ultimate branchlets, with internodes between them. **Perianth** campanulate; segments oblong-obtuse, subpetaloid, 3 outer ones shorter than inner 3. **Stamens** exserted, sagittate at base; anthers linear-oblong. **Ovary** narrow, trigonous; stigma linear, ± stout, exserted and recurving over apex of perianth segments.

Flowering time Dec.–Apr. **Fruit** a red, globose berry. In sandy loam soil and coastal forests; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (along coast from Mthatha to Kentani and East London Districts).

BROWN, N.E. 1897. Flagellariaceae. *Flora capensis* 7: 15.
ROSS, J.H. 1972. Flagellariaceae. Flora of Natal. *Memoirs of the Botanical Survey of South Africa* No. 39: 115.

HAEMODORACEAE

(Order Commelinales)

Compiled by Z.L. Magwaza & C.L.Bredenkamp

Rootstock a stoloniferous corm; ovary superior, with 1 fertile locule; slender plants with sparse glandular pubescence on raceme..... **Barberetta**
Rootstock a rhizome; ovary superior, inferior, or subinferior, with 1–3 fertile locules; strong, tufted plants variously pubescent..... **Wachendorfia**

BARBERETTA Harv.

Monotypic, sthn Afr., KZN, EC.

aurea Harv.

Perennial geophyte, 0.1–0.3 m high; rootstock stoloniferous; stem slightly hairy upwards. **Leaves** sessile, lanceolate, 350 × 6–20 mm, radical, superposed, ribbed, glabrous, membranous, acuminate. **Bracts** lanceolate, persistent, membranous, sheathing. **Inflorescence** a terminal raceme; pedicels ascending, scape and pedicels with glandular hairs. **Perianth** bright orange, glabrous. **Stamens** subequal, divergent; anthers introrse, basifixed, slightly sagittate at base. **Ovary** superior, with 1 fertile carpel, half ellipsoidal, 1-ovulate; style apical on lower side of ovary; stigma minute. **Flowering time** Dec., Jan. Colonies on wet rocky forest floors; Sub-Escarpment Grassland, Indigenous Forests, Sub-Escarpment Savanna (Kokstad and Thembuland Districts).

WACHENDORFIA Burm.

Species 4, sthn Afr., WC, EC.

paniculata Burm.

Rooikanol, *spinnekopblom* (A)

Perennial geophyte, 0.15–0.90 m high; rhizome ovoid, culm covered with short dense hairs. **Leaves** dull green to yellow-green, linear or lanceolate to broadly falcate, erect or spreading, 3-nerved, 0.1–0.7 × 5–35 mm, hairy. **Inflorescence** a lax, racemose panicle. **Bracts** scarious, often recurved, acuminate, partly sheathing. **Perianth** apricot to orange, margins sometimes fringed with short cilia. **Stamens** ± $^{3}/_{4}$ length of tepals, spreading. **Ovary** with style as long as shortest tepal. **Flowering time** Dec., Jan. Fynbos and sandy soils; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth and Humansdorp Districts).

thyrsiflora Burm.

Perennial geophyte, 0.6–2.5 m high; rhizome cylindrical; culm pilose at base, with glandular hairs near apex. **Leaves** lorate to lanceolate, deeply plicate, up to 900 × 80 mm, glabrous. **Inflorescence** a dense, cylindrical panicle. **Bracts** scarious, recurved, persistent. **Perianth** bright yellow, sometimes fringed with orange cilia; upper tepal

narrower and shorter, slightly recurved; upper 5 tepals overlapping. **Stamens** spreading. **Ovary** yellowish. **Flowering time** Oct.–Feb. Fynbos; Eastern Fynbos-Renosterveld (Humansdorp).

BAKER, J.G. 1896. Haemodoraceae. *Flora capensis*: 6: 1–7.
BARKER, W.F. 1949. *Wachendorfia*. In T.M. Salter, G.J. Lewis & W.F. Barker, Plantae novae africanae. Series XXIX. *Journal of South African Botany* 15: 39–42.
HELME, N.A. & LINDER, H.P. 1992. Morphology, evolution and taxonomy of *Wachendorfia* (Haemodoraceae). *Bothalia* 22: 59–75.
HILLIARD, O.M. & BURTT, B.L. 1971. Notes on some plants of southern Africa, chiefly from Natal: II. *Notes from the Royal Botanic Garden Edinburgh* 31: 1–33.
SIMPSON, M.G. 1990. Phylogeny and classification of the Haemodoraceae. *Annals of the Missouri Botanical Garden*: 77: 722–784.

HEMEROCALLIDACEAE

(Order Asparagales)

Compiled by Z.L. Magwaza & C.L.Bredenkamp

CAESIA R.Br.

Species ± 12, Australia, Madagascar; 2 in sthn Afr., KZN, NW, WC, EC.

contorta (L.f.) T.Durand & Schinz

Bloutjienks (A)

Perennial herb, 0.1–0.7 m high, with stoloniferous corm. **Leaves** cauline, radical, sheathing, elliptic. **Inflorescence** a terminal or axillary raceme; flowers blue. **Perianth** twisted when folded; segments subequal, 3-nerved. **Stamens** 6, the 2 upper ascending, ± diverging; filaments yellow, somewhat swollen; anthers orange, elliptic, open by longitudinal slits. **Ovary** green, trilocular, with 3 ovules in each locule; style yellow, minutely papillate, curved; stigma orange, apical. **Flowering time** Aug.–Apr. Grasslands and forests; Indigenous Forests, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Lusikisiki S, from Amatole Mts to Keiskammahoek, Van Stadens Mts, Grahamstown and Humansdorp).

OBERMEYER, A.A. 1973. *Caesia* and *Nanolirion*. *Bothalia* 11: 122, 123.
POOLEY, E. 1998. *A field guide to wild flowers of KwaZulu-Natal and the eastern region.* The Flora Publications Trust, Durban.

HYACINTHACEAE

(Order Asparagales)

Compiled by C.L. Bredenkamp

Key to subfamilies, tribes and genera, following Manning et al. (2004, 2009).

1a Bracts usually spurred (at least the lower), sometimes deciduous; leaves often dry at flowering; testa brittle, loose, forming a peripheral wing; bulb of more less overlapping scales, often pinkish (subfamily **Urgineoideae**):

2a Flowers short-lived, usually lasting a single day at most, rarely up to 2 days; tepals often connate below, circumscissile and caducous, twisted and cohering above when faded; inflorescence erect or branched but then stiff or wiry ..... **Drimia**

2b Flowers long-lived, lasting 2–3 days; tepals free, persistent in fruit; inflorescence ± twining and fleshy ..... **Bowiea**

1b Bracts never spurred, persistent; leaves mostly green at flowering; testa tightly adhering; bulb usually of sheathing tunics, sometimes of overlapping scales:
3a Seeds flattened or angled, rarely globose but then stigma trifurcate; stigma ± trifid or capitate (subfamily **Ornithogaloideae**):
4a Flowers nodding in a cylindrical or secund raceme; tepals fused below for at least half their length into an elongate tube; stamens inserted at top of tube, included or exserted; capsules quadrate, as broad or broader than high; seeds discoid.....**Dipcadi** (tribe Dipcadieae)
4b Flowers spreading or nodding but then tepals free or shortly fused below:
5a Tepals thick-textured, ± oblong, whitish or yellowish with distinct, broad, green to brown longitudinal band on adaxial surface associated with 3–5 medially aggregated veins.....**Albuca** (tribe Albuceae)
5b Tepals usually ovate or lanceolate, thick- or thin-textured, unicoloured or with narrow, indistinct green or brownish keel on adaxial surface not associated with medially aggregated veins..... ..... **Ornithogalum** (tribe Ornithogaleae)
3b Seeds ellipsoid or globose to pear-shaped; stigma penicillate (subfamily **Hyacinthoideae**):
6a Flowers rotate, tepals united only at base, whitish to pink or blue; pedicels subtended by both a well-developed bract and a smaller bracteole:
7a Bulb tunics fibrous or cartilaginous and decaying above into firm fibres that form a neck; leaves firm-textured or fibrotic with cartilaginous margins; flowers white with a dark bluish ovary..... .....**Schizocarphus** (tribe Massonieae**)**
7b Bulb tunics cartilaginous or papery but not fibrous above; leaves leathery without cartilaginous margins; flowers pink to blue with a pale greenish ovary:
8a Flowers whitish to lilac; ovary with 2 ovules per locule; fruit turbinate with 3 prominent lobes above; seeds black.....**Pseudoprospero** (tribe Pseudoprospereae)
8b Flowers blue, rarely lilac; ovary with several ovules per locule; fruit obovoid; seeds beige or pale brown.....**Merwilla** (tribe Massonieae**)**
6b Flowers various but, if rotate, then pedicels subtended by a single bract or apparently bractless **(**tribe Massonieae):
9a Bracts vestigial or lacking; ovules (1)2 per locule, apparently basal; leaves usually spotted; bulb scales often loose and producing threads when torn.....**Ledebouria**
9b Bracts well-developed, at least on the upper flowers; ovules 2 or more per locule, clearly axile; leaves plain or spotted; bulb tunics tightly adhering, never producing threads when torn:
10a Filaments inserted in two series at different levels, never fused below; lower bracts often reduced; plants with a well-developed, tubular, membranous cataphyll.....**Lachenalia**
10b Filaments inserted in one series, either at same level or obliquely, often fused below; bracts always well developed; plants without a prominent, membranous cataphyll:
11a Leaves 2–several, usually ascending; inflorescences distinctly pedunculate:
12a Inflorescence topped by a coma of leafy bracts longer than flowers; flowers campanulate with stamens inserted near base of tepals; ovules 6 or 7 per locule.....**Eucomis**
12b Inflorescence not topped by a coma of leafy bracts; flowers tubular with stamens inserted obliquely near middle of tube; ovules 3 or 4 per locule ..... **Veltheimia**
11b Leaves 2, spreading or prostrate; inflorescence not distinctly pedunculate:
13a Leaves firm and glossy with impressed longitudinal striations; bulb tunics decaying above into a neck of narrow, flat, papery segments; bracts usually shorter than flowers.....**Daubenya**
13b Leaves coriaceous or somewhat succulent and matte, smooth, pustulate or setose; bulb tunics not decaying above into narrow segments; bracts usually as long as or longer than flowers.....**Massonia**

ALBUCA L.

Subfamily Ornithogaloideae Speta, tribe Albuceae J.C.Manning & Goldblatt

Slime lily

Species 110–140, mainly sub-Saharan Africa, especially winter rainfall region, 1 extending into Arabia; ± 68 in sthn Afr., N, M, FS, KZN, L, NC, WC, EC.
For synonymy see Manning et al. (2009: 96–98), Müller-Doblies (1994: 365–368), Müller-Doblies (2006: 125)

*1A Plants small to large; bulb with outer tunics leathery, rough, greyish; leaves several, linear to lanceolate; raceme subcorymbose or pyramidal at first; bracts membranous, deltoid to filiform; flowers remaining open, tepals white or yellow with broad green or brown midrib; ovary sometimes stipitate and expanded below into lobed disc; capsules ovoid or deeply 3-lobed and retuse apically, seeds discoid [*Albuca *subgenus* Namibiogalum *(U.Müll.-Doblies & D. Müll.-Doblies) J.C.Manning & Goldblatt]*

prasina (Ker Gawl.) J.C.Manning & Goldblatt
(= *Ornithogalum prasinum* Ker Gawl.)

Perennial, solitary or gregarious geophyte, 0.1–0.3 m high; outer bulb tunics thin. **Leaves** often hysteranthous, 6–10, erect, linear, canaliculate, up to 300 × 16 mm, base folded, apex acute, glaucous. **Inflorescence** a 15–30-flowered, cylindrical raceme; pedicels ± 20 mm long; flowers green or white and green; tepals ± 8 mm long, narrowly oblong. **Stamens**: filaments ovate-acuminate. **Flowering time** Oct.–Mar. **Fruit** an obcordate capsule, deeply trigonous, ± 12 mm high. Dry sandy or alluvial grassy flats, overgrazed areas; Upper Karoo, Lower Karoo (Middelburg and Aberdeen Districts).

toxicaria (C.Archer & R.H.Archer) J.C.Manning & Goldblatt
(= *Ornithogalum toxicarium* C.Archer & R.H.Archer)

Geophyte, 0.1–0.2 m high; bulb solitary, ovoid, attenuated, outer tunics thin, soft, brownish. **Leaves** just emergent or well developed at flowering, erect, terete, adaxially channelled, ± glaucous. **Inflorescence** a subcapitate, dense raceme; pedicels up to 2.2 mm long; flowers whitish, brownish to green-striped; tepals recurved, oblong, 4.5 × 2.5 mm, apex obtuse and slightly cucullate. **Stamens**: filaments fleshy, white, triangular, without appendages, 1.5 × 0.8 mm. **Flowering time** early spring. **Fruit** an ovoid capsule, remains of perianth at base and style persistent. In stony ground; Upper Karoo (NC to Middelburg District).

*1B Plants moderate-sized to large; bulb with outer tunics papery and greyish or fleshy and green; leaves several, linear to lanceolate; raceme subspicate or narrowly cylindrical; bracts membranous, ovate-acuminate, aristate; flowers remaining open, tepals whitish with broad green midrib; ovary ovoid; capsules subglobose or broadly ovoid or obovoid, acute; seeds semi-lunar or variously angled [*Albuca *subgenus* Urophyllon *(Salisb.) J.C.Manning & Goldblatt]*

bracteata (Thunb.) J.C.Manning & Goldblatt
(= *Ornithogalum bracteatum* Thunb., *Ornithogalum longibracteatum* Jacq.)

Pregnant onion

Perennial, gregarious, succulent geophyte, 0.6–1.8 m high; bulbilliferous, bulb often exposed, green. **Leaves** 8–12, spreading, lanceolate, 0.4–1.0 m long, flaccid. **Inflorescence** a many-flowered, dense raceme with long-attenuate bracts; pedicels 5–15 mm long; flowers white with broad, green keels; tepals ± 9 mm long. **Stamens**: filaments ovate-acuminate or with short basal extensions. **Flowering time** Aug.–May. **Fruit** a globose to trigonous capsule, 10 mm long. Widespread, grassland and savanna, hill slopes, well-drained soil, sandstone and quartzite, full sun; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Middelburg to Mkambati Nature Reserve southwards, Fort Beaufort to Kentani District and Baviaanskloof to Sidbury and Humansdorp).

virens (Kerr Gawl) J.C.Manning & Goldblatt
[= *Ornithogalum tenuifolium* Redouté (1811), non *Albuca tenuifolia* Baker (1872)**]**

Bosui (A)

Perennial geophyte, 0.1–0.6 m high; bulbous. **Leaves** ± 5, suberect, linear to filiform, leaf bases sometimes forming a neck. **Flowers**: pedicels 2–5 mm long; bracts long, narrow; suberect, whitish with green keels; tepals 6–10 mm long. **Stamens**: filaments ovate-acuminate, inner ones with basal lobes. **Flowering time** Sept.–July. **Fruit** an ovoid, trigonous capsule. Grassland, closed woodland, forest, soil shallow, sandy-loam derived from basalt, steep slopes and mountain summits with exposed bed rock; widespread in all bioregions, except Mesic Highveld Grassland, Rainshadow Valley Karoo (Elandshoek E to Thaba Chitja southwards, Middelburg to Mkambati Nature Reserve, Queenstown to Kentani and Kommadagga to Grahamstown and Humansdorp).

*1C Plants small to medium; bulb with outer tunics papery or leathery; leaves 1–several, terete to lanceolate; raceme subspicate or racemose; bracts membranous, ovate-acuminate, aristate; flowers spreading or somewhat pendulous, diurnal, fragrant, yellowish (rarely white) with broad green midrib; ovary without paraseptal crests; capsules ovoid or oblong, acute; seeds angular, semi-lunate, colliculate [*Albuca *subgenus* Osmyne *(Salisb.) J.C.Manning & Goldblatt, sect.* Osmyne *(Salisb.) J.C.Manning & Goldblatt, ser.* Erecta *(U.Müll.-Doblies & D.Müll.-Doblies) J.C.Manning & Goldblatt]*

suaveolens (Jacq) J.C.Manning & Goldblatt
(= *Ornithogalum suaveolens* Jacq.)

Bonttjienk (A)

Perennial geophyte, 0.10–0.76 m high; bulbous. **Leaves** 2–7, linear, 0.1–0.4 m long, channelled, clasping below, sometimes dry at flowering. **Flowers** spreading or nodding, firm, yellow with green keels; tepals 12–15 mm long. **Stamens**: filaments awl-shaped or inner ones expanded below. **Flowering time** Sept.–Nov. **Fruit** an ovoid, trigonous capsule, 1–20 mm long; pedicel up to 30 mm long. Dry slopes and flats; Eastern Fynbos-Renosterveld (Humansdorp).

1D Plants small to large; bulb with outer tunics papery, leathery or fleshy and green; leaves 1–several, terete to lanceolate; raceme subspicate, racemose or corymbose; bracts membranous, ovate-acuminate, aristate; flowers spreading, erect or pendulous, diurnal, fragrant, whitish or yellowish with broad green midrib; ovary with paraseptal crests; capsules ovoid or oblong, acute or obtuse; seeds angular, semi-lunate or discoid, colliculate [subgenus Albuca*]*
2a Flowers erect, actinomorphic; tepal whorls strongly dimorphic, apex of inner tepals developed into fleshy boss; stamen whorls dimorphic, anthers of inner whorl subequal to outer or smaller; ovary with paraseptal crests; style prismatic; capsule oblong, obtuse; seeds discoid [subgenus Albuca *sect.* Branciona *(Salisb.) J.C.Manning & Goldblatt]*

annulata Mart.-Azorín & M.B.Crespo

Deciduous, bulbous plants, up to 380 mm high; bulb solitary, hypogeal, ovoid to spherical, 30–40 × 22–42 mm; outer tunics soft, ending in long, epigeal, narrow neck covered by membranous cataphylls with thick, prominent, transversal dark ridges (zebra banding pattern). **Leaf** mostly solitary, linear, terete, canaliculate at base 220–450 × 4–6 mm, glaucous, glabrous, finely longitudinally striate. **Inflorescence** an erect raceme, (5)7–10-flowered, up to 160 mm long. **Flowers** erect; tepals yellow with

a green median stripe 2–3 mm wide; outer tepals oblong, inner tepals ovate. **Stamens** dimorphic; outer anthers absent or very small and sterile, up to 1 mm long; inner anthers bigger and fertile up to 3 mm long. **Ovary** oblong to obovate, green with prominent paraseptal crests that are divergent in lower part and forming 3 prominent ridges; style subobpyramidal or clavate; stigma yellow-green. **Flowering time** Sept., Oct. **Fruit** an ovate to oblong-ovate capsule. Sandy soils at low altitudes; Albany Thicket (Aloes Reserve E of Port Elizabeth, Alicedale and Thomas Baines Reserve SW of Grahamstown).
Closely related to *A. caudata*.

[E]**batteniana** Hilliard & B.L.Burtt
[= *Ornithogalum battenianum* (Hilliard & B.L.Burtt) J.C.Manning & Goldblatt]

Evergreen, perennial geophyte, up to 0.6 m high; bulb borne above ground, green, scales firm, truncate, fibrous above. **Leaves** 6–12, lanceolate, firm. **Inflorescence** subsecund with an inclined peduncle. **Flowers** erect on long pedicels, white with pale greenish keels, 25–40 mm long; outer tepals spreading-recurved, inner tepals cucullate (cowled) above. **Flowering time** July–Oct. Coastal cliffs; Indian Ocean Coastal Belt, Albany Thicket (Morgan's Bay, Kei River Mouth, SW to Knysna and Kouga Dam).

baurii Baker

Doubtfully distinct from *A. setosa*.

[= *Ornithogalum baurii* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte, ± 0.4 m high; bulb up to 38 mm in diam., tunics splitting into copious persistent fibres at top. **Leaves** 5 or 6, linear-acuminate 305 × 13 mm, glabrous. **Peduncle** moderately stout, ± 250 mm long. **Inflorescence** a few-flowered, short raceme; pedicels ascending, cernuous at apex; bracts lanceolate-acuminate. **Flowers**: perianth lobes white, broadly green-banded. **Stamens** all fertile. **Style** comparatively slender, ± longer that ovary. **Flowering time** Sept.–Feb. Stony soil, rocky, riverbanks; Sub-Escarpment Savanna, Albany Thicket (Baziya, Kasouga River Mouth).

[E]**caudata** Jacq.
(= *Ornithogalum aristatum* J.C.Manning & Goldblatt)

Perennial geophyte, 0.3–0.5 m high; bulb globose, 50–66 mm in diam., tunics not splitting into fibres apically. **Leaves** 5 or 6, linear, glabrous, acuminate, 0.3–0.5 m long, 12 mm wide near base. **Peduncles** moderately robust, 0.15–0.27 m long. **Inflorescence** a lax raceme, 0.15–0.23 m long; pedicels ascending; bracts lanceolate-acuminate, up to 38 mm long. **Flowers** erect; perianth up to 25 mm long, white, green-banded. **Stamens** all fertile. **Stigma** with conical apex, entire. Mountainous area, alt. 1 167 m; Albany Thicket (Somerset East, Bruintjieshoogte, Grahamstown District).

[E]**collina** Baker
(= *Ornithogalum monticola* J.C.Manning & Goldblatt)

Perennial geophyte, 0.30–0.45 m high; outer tunics of bulb produced much beyond neck, splitting into fibres at tip. **Leaves** ± 4 subterete, glabrous, up to 0.4 m long, 2 mm in diam. near base. **Peduncle** curved towards apex, 0.10–0.15 m long. **Inflorescence** a few-flowered, lax raceme; pedicels curved, 25–38 mm long; bracts ovate-lanceolate, acuminate, up to 19 mm long. **Flowers**: perianth up to 25 mm long, yellow, broadly barred with green. **Style** comparatively slender, as long as ovary. **Stigma** tricuspidate. **Flowering**

time June–Sept. Stony hills, mountain tops; Dry Highveld Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Bethulie District, Queenstown, Mkambati River Mouth, Graaff-Reinet, Humansdorp).

[E]corymbosa Baker
(= *Ornithogalum wilsonii* J.C.Manning & Goldblatt)

Perennial geophyte, up to 0.6 m high; bulb > 25 mm in diam., outer tunics splitting into fibres. **Leaves** 6–8, terete, ad- and abaxially convex, 0.3(0.6) m long, 6 mm wide near base, tapering to apex. **Peduncle** terete, 0.1 m long. **Inflorescence** a 5–10-flowered, lax corymb; pedicels ± 60 mm long; bracts ovate-lanceolate. **Flowers** scented; perianth ± 25 mm long, yellow, green-banded. **Stamens** with inner whorl sterile. **Style** prismatic, as long as ovary. **Flowering time** Aug.–Oct. Grassland; Drakensberg Grassland, Indian Ocean Coastal Belt (Kei Road, Kei River Mouth).

cremnophila Van Jaarsv. & A.E.van Wyk
[= *Ornithogalum cremnophilum* (Van Jaarsv. & A.E.van Wyk) J.C.Manning & Goldblatt]

Evergreen, perennial geophyte, 1–2 m long; bulb usually epigeal, greyish green, scales firm, truncate above. **Leaves** 6–12, lanceolate, firm. **Peduncle** pendent. **Pedicels** long. **Flowers** erect, subsecund, white with pale greenish keels, 10–20 mm long; outer tepals suberect, inner tepals crowded above. **Flowering time** Dec.–Feb. Sheer rock, cliffs; Eastern Fynbos-Renosterveld (Steytlerville District, Baviaanskloof Mts).

[E]dalyae Baker
[= *Ornithogalum dalyae* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte; bulb ovoid, crowned by copious, brown tunics. **Leaves** 2 or 3, erect, glabrous, linear, 14–19 × 1.5 mm. **Peduncles** slender, ± 300 mm long. **Inflorescences** lax, few-flowered; pedicels patently erect, 30–36 mm long; bracts ovate-cuspidate. **Flowers**: perianth campanulate, ± 12–16 mm long, segments oblong-obtuse, white, keel wide, green. **Anthers** minute. **Ovary** as long as style. **Flowering time** Sept.? Albany Thicket (Uitenhage District, Grahamstown).

exuviata Baker
[= *Ornithogalum exuviatum* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte, 0.25–0.30 m high; bulb tunics coarsely fibrous above, forming a thick neck with conspicuous woody rings. **Leaves** 2–4, linear filiform, not clasping. **Inflorescences** subcorymbose. **Flowers** erect, white to yellow with green keels, 15–25 mm long; inner tepals cowled above. **Stamens** all fertile. **Flowering time** Aug., Sept. Clay soils, stony places; Upper Karoo, Albany Thicket (Little Karoo to Graaff-Reinet District, Somerset East).

[E]fastigiata Dryand.
[= *Ornithogalum fastigiatum* (Dryand.) J.C.Manning & Goldblatt]

uMaphiphintelezi (Z)

Perennial geophyte, 0.14(0.60) m high; bulb globose, 50–70 mm in diam., neck, comparatively long, tunics splitting into fibres at top. **Leaves** 4 or 5, linear, conduplicate, ± 70 mm long (lower part with indurated margins), venation conspicuous, margins sinuate, hyaline, ciliate. **Peduncle** shorter than leaves. **Inflorescence** a raceme; pedicels

ascending or spreading; bracts ovate-lanceolate, acuminate, margins hyaline. **Flowers** not odorous, erect; perianth up to 25.4 mm long, white, broadly banded with green, fading to reddish brown. **Stamens** all fertile. **Style** as long as ovary. **Flowering time** Sept.–Jan. Stony, rocky soil, alt. 30–550 m; Sub-Escarpment Grassland, Lower Karoo, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad District, Pearston, Komga, Grahamstown, Port Alfred, Humansdorp).

[E]**longifolia** Baker
[= *Ornithogalum longifolium* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte; bulbs large. **Leaves** 5–10 linear, glabrous, erect, up to 860 × 9 mm. **Peduncles** robust, up to 530 mm long. **Inflorescence** a lax raceme, up to 240 mm long, multiflowered; bracts lanceolate, 26–33 mm long. **Flowers**: perianth oblong, ± 24 mm long, segments linear-oblong, green-keeled. **Anthers** 6, fertile. **Flowering time** Aug.–Dec. Grassland, closed shrubland; Albany Thicket (Uitenhage, Port Elizabeth E to Grahamstown and East London).

longipes Baker
[= *Ornithogalum longipes* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte, up to 0.3 m high; outer bulb tunics often dry and wrinkled above. **Leaves** 2–6, linear, channelled, not clasping below, dry when flowering. **Inflorescences** corymbose. **Flowers** erect on long pedicels; tepals white with green keels, 15–20 mm long; inner tepals cowled and bright yellow at apex. **Flowering time** Sept.–Nov. Clay or lime slopes; Eastern Fynbos-Renosterveld (WC to Willowmore).

[E]**macowanii** Baker
[= *Ornithogalum macowanii* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte; bulbs forming a compact cushion, tunics thick, truncate, not splitting into fibres. **Leaves** up to 0.2 m long, terete, channelled down one side, glabrous. **Peduncles** terete, up to 0.3 m long. **Inflorescences** lax; bracts membranous. **Flowers**: tepals yellow, green-keeled; outer whorl oblong, spreading, inner connivent, cucullate at apex. **Stamens** all bearing anthers, filaments winged at base, 3 widening towards apex and bearing large anthers, 3 narrowing towards apex, bearing small anthers. **Ovary** 3-angled, style prismatic. **Flowering time** Aug.–Feb. Albany Thicket (Somerset East and Grahamstown).

[E]**nana** Schönland
(= *Ornithogalum parvum* J.C.Manning & Goldblatt)

Perennial geophyte; bulb subglobose, ± 18 mm in diam., exterior tunics membranous, fibres absent. **Leaves** 2 or 3, ovate-lanceolate, ± 58 mm long, margins involute, venation prominent, puberulent. **Peduncle** terete, 19–45 mm long. **Inflorescence** a 2- or 3-flowered raceme; pedicels ± 15 mm long, patently erect; bracts ovate-lanceolate, ± 10 mm long. **Flowers**: tepals pale green, white-winged; exterior tepals narrowly oblong, 16–18 mm long, patently erect, apices incurved, slightly thickened; interior ones erect, ovate, boat-shaped, 14 mm long. **Stamens**: outer filaments flattened, 11 mm long, anthers 2 mm long; inner ones pinched in, 11 mm long, anthers 4.5 mm long. **Ovary** subovoid ± 5 mm long. **Style** ± 7 mm long. **Flowering time** Nov.? Mountain top; Dry Highveld Grassland, Albany Thicket (Mountain Zebra National Park, Redhouse).

[E]nelsonii N.E.Br.
[= *Ornithogalum nelsonii* (N.E.Br.) J.C.Manning & Goldblatt]
Umababaza, *umaphipha-intelezi*, *uMaphiphintelezi* (Z)
Perennial geophyte, 0.9–1.7 m high; bulb globose, the size of an apple, tunics thick, green, not split into fibres at top. **Leaves** 4–6, lanceolate, acuminate, bright green, glabrous 0.9–1.2 m long, 50 mm wide near base. **Peduncle** stout, erect, 0.6–0.9 m long. **Inflorescence** a lax raceme, ± 0.3 m long; pedicels ascending, up to 76 mm long. **Flowers** erect; perianth 38 mm long, white, broadly banded with greenish or reddish brown. **Style** longer than ovary. **Flowering time** Sept.–Nov. Forest, grassland above seashore; Indian Ocean Coastal Belt, Indigenous Forests (Dwessa Forest and River Mouth).

[E]patersoniae Schönland
[= *Ornithogalum patersoniae* (Schönland) J.C.Manning & Goldblatt]
Perennial geophyte; bulb ± globose, 40–50 mm in diam., outer tunics white, very smooth, fibrous at apex. **Leaves** 3–5, up to 0.2 m long, linear-canaliculate, margins involute. **Peduncle** terete, 80–120 mm long. **Inflorescence** a few-flowered raceme; pedicels incurved, lower ones up to 15 mm long; bracts lanceolate, cuspidate, ± 10 mm long. **Flowers** erect, outer perianth segments ± 23 mm long, white with reddish keel; inner perianth segments ± 19 mm long, white with median green keels. At Parsons Vlei; Albany Thicket, Eastern Fynbos-Renosterveld (Redhouse, Port Elizabeth).
Doubtfully distinct from *A. setosa*.

[E]polyphylla Baker
(= *Ornithogalum teretifolium* J.C.Manning & Goldblatt)
Perennial geophyte, up to 0.15 m high; bulb ovoid, up to 50 mm in diam., tunics not splitting into fibres at apex. **Leaves** 12–15, subulate, bright green, glabrous, 50–76 × 1 mm. **Peduncle** slender, terete, glaucous, 0.15 m long. **Inflorescence** a few-flowered raceme; pedicels erecto-patent, lower ones > 25 mm long; bracts ovate-lanceolate, up to 12.5 mm long. **Flowers**: perianth erect, 19 mm long, white, banded with green, fading reddish brown. **Style** as long as ovary. Mountain summits; Dry Highveld Grassland (Somerset East, Bosberg).

[E]prolifera Wilson
(= *Ornithogalum bulbilliferum* J.C.Manning & Goldblatt)
Perennial geophyte; bulb globose or subglobose, 25–38 mm in diam., smooth, deep red, forming many small bulbils, tunics 4 or 5, thick. **Leaves** 4, linear, subterete or channelled, up to 0.3–0.4 m long. **Peduncle** 0.1–0.2 m long. **Inflorescence** 0.3 m long, a few-flowered raceme; pedicels erect, up to 63 mm long; bracts lanceolate, 15–19 mm long. **Flowers** 3–5, fragrant; perianth segments pure white with narrow, green, median bands; outer segments up to 24 mm long, inner segments up to 17 mm long. **Ovary** 6 mm and style 8 mm long. Habitat not known; Eastern Fynbos-Renosterveld (Bakens River Valley, Port Elizabeth).

[E]rogersii Schönland
(= *Ornithogalum moylei* J.C.Manning & Goldblatt)
Perennial geophyte; bulb subglobose, ± 75 mm long, membranous, fibres absent. **Leaves** suberect, sublinear, slender, up to 1 m long, 37 mm wide; outside convex, inside concave, green, veins conspicuous on both sides. **Peduncle** up to 0.9 m long. **Inflorescence** a lax raceme. **Bracts** ± 25 mm long. **Flowers** suberect, outer segments white, medially

green-striate, ± 21 mm long, inner segments shorter. **Stamens**: anthers of outer segments ± 4.5 mm long, those of inner ± half the length. **Flowering time** Oct.–Dec. Forest along banks of Kowie River; Drakensberg Grassland, Indigenous Forests (Stutterheim, Port Alfred).

schoenlandii Baker
[= *Ornithogalum schoenlandii* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte, up to 0.3 m high; outer bulb tunics dry and firm. **Leaves** 4–7, oblong, flat, margins hyaline. **Inflorescences** subcorymbose. **Flowers** erect on long pedicels, white and green, 15–25 mm long; inner tepals cowled above. **Flowering time** Sept.–Nov. Dry sandstone slopes; Albany Thicket (WC to Cradock and Alicedale).

setosa Jacq.
[= *Ornithogalum setosum* (Jacq.) J.C.Manning & Goldblatt]

Diktamarak, *slymstok*, *slymuintjie*, *snotblom* (A); *gib'iziphoso* (S); *mototse* (SS), *in-Gcino* (Z)

Perennial geophyte, 0.5–1.8 m high; bulb large, tunics splitting apically into copious persistent fibres. **Leaves** 6–9, not clasping below, lanceolate, acuminate, ± fleshy, margins hyaline, often ciliolate. **Peduncle** moderately stout, up to 0.45 m long. **Flowers** erect on long pedicels, yellow with green keels, 15–25 mm long; inner tepals cowled above. **Flowering time** Oct., Nov. Rocky clay flats and slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket (Qacha's Neck to Maclear southwards, from Middelburg to Port Edward, from Pearston to Nahoon River Mouth and from Port Elizabeth to Port Alfred).

[E]**tenuifolia** Baker
(= *Ornithogalum nematophyllum* J.C.Manning & Goldblatt)

Perennial geophyte; bulb ovoid, up to 19 mm in diam., tunics membranous, not splitting into fibres apically; plants glandular-pubescent throughout, except for flowers. **Leaves** 6–13, terete, very slender, 150 × 1 mm long. **Peduncle** slender, up to 152 mm long. **Inflorescence** a few-flowered, lax raceme; pedicels erecto-patent, lower ones up to 76 mm long; bracts ovate-attenuate, up to 6 mm long. **Flowers**: perianth erect, up to 19 mm long, pale yellow, banded with green, turning reddish brown. **Stamens** all fertile. **Style** triquetrous in upper half, longer than ovary. **Flowering time** Nov., Dec. Variable, karoo, thick *Acacia karoo* scrub between grass, loamy soil; Upper Karoo, Sub-Escarpment Grassland (Albert District, Graaff-Reinet, Fort Beaufort).

[E]**tortuosa** Baker
(= *Ornithogalum tortile* J.C.Manning & Goldblatt)

Perennial geophyte, ± 0.56 m high; bulb globose, proliferous, up to 50 mm in diam. **Leaves** 8–11, linear, up to 0.3 m long, 1.3 mm wide towards base, flaccid, spirally twisted, glabrous. **Peduncle** moderately stout, ± 0.3 m long. **Inflorescence** a moderately dense raceme, 0.2 m long; pedicels ascending, lower ones ± 38 mm long; bracts membranous, ovate-attenuate, up to 25 mm long. **Flowers**: perianth ± 25 mm long, yellow, broadly striped with green. **Stamens** all fertile. **Style** prismatic, as long as ovary. **Flowering time** Aug.–Mar. Stony, rocky soil, grassland, shrubland, gardens; Albany Thicket, Sub-Escarpment Savanna (Jansenville District, Komga, Greater Addo Elephant National Park, Port Elizabeth, Coega, Grahamstown).

2b Flowers nodding, actinomorphic; tepal whorls weakly dimorphic, apex of inner tepals slightly cucullate; stamen whorls subequal or dimorphic, anthers of outer whorl subequal to or smaller than inner or lacking; ovary with or without paraseptal crests; style prismatic, obpyramidal, or 3-horned; capsule ovoid, acute; seeds discoid or semi-lunate [subgenus Albuca *sect.* Falconera *(Salisb.) J.C.Manning & Goldblatt]*

3a Inner tepals slightly gaping; all stamens fertile; style ± cylindrical [subgenus Albuca *ser.* Falconera *(Salisb.) J.C.Manning & Goldblatt]*

[E]**bifoliata** R.A.Dyer
[= *Ornithogalum bifoliatum* (R.A.Dyer) J.C.Manning & Goldblatt]

Perennial geophyte; bulb ± pyriform, tunics light brown, membranous. **Leaves** 2, canaliculate on inner surface with a solid terete tip, glabrous, bluish green bloom. **Inflorescence** a 2–7-flowered raceme. **Flowers**: perianth segments 12–18 mm long, oblong-lanceolate, apex hooded; outer tepals entirely green, inner green-striped, margins yellow. **Stamens**: filaments with margins incurved in lower half. **Ovary** sessile, oblong. **Style** equalling ovary in length; stigma 3-lobed, elongate and recurved. **Flowering time** July–? **Fruit** an ovoid capsule. **Seeds** superposed flat, discoid, 10 mm in diam. (largest in genus), black. Karroid scrub, in sandy loam; Albany Thicket (Grahamstown E to Hopewell and Banks of Nahoon River).

robertsoniana U.Müll.-Doblies

Perennial geophyte; bulb tunics with few fibres, originating from cataphylls with age. **Leaves** 2, channelled, glabrous. **Flowers** yellow-green. **Ovary** subglobose. **Style** twice as long as ovary; stigma with apiculus. **Flowering time** May? Sundays River Scrub, calcrete, closed shrubland; Albany Thicket (Robertson Karoo, one Acocks voucher from Port Elizabeth).

Species excluded – No authentic material found and probably conspecific with one of the above: **A. weberlingiorum** U.Müll.-Doblies

3b Inner tepals connivent; outer stamens sterile, with rudimentary anthers; style obpyramidal [subgenus Albuca *ser.* Trianthera *(U.Müll.-Doblies) J.C.Manning & Goldblatt]*

crispa J.C.Manning & Goldblatt

Deciduous geophyte, 0.1–0.3 m high; bulb subglobose 25–30 mm in diam.; outer tunics papery, greyish brown, inner tunics forming translucent collar around base of leaves. **Leaves** 2–4, ± as long as inflorescence, fleshy, clasping at base, linear-lanceolate, attenuate, undulate-crispulate. **Inflorescence** a cylindrical raceme, up to 60 mm long, 2–10-flowered. **Bracts** lanceolate-acuminate. **Flowers** white or cream-coloured with green keels, nodding; outer tepals narrowly oblong, inner tepals oblong-elliptical. **Stamens** adnate to perianth for ± 1 mm, dimorphic; inner whorl fertile, anthers ± 6 mm long at anthesis, cream-coloured. **Ovary** oblong, 3-winged ± 5 mm long; stigma trigonous, apiculate. **Flowering time** Nov., Dec. Endemic to Great Karoo, on rocky flats; Lower Karoo, Albany Thicket, Rainshadow Valley Karoo (Aberdeen, Graaff-Reinet, Willowmore and Steytlerville).

[E]**crudenii** Archibald
[= *Ornithogalum crudenii* (Archibald) J.C.Manning & Goldblatt]

Perennial geophyte; bulb spherical, up to 30 mm in diam., outer tunics membranous, light brown, inner white, fleshy. **Leaves** usually 1, yellowish green, slightly folded, 450 × 16 mm, apex subulate, withering early. **Peduncle** 0.28 m long. **Inflorescence** up to 450 mm long, a lax, secund raceme. **Flowers** 3–10, pendulous, with vanilla-like scent;

tepals bright yellow with median green stripes, oblong 15 × 6 mm long, apex slightly cucullate; inner tepals 12 × 5 mm, cucullate above. **Anthers** of inner whorl spade-shaped. **Flowering time** Oct.–Sept. S-facing krantz faces and shady rock ledges; Albany Thicket (Albany District, Alicedale, Dassieklip on E banks of Bushman's River).

shawii Baker
[= *Ornithogalum shawii* (Baker) J.C.Manning & Goldblatt]

Lanternblom (A)

Perennial geophyte, 0.1–3.0 m high; bulb ovoid, tunics whitish, membranous, not fibrous at top. **Leaves** 6–12, filiform, very slender, up to 0.12 m long, glabrous. **Peduncles** slender, up to 0.24 mm long. **Inflorescence** a lax raceme, 3–9-flowered; pedicels cernuous at apex; bracts ovate-lanceolate, acuminate. **Flowers**: perianth yellow, keeled with green, up to 15 mm long. **Ovary** shorter than style, stigma 3-lobed. **Flowering time** Nov.–Feb. Karroid, stony slopes; Drakensberg Grassland, Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna, Albany Thicket (Maclear S to Cradock, Somerset East, Fort Hare, Tukulu and Grahamstown).

2c Flowers nodding, actinomorphic; tepal whorls strongly dimorphic, apex of inner tepals developed into a hinged flap; stamen whorls dimorphic, anthers of outer whorl vestigial or lacking; ovary with paraseptal crests; style prismatic or obtriangular; capsule oblong, obtuse; seeds discoid
[subgenus Albuca *sect.* Albuca*]*
4a Bulb tunics fibrous [subgenus Albuca *ser.* Fibrosa *J.C.Manning & Goldblatt]*

cooperi Baker
[= *A. karooica* U.Müll.-Doblies, *Ornithogalum cooperi* (Baker) J.C.Manning & Goldblatt]

Blougif (A)

Perennial geophyte, 0.18–0.30 m high. **Leaves** 2 or 3, slender, channelled, conspicuously clasping and warty basally. **Flowers** yellow with green keels, 15–25 mm long. **Stamens** of outer whorl sterile. **Flowering time** Sept.–Nov. Stony, mostly sandy slopes and flats, rarely limestone; Eastern Fynbos-Renosterveld (WC to Willowmore).

4b Bulb tunics not fibrous [subgenus Albuca *ser.* Albuca*]*

juncifolia Baker
(= *A. imbricata* F.M.Leight.)

Snotbel (A)

Perennial geophyte, up to 0.57 m high; bulb globose, 25 mm in diam., tunics membranous. **Leaves** 3–14, non-clasping, stiffly erect, needle-shaped, up to 3 mm wide, shallowly channelled throughout, dorsal rib and margins pilose. **Peduncle** slender, terete, glaucous, ± 0.3 m long. **Inflorescence** a few-flowered, lax raceme, overtopping erect leaves; pedicels cernuous at tip, lower ones up to 38 mm long; bracts ovate-lanceolate, up to 15 mm long. **Flowers**: perianth 19 mm long, pale yellow, banded with green. **Style** prismatic, as long as ovary. **Flowering time** Aug.–Dec. Steep rocky mountain slopes, fairly frequent in karoo flats; Albany Thicket (WC, followed by a disjunction gap of 500 km, East London and high mountains further north) (Müller-Doblies 2006: 122).

namaquensis Baker
[= *Ornithogalum namaquense* (Baker) J.C.Manning & Goldblatt]

Perennial geophyte, up to 0.3 m high; bulb tunics membranous. **Leaves** 4–20, not clasping below, channelled or rolled, spirally curled above, scabrid or hairy. **Flowers** nodding; tepals pale yellow, green-keeled. **Stamens** of outer whorl sterile. **Flowering time** Sept., Oct. Near seashore, sandy, in shade of low shrubs, grassland, gardens; Lower Karoo, Sub-Escarpment Savanna, Albany Thicket (Pearston, Nahoon River Mouth, Port Elizabeth, Boknes).

[E]xanthocodon Hilliard & B.L.Burtt
[= *Albuca juncifolia* subsp. *xanthocodon* (Hilliard & B.L.Burtt) U.Müll.-Doblies (Müller-Doblies 2006: 125), *Ornithogalum xanthocodon* (Hilliard & B.L.Burtt) J.C.Manning & Goldblatt (Manning et al. 2009: 98)]

Perennial geophyte, ± 0.3 m high; bulbs ovoid, 1.5–2.5 × 1.0–2.5 mm, tunics imbricate. **Leaves**, filiform, widest basally, 30 × 5 mm, canaliculate above, glabrous, glaucous. **Peduncles** firm, 0.15 m high. **Inflorescences** with racemes, up to 0.13 m high; pedicels ascending, 30–40 mm long. **Flowers** ± 7, nodding; outer tepals yellow, green-keeled, oblong, apices thickened; inner tepals cymbiform, apices rounded. **Stamens**: outer whorl sterile; inner whorl fertile. **Ovary** triangular, 8 mm long. **Style** prismatic, 5 mm long. **Flowering time** Aug.–Dec. **Fruit** a capsule, 15 × 10 mm. **Seeds** 5 × 4 mm. Steep grass slopes, high mountains; Mesic Highveld Grassland, Sub-Escarpment Grassland (Witteberg Mts, Barkly East District, Tabankulu Mtn, between Engcobo and Elliot, Nahoon River Mouth).

BOWIEA Harv. ex Hook.f.

Subfamily Urgineoideae Speta

Knolklimop (A)

Species 1 (monospecific, Bruyns & Vosa 1987), from SA to Uganda and Kenya; widespread but increasingly rare, N, LIM, NW, G, M, S, FS, KZN, NC, WC, EC.

volubilis Harv. ex Hook.f.

Climbing onion; *knolklimop* (A); *umagaquana* (X); *uGibisila* (Z)

Perennial, deciduous herb, 0.2–3.0 m long; bulb globose-depressed, ± 150 mm in diam., exposed, green. **Leaves** 1–few, soon withering, linear, small, canaliculate. **Inflorescence** a diffusely branched, twining raceme; pedicels 20–50 mm long, arched. **Flowers** yellowish green, diurnal. **Tepals** fused at base; lobes lightly reflexed, lanceolate, apex incurved, persistent. **Stamens** 6, filaments free; anthers oblong, introrse. **Ovary** globose-conical; style terete; stigma clavate, 3-lobed. **Flowering time** Jan., Feb. **Fruit** a globose-conical capsule, ± 13 mm long, dehiscing loculicidally. **Seeds** few, flattened, shiny black. Bushes and trees, riverbanks, also drier areas; Sub-Escarpment Grassland, Indigenous Forests, Sub-Escarpment Savanna, Drakensberg Grassland, Indian Ocean Coastal Belt (Mount Frere to Weza State Forest southwards, from Queenstown to Mthatha, Katberg Pass, Komga and Kentani Districts). Medicinal plant, toxic in large quantities. Cultivated ornamental.

DAUBENYA Lindl.

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Species 8, almost restricted to arid, winter rainfall area of SA, NW, FS, NC, WC, EC.

comata (Burch. ex Baker) J.C.Manning & A.M.van der Merwe

Pincushion lily

Perennial, dwarf, bulbous herb, up to 0.05 m high; bulb subglobose, 20–35 mm in diam., deep-seated, tunics leathery, dark brown. **Leaves** 2, ovate to lanceolate, dark green, flushed maroon. **Inflorescence** a showy, capitate head of ± 10 flowers, situated between and exserted up to 20 mm above leaves; peduncle short; bracts large, obovate, membranous, clasping pedicels and flower bases. **Flowers** white or flushed pink, scent sweet and spicy; weakly dimorphic: lower flowers slightly bilabiate, upper flowers actinomorphic; tepals fused into a tube, 3 upper tepal lobes large, spathulate, 3 inner lobes reduced; inner flowers with tepal lobes short. **Stamens** 6; anthers oblong, versatile, introrse. **Ovary** ovoid; ovules many; style tapering; stigma minute. **Flowering time** Mar., Apr. **Fruit** a shortly fusiform capsule. **Seeds** globose, black. Grassland, clay soil; Upper Karoo, Dry Highveld Grassland (Middelburg E to Oorlogspoort and Molteno).

DIPCADI Medik.

Subfamily Ornithogaloideae Speta, tribe Dipcadieae Speta ex J.C.Manning & Goldblatt

Snakeroot; *slangui* (A)

Species 30, Africa to Madagascar, Socotra, Mediterranean to India, centres of diversity in sthn Afr. and India; more arid parts of sthn Afr., adapted largely to summer rainfall climate, widespread across interior of subcontinent.

Adapted from Manning et al. (2002, 2009) and Obermeyer (1963).

Outer tepals without caudate apical appendages (ser. Dipcadi*, Africa, Madagascar, Socotra, Mediterranean, India)*

brevifolium (Thunb.) Fourc.

Slangui (A)

Perennial geophyte, 0.1–0.4 m high; bulb 15–30 mm in diam., outer tunics firm, grey, sometimes with short neck. **Leaves** dry or present at flowering, 2–4, straight to coiled, linear to filiform. **Inflorescence** racemose, secund. **Flowers** brown, green or cream-coloured, 12–20 mm long; tepals united in lower half, apices subacute to retuse, outer recurved, inner erect, forming a short tube above recurved apex, acridly scented at night. **Flowering time** Aug.–Apr. **Fruit** a trigonous capsule, rounded in outline. Dry sandy or stony flats or slopes; Upper Karoo, Rainshadow Valley Karoo (Middelburg, Steytlerville).

ciliare (Zeyh. ex Harv.)

Curly-curly, jig-a-jig; *slanguintjie* (A)

Perennial geophyte, 0.15–0.60 m high; bulb ovoid to globose, ± 20 mm in diam., outer tunics thin, dark, produced into a short neck. **Leaves** present at flowering, ± 6, linear, channelled, often coiled, roughly hairy beneath, margins hairy and crisped or undulate. **Inflorescence** secund. **Flowers** brown, green or cream-coloured, 16–18 mm long; tepals united in lower $^1/_3$, apices acute to attenuate, recurved. **Flowering time** Nov.–May. **Fruit** a trigonous capsule, oblong in outline. Grassy slopes; Dry Highveld Grass-

land, Upper Karoo, Sub-Escarpment Grassland, Lower Karoo, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Aliwal North, Middelburg and Queenstown, southwards to Graaff-Reinet, Alice and Kei River Mouth, from Port Elizabeth E to Grahamstown and East London).

marlothii Engl.

Dronkui (A); *morothoana-phookoana* (SS)

Perennial geophyte, 0.1–2.4 m high; bulb globose, produced into neck, brown leathery skin. **Leaves** appearing after flowers early in season, many, often in lax spirals, linear to filiform, 100–450 mm long, base white, apices attenuate into filiform, membranous, margins sparsely to densely bristly. **Inflorescence** a subsecund raceme, 10–20-flowered. **Flowers** green, ± 18 mm long; tepals united in lower $^1/_3$, outer ones spreading in upper half, inner forming a tube with apices slightly recurved. **Flowering time** Nov., Dec. **Fruit** an oblong to globose capsule. Grassland, rocky hills; Drakensberg Grassland, Indian Ocean Coastal Belt (Kloppershoek, Mkambati Nature Reserve).

papillatum Oberm.

Perennial geophyte, 0.1–0.5 m high; bulb ovoid, ± 20 mm in diam., outer tunics thin, brown, produced into a neck. **Leaves** appearing after flowers in spring, ± 4, forming an erect rosette with lamina in lax spirals, somewhat coriaceous, glaucous, glabrous, margins yellow, minutely ciliate. **Inflorescence** a secund raceme, 4–7-flowered, overtopping leaves. **Flowers** green, 10 mm long; tepals united in lower $^1/_3$, constricted above ovary, equal, outer recurved near apex. **Flowering time** Dec.? **Fruit** a round, trigonous capsule. Sub-Escarpment Grassland (Andriesberg near Bailey).

Outer tepals with short to long caudate apical appendages (ser. Uropetalon, *sthn Afr., tropical Africa, Madagascar)*

viride (L.) Moench

Dainty green bells; *gifbolletjie*, *grootslymuintjie* (A); *lephotoana*, *molubeli* (SS); *ikhakhakha eliluhlaza* (Z)

Perennial geophyte, 0.2–1.7 m high; plants glabrous; bulb firm or loose and scaly during growth period. **Leaves** present at flowering, 1–4, long, erect, linear to lanceolate, channelled, up to 0.6 × 0.02 m, clasping at base, attenuate in upper half, apices acuminate. **Inflorescence** a raceme, as long or longer than leaves, few- to many-flowered. **Flowers** green to brown, 12–15 mm long, acridly scented at night; tepals united in lower $^1/_3$, acuminate to aristate, outer longer with filiform appendages 2–30 mm long, progressively longer in upper flowers, often recurved. **Flowering time** Sept.–Feb. **Fruit** a capsule, oblong in outline. Stony grassland; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (widespread, from Aliwal North to Port Edward and southwards to Baviaanskloof, Port Elizabeth and East London).

DRIMIA Jacq.

Subfamily Urgineoideae Speta

Poison squill

Species ± 100, Africa, Mediterranean, Asia; ± 49 in sthn Afr., widespread.

Drimia includes genera such as: *Tenicroa*, *Thuranthos* and *Urginea* (Jessop 1976) or *Litanthus*, *Rhadamanthus*, *Schizobasis*, *Tenicroa* and *Urginea* (Goldblatt & Manning 2000).

Drimia is well defined by the short-lived flowers in which the perianth abscises below and twists above to form a cap on top of the developing fruit (Manning et al. 2002).

Drimia-group: *brandui*, *jeukbol* (A)

anomala (Baker) Baker

Perennial geophyte, up to 0.8 m high; bulb up to 80 mm long, sheath scales tightly packed, white. **Leaves** synanthous, solitary, cylindrical, dark green, up to 300 × 4 mm. **Inflorescence** an elongate raceme, 14–18-flowered; bracts ± 1 mm long. **Flowers**: white, pinkish, beige, yellow or greenish, with a green to reddish dorsal stripe; tepals 4–5 mm long, fused for ± 1 mm, spreading or recurved. **Stamens**: filaments 2.5–3.0 mm long, erect-spreading, never connivent; anthers dorsifixed, ± 1 mm long. **Ovary** ovoid; style up to 2 mm long; stigma minutely capitate. **Flowering time** summer. **Fruit** an ellipsoid capsule, ± 6 mm long. Grassland among rocks, semi-desert areas; Dry Highveld Grassland, Upper Karoo, Eastern Fynbos-Renosterveld, Albany Thicket, Lower Karoo (Jansenville E to Mountain Zebra National Park, Somerset East, Joubertina and Bushman's River Mouth).

capensis (Burm.f.) Wijnands

Slangkos (A)

Perennial geophyte, 0.45–2.15 m high; bulb large, subterranean. **Leaves** dry at flowering, spreading, oblong to lanceolate, 300–500 × 100 mm. **Inflorescence** an elongate, densely whorled raceme. **Flowers** white or cream-coloured, often subsessile; tepals reflexed 12–20 mm long, shortly united below. **Stamens** connivent; filaments up to 12 mm long; anthers green, 6–8 mm long. **Flowering time** Nov.–Feb. **Fruit** a 3-lobed capsule, up to 10 mm long. Frequent in open grassland, Karoo; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Queenstown SE to Kei Road and Whittlesea, from Greater Addo Elephant National Park and Port Elizabeth).

[E]**cremnophilla** Van Jaarsv.

Evergreen geophyte; bulb epigeous, ovoid, up to 30 mm long, in loose clusters, tunics loose, thick succulent, oblong-clavate, purplish. **Leaves** linear, up to 200 × 8 mm, amplexicaul at base, dark green, midrib distinct, margins entire. **Inflorescence** racemose, up to 300 mm long, bearing 4–8 pendent flowers; bracts up to 4 mm long, white, linear-lanceolate. **Flowers**: tepals oblanceolate-oblong, white with dull purplish stripes in centre. **Stamens** appressed to ovary in erect, cone-like structure; filaments ± 1.5 mm long; anthers 6 mm long, opening by an apical pore. **Ovary** ovoid, 6-grooved; style 3 mm long; stigma capitate. **Flowering time** Dec. Occurring singly or in small groups, packed in rock crevices of vertical Ecca Group shale cliffs; Sub-Escarpment Savanna (lower Mzimvubu River, Ludonga near Port St Johns coast).

elata Jacq.

Brandui, *jeukbol* (A); *gib'iziphoso* (S); *undongana-zibomvana* (Z)

Perennial geophyte, 0.2–1.8 m. **Leaves** dry at flowering, erect to spreading, linear-lanceolate, 250 **× 15 mm,** often undulate, sometimes hairy, margins ciliate. **Inflorescences**: narrow, crowded, erect racemes. **Flowers** silvery white, green or purple; tepals reflexed, 10–15 mm long, shortly united below. **Stamens** connivent; filaments 6–8 mm long; anthers ± 2 mm long, blue to purple. **Flowering time** Nov.–Apr. **Fruit** a 3-lobed capsule, 1–15 mm long. Dry grassy slopes on shale; Drakensberg Grassland, Sub-Escarp-

ment Savanna, Albany Thicket, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Maclear S to Komga and Kei River Mouth, Willowmore, Humansdorp, Kouga, Port Elizabeth, Grahamstown and East London).

haworthioides Baker

Perennial geophyte, 0.2–0.4 m high; bulb exposed, with loose scales. **Leaves** 5–10, dry at flowering, spreading, lanceolate, margins often ciliate. **Inflorescence** a short cylindrical raceme. **Flowers** greenish brown; tepals 10–15 mm long, shortly united below. **Stamens**: filaments 5–6 mm long; anthers mauve, ± 1 mm long. **Flowering time** Nov.–Feb. **Fruit** a 3-lobed, obcordate capsule, 8–10 mm long. Dry grassland, grassy dunes and karoo, seasonally moist, sandy soil, on conglomerates; Eastern Fynbos-Renosterveld, Albany Thicket (Kouga, Grahamstown, Bushman's River Mouth, Hopewell, Humansdorp).

[E]**hyacinthoides** Baker

Perennial geophyte, up to 0.7 m high; bulb ± 60 mm long, globose, scales very loose, white, sometimes reddish. **Leaves** hysteranthous, few, linear to oblong, 100–120 × 14–24 mm, glabrous, conspicuous parallel venation. **Inflorescences** racemose; peduncles 200–500 mm long, up to 50-flowered; bracts 3–4 mm long, lowest spurred. **Flowers** pendulous, narrowly campanulate; tepals lilac or dull mauve with a dark dorsal stripe, fused for 1–2 mm, 9–12 mm long. **Stamens**: filaments linear, connivent above ovary, ± 2.4 mm long; anthers basifixed, ± 2.5 mm long. **Ovary** globose; style 4–5 mm long; stigma capitate. **Flowering time** Dec., Jan. **Fruit** an ellipsoid capsule, up to 16 mm long. Grassland, in shelter of bushes; Albany Thicket (restricted to Fort Beaufort, Alexandria and East London).

[E]**mzimvubuensis** Van Jaarsv.

Evergreen geophyte; bulb epigeous, ovoid, up to 50 mm long, tunics loose, thick succulent, oblong-clavate, dark purplish brown. **Leaves** linear, subterete, up to 50 × 3 mm, distinctly 12–15-grooved, amplexicaul at base, dark green. **Inflorescence** racemose, up to 380 mm long, bearing 20–30 pendent flowers; bracts ± 8 mm long, white, linear-lanceolate. **Flowers**: tepals lanceolate to strap-shaped, white with green stripe in centre. **Stamens**: filaments fused into distinct staminal column 2.5 × 2 mm, apices free, tapering into cone-like structure consisting of acute, appressed, introrse anthers; anthers 3 mm long, erect, sagittate, with apical pores. **Ovary** ovoid-tapering, 6-grooved. **Flowering time** Nov., Dec. **Fruit** a 3-locular, loculicidal capsule. Loose, globose clusters in rock crevices of vertical Ecca Group shale cliffs; Indian Ocean Coastal Belt (lower Mzimvubu River near Lutengele, close to Port St Johns coast).

sphaerocephala Baker

Snotuintjie (A); *hlare-sa-noko* (SS)

Perennial geophyte, 0.3–0.7 m high; bulb 20–30 mm long, ovoid to subglobose, scales rather loose, pale-coloured. **Leaves** hysteranthous, 3 or 4, linear, 115–117 × 6–8 mm long, acute, ciliate on margins. **Inflorescence** 15–20-flowered in a capitate arrangement; peduncle up to 700 mm long. **Bracts** 6–9 mm long, spurred. **Flowers** white (also pink, mauve, greenish yellow), fused for 2–3 mm, 8–12 mm long, reflexed. **Stamens**: filaments greenish or white, up to 10 mm long, linear; anthers green, dorsifixed 1.0–1.5 mm long. **Ovary** ellipsoid to ovoid; style up to 9 mm long; stigma capitate. **Flowering time** Dec., Jan. **Fruit** an ellipsoid capsule, up to 8 mm long. Recently burned grassland on slopes; Sub-Escarpment Grassland (St Bernard's, Griqualand East, Weza, Ngele slopes).

Litanthus-group: fairy snowdrop

uniflora J.C.Manning & Goldblatt

Fairy snowdrop

Perennial geophyte, 0.01–0.08 m high. **Leaves** 2–4, dry at flowering, suberect, filiform. **Flower** solitary, sometimes 2, tubular, nodding; pedicels 1.0–1.5 mm long; tepals 4–8 mm long, united for 3–7 mm, white to pale pink. **Stamens**: filaments 0.5 mm long; anthers opening by longitudinal slits. **Flowering time** Dec.–Mar. **Fruit** an ovoid to ellipsoid capsule, 3–6 mm long. Grassland, karoo, sandstone, gravelly sand; Dry Highveld Grassland, Indian Ocean Coastal Belt, Upper Karoo, Sub-Escarpment Grassland, Albany Thicket (Aliwal North E to Port Shepstone, S to Mountain Zebra National Park, Whittlesea, Wolwefontein and Redhouse).

Rhadamanthus-group: African snowdrop

[E]cyanelloides (Baker) J.C.Manning & Goldblatt

Perennial geophyte, up to 0.06 m high; subterranean parts and leaves unknown. **Scape** erect, 400–600 × 2–3 mm, glabrous, straw-coloured, brownish. **Inflorescence** a 40–60 mm long raceme, 12–20-flowered; bracts ovate-acuminate with one lateral tooth on each side (tricuspidate), ± 4 mm long, submembranous, lower ones spurred. **Flowers** erect; pedicels 5–10 mm long; tepals biseriate, free from base, oblong to narrowly ovate-oblong, 7.5 × 3 mm, midrib distinct, brown. **Stamens**: filaments free, 1.0–1.5 mm long, ovate-oblong; anthers yellow, 5–6 mm long, connate into a narrow cone surrounding gynoecium, dehiscing by apical pores. **Ovary** oblong-ovoid; style ± 3 mm long. **Flowering time** Nov., Dec. Forest and grassy valleys; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Maclear E to Mateku Waterfall, S to Komga and Ngqaqini in Transkei).

Schizobasis-group: *volstruiskos* (A)

intricata (Baker) J.C.Manning & Goldblatt

Wire onion

Perennial geophyte, 0.05–0.70 m high. **Leaf** ephemeral, dry at flowering; linear, 40–60 mm long. **Scape** ± intricately branched, minutely hairy below. **Flowers** in densely branched panicles; pedicels spreading or deflexed, up to 50 mm long; star-shaped, tepals ± 3 mm long, united below for 1 mm, white, pale yellow or pink. **Stamens**: filaments up to 1.5 mm long; anthers ± 0.8 mm long. **Style** up to 1.5 mm long. **Flowering time** Jan.–Mar. **Fruit** an ovoid capsule, 3–5 mm long. Dry areas, stony slopes; Dry Highveld Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Aliwal North S to Queenstown, Graaff-Reinet, Alice and Keiskamma Valley, from Wolwefontein E to Grahamstown).

Tenicroa-group: *gifbol* (A)

exuviata (Jacq.) Jessop

Perennial geophyte, up to 1 m high; bulb 35–70 mm long, ovoid, solitary, neck apically banded, scales loosely arranged. **Leaves** synanthous, 1–10, narrowly linear, up to 400 × 3 mm, spirally twisted, erect, leathery, greyish. **Inflorescence**: peduncle up to 600 mm long, 15–60-flowered, racemose; bracts 2–7 mm long, auriculate, lowest spurred. **Flowers**: pedicels 6–13 mm long, spreading-erect; tepals rotate, up to 15 × 7 mm, fused up to 1.5 mm, purplish white with green keels, fragrant. **Stamens**: filaments up to 6 mm

long, linear; anthers basifixed, 2–6 mm long, connivent. **Ovary** oblong-ellipsoid; style 3–9 mm long; stigma minutely 3-lobed. **Flowering time** Sept. throughout summer. **Fruit** an ellipsoid capsule, 8–13 mm long. Widespread from WC on lime soils, sandy flats and mountain slopes, from Table Mountain Sandstone; Albany Thicket (Port Elizabeth to Grahamstown).

Urginea-group: *slangkop* (A)

1a Anthers basifixed

angustifolia Baker

Perennial geophyte, up to 0.9 m high; bulb 35–65 × 55 mm, scales ± globose, firmly to loosely packed, whitish. **Leaves** hysteranthous, ± 3, linear, up to 160 × 13 mm, adaxially channelled. **Inflorescence**: peduncle 600–900 mm long; 4–9-flowered, laxly arranged; bracts 7–8 mm long, lowest caducous. **Flowers**: pedicels up to 80 mm long, spreading, ascending and thickened in fruit; tepals 14–20 mm long, fused for 1–4 mm, yellow-green to brownish white. **Stamens**: filaments linear-lanceolate, 7–11 mm long; anthers 2.5–7.0 mm long, green, connivent. **Ovary** narrowly ovoid; style up to 9 mm long, clavate, becoming subtruncate. **Flowering time** Oct.–Dec. **Fruit** an oblong-ovoid capsule, 25–40 mm long. Widespread in eastern half of SA, from dry localities to marshes; Albany Thicket (near Somerset East).

macrantha (Baker) Baker

Perennial geophyte, up to 1.4 m high; bulb 30–100 mm long, ± ovoid, scales loose, spathulate. **Leaves** hysteranthous, 2–4, linear, up to 600 × 10 mm, channelled. **Inflorescence**: peduncles up to 1.3 m long, 12–30-flowered; bracts 3–7 mm long, caducous. **Flowers**: pedicels > 20 mm long; tepals 28–33 mm long, fused for 1–2 mm, varying from green to brown, keel and margins green. **Stamens**: filaments connivent above ovary, distal part terete; anthers green, up to 5 mm long. **Ovary** ± ovoid; style 14–22 mm long; stigma capitate. **Flowering time** summer. **Fruit** a 3-lobed, ellipsoid capsule, 25–40 mm long. Karoo and grassland, sandy slopes in drier, heavy turfs in moist areas; Upper Karoo, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Middelburg District southwards, Somerset East E to Kentani, from Port Elizabeth to East London).

1b Anthers dorsifixed

[E]**acarophylla** E.Brink & A.P.Dold

Fish River tick plant

Geophyte diminutive, inconspicuous; bulb 14–25 mm long. **Leaves** recumbent (leaning or resting on ground), present or absent at anthesis; succulent, up to 14 × 4 mm, clavate-terete, wrinkled, dark grey-green with dull whitish bloom; epidermal wax layer of erect wax platelets. **Inflorescence**: peduncle up to 27 mm long; subcapitate-racemose, 6–17-flowered. **Flowers** apricot-coloured, outer tepals ovate, inner broadly elliptic; when fading, inner tepals close first, their papillate apices fuse with stigmatic papillae. **Flowering time** July–Oct. **Fruit** an orbicular capsule, 4.5–6.4 mm. Small colonies confined to bare patches of exposed, loose pencil shale fragments of Fort Beaufort Formation, Ecca group of shales; Albany Thicket (restricted to flood plain of Great Fish River).

altissima (L.f.) Ker Gawl.

Perennial geophyte, 1.0–2.5 m high; bulb 90–200 mm long, scales whitish to pale green. **Leaves** mostly hysteranthous, up to 16, oblong, 200–400 × 25–40 mm. **Inflorescence**: peduncle up to 2.5 m long; racemose, 100–300-flowered, spirally arranged; bracts 5–7 mm long, lowest spurred, caducous. **Flowers**: pedicels up to 25 mm long;

tepals up to 15 mm long, fused up to 2 mm, spreading, whitish, usually with green, dorsal stripe. **Stamens**: filaments up to 12 mm long, linear; anthers 1–3 mm long. **Ovary** ellipsoid; style up to 11 mm long; stigma ± capitate. **Flowering time** Oct.–Feb. **Fruit** an obovoid capsule. Grassland, often encroached, grazed, gardens, loose sandy soils, loam; Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Queenstown E to Indwe, southwards from Somerset East to King William's Town and from Addo to confluence of Cap and Fish Rivers).

calcarata (Baker) Stedje

Perennial geophyte, small and slender, 0.07–0.45 m high. **Leaves** filiform, hysteranthous. **Inflorescence** a ± 20-flowered raceme; bracts ± 1.5 mm long; spurs up to 6 mm long. **Flowers**: pedicels 1–3 mm long; tepals free, white with green or brown abaxial band, 3–4 mm long. **Filaments** free, ± 3 mm long. **Ovary** ellipsoid, ± 2 mm long; style ± as long as ovary. **Flowering time** Aug.–Nov. **Fruit** a narrowly ovoid-ellipsoid capsule, 4–5 mm long. Mountain slopes and rocky outcrops in grassland, stream and rocky riverbanks in forest; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Grassland (Rhodes E to Port Shepstone, S to Lusikisiki, King William's Town and Kei River Mouth).

[E]**chalumnensis** A.P.Dold & E.Brink

Dwarf geophyte, 0.15 m high; bulb globose, without tunic, white. **Leaves** 2–6, rosulate, deciduous, linear-lanceolate, stiffly coriaceous, dark grey-green with dull whitish bloom, prostrate, margins light brown, cartilaginous, thickened. **Inflorescence** single, subcapitate, racemose; bracts deltoid, attenuate, saccate, glossy purple-red. **Flowers** spreading-erect, stellate; tepals biseriate, fused at base, apices penicillate, recurved golden-brown below, white flushed above; outer tepals narrowly ovate, apically winged, inner tepals ovate, apices truncate. **Stamens** erect; filaments broadly lanceolate, basally contiguous; anthers globose, yellow. **Ovary** ovoid, shallowly 3-lobed; style terete; stigma trigonous. **Flowering time** Oct., Nov. **Fruit** a subglobose capsule, 5 × 4.5 mm. Vulnerable (VU D2), colonies of ± 40 plants on calcareous sandstone sheets in pockets of shallow, sandy soil, daily mist from the sea supplements rainfall; Albany Thicket (Chalumna to Kayser's Beach SW of East London).

ciliata (L.f.) J.C.Manning & Goldblatt

Perennial geophyte, 0.07–0.15 m high; bulbous. **Leaves** dry at flowering, 3–5 in a rosette, elliptic to oblanceolate, up to 35 × 12 mm, leathery, margins hyaline, papillate-ciliolate. **Scape** scabrid below. **Flowers** in lax racemes; pedicels wiry, spreading, 10–20 mm long; nodding in bud, stellate, sweetly scented; tepals ovate, 4–6 mm long, united for 0.5 mm, white. **Stamens**: filaments ± 2 mm long; anthers ± 1 mm long. **Style** ± 1.5 mm long. **Flowering time** Dec.–Feb. **Fruit** a subglobose capsule, ± 5 mm long. Rocky outcrops; Albany Thicket (Port Elizabeth, Grahamstown).

depressa (Baker) Jessop

Perennial geophyte, up to 0.3 m high; bulb up to 50 mm long, colonial; scales tightly packed, white. **Leaves** hysteranthous, 5–8, linear, up to 260 × 26 mm. **Inflorescence**: peduncle up to 200 mm long; raceme solitary, 10–20(–50)-flowered, forming a ± globose head; bracts up to 4 mm long, lowest with 1–6 mm long spurs. **Flowers**: pedicels up to 15 mm long, spreading; tepals linear-oblong, 3–6 mm long, fused for ± 1 mm, white tinged purple, dorsal stripe brownish. **Stamens**: filaments 3–4 mm long, lanceolate; an-

thers up to 1.25 mm long, brown. **Ovary** ovoid; style up to 2.5 mm long. **Flowering time** Aug.–Feb. **Fruit** an ovoid capsule, 5–8 mm long. Widespread in open, stony grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Rainshadow Valley Karoo (Kokstad southwards, from Queenstown E to Port St Johns and from Bruintjieshoogte to Komga and to Steytlerville).

[E]**echinostachya** (Baker) Eggli & N.R.Crouch
[= *Drimia cooperi* (Baker) Bentham ex Baker, *Ornithogalum cooperi* Baker, *Urginea echinostachya* Baker]

Perennial geophyte, up to 0.7 m high; bulb ± globose, 25–50 mm long, scales white, ± firmly arranged, leaf blade damage causing fine shreds. **Leaves** synanthous, 2–4, sublinear, 80–270 × 8–13 mm, glabrous, firm. **Inflorescence**: peduncle 400–600 mm long; 35–70-flowered in an elongate raceme; bracts 2–7 mm long; spur of lowest bract 2–3 mm long. **Flowers**: pedicels 2–4 mm long, erect-spreading; tepals oblong, 5–6 mm long, fused for 1.0–1.5 mm, greenish white, conspicuously striped on keel. **Stamens**: filaments narrowly lanceolate, up to 3 mm long; anthers ± 1 mm long. **Ovary** ovoid; style ± 3 mm long, subcapitate. **Flowering time** early summer. Grassy hills; Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Umtamvuna Nature Reserve, near Komga, Kentani).

macrocentra (Baker) Jessop
Perennial geophyte, 0.4–1.5 m high; bulb ovoid, up to 50 mm long, scales firmly arranged. **Leaves** hysteranthous, solitary, cylindrical, 0.4–1.0 m × 15 mm. **Inflorescence**: peduncle up to 900 mm long, solitary; raceme ± elongate, youngest flowers congested near apex, 50–100-flowered; bracts 4–5 mm long, lowest ones spurred, 25–35 × 7 mm, brownish, caducous. **Flowers**: pedicels up to 12 mm long, erect-spreading; tepals up to 8 mm long, fused ± 1 mm, white or pink, green-keeled. **Stamens**: filaments 4–5 mm long, linear-lanceolate; anthers up to 1 mm long. **Ovary** ovoid; style ± 3 mm long. **Flowering time** Oct., Nov. **Fruit** an ovoid capsule, 9–11 mm long. Moist slopes on mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Mount Currie, Inungi and Ngeli Mts near Elliot, Maclear and Ugie Districts).

multisetosa (Baker) Jessop
Perennial geophyte, 0.2–0.8 m high; bulb ovoid-oblong, up to 80 mm long with long fibres distally, scales ± densely packed, cream-coloured. **Leaves** hysteranthous, few, linear, 120–400 × 7–14 mm. **Inflorescence**: peduncle 300–500(–800) mm long, solitary; raceme elongate, 50–100-flowered; bracts 1.5–3.0 mm long, lowest with persistent spur, 1–3 mm long. **Flowers**: pedicels up to 13 mm long, erect-spreading; tepals up to 6 mm long, fused into 1.0–1.8 mm tube, lobes spreading to reflexed, brown, yellowish or white, dorsal stripe brown to black. **Stamens**: filaments 3–4 mm long, lanceolate; anthers up to 1.5 mm long. **Ovary** ovoid; style ± 2.5 mm long. **Flowering time** Sept., Oct. **Fruit** a subglobose capsule, 6–10 mm long. Grassland; Sub-Escarpment Grassland (Kokstad District, Mvenyane, Cedarville).

sclerophylla J.C.Manning & Goldblatt
Perennial geophyte, 0.1–0.3 m high. **Leaves** dry at flowering, 2 or 3, erect, terete, ± 1.5 mm in diam., fibrous and striate. **Inflorescence**: peduncle scabrid below; racemes lax. **Flowers**: pedicels wiry, spreading, 10–15 mm long; nodding in bud, stellate, white, sweetly scented, opening in late afternoon; tepals ovate, 4–6 mm long, unit-

ed below for 0.5 mm. **Stamens**: filaments ± 2 mm long, ascending; anthers ± 2 mm long. **Style** ± 1.5 mm long. **Flowering time** Dec., Jan. **Fruit** an ovoid capsule, ± 7 mm long. Rocky slopes, sandy soil, full sun; Albany Thicket, Upper Karoo, Dry Highveld Grassland (Graaff-Reinet, Mountain Zebra National Park, Port Elizabeth).

DRIMIOPSIS Lindl. & Paxton see **LEDEBOURIA** Roth

EUCOMIS L'Hér.

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Pineapple lily

Species ± 12, SA to Zimbabwe and Malawi; ± 10 in sthn Afr., B, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

Widespread, absent from drier areas. In grassland, forest, swamps, along riverbanks, from coast to mountainous areas of interior. Used in traditional medicine. Unusual and beautiful garden plants. Common name derived from coma-topped raceme, resembling a pineapple.

Key based on Reyneke (1972) and Zonneveld and Duncan (2010).

1a Plants small-sized; leaf length (0.06–)0.09–0.13(–0.30) m; diploid (2n = 2x = 30)

[E]grimshawii G.D.Duncan & Zonn.

Dwarf geophyte, 80–100 mm high; bulb ovoid, tunic membranous, pale brown. **Leaves** ± spreading, 4 or 5, broadly lanceolate, 90–120 × 40–60 mm, pale green, margins cartilaginous. **Inflorescence**: peduncle clavate, up to 60 mm long; spike few- to many-flowered; sterile coma bracts 9–16, ± ovate. **Flowers** densely arranged, sessile below, upper ones with pedicels up to 1 mm long; perianth campanulate, spreading, greenish white; tepals oblong, up to 5 × 4 mm, curved inwards. **Stamens** 6, included; filaments white, narrowly triangular, up to 4 mm long; anthers oblong. **Ovary** trilocular, bright green. **Flowering time** Nov.–Feb. **Fruit** a trilocular capsule, inflated, membranous, pale brown. Shaded, seasonally wet, S-facing, grassy slopes below overhanging rocks, soils rich, heavy, black; Drakensberg Grassland (Tiffindell Ski Resort, southern Drakensberg, just S of Lesotho Border, Naude's Neck Pass).

schijffii Reyneke

Perennial geophyte, 0.10–0.15 m high; bulb pyriform, tunics imbricate, surfaces rough. **Leaves** usually prostrate, 3 or 4, ovate, not keeled, 60–100 × 40–70 mm, green without purple spots, margins smooth or minutely crisped. **Inflorescence**: peduncle clavate, up to 70 mm long; spike 10–20-flowered, topped with coma of 10–15, declinate, oval bracts. **Flowers** closely arranged, sessile (pedicels sometimes up to 2 mm long), dark purple; tepals 10 × 5 mm, fused at base. **Stamens** 6, fused with perigone below; filaments purple, triangular ± 6 mm long. **Ovary** trilocular, green, purplish below, apically grooved between loculi. **Flowering time** Dec.–Feb. **Fruit** a trilocular capsule, inflated, membranous, purple. Recently burned mountain grassland to subalpine grassland, on Drakensberg basalt, steep slopes, in humus-rich soils; Drakensberg Grassland (Ben Macdhui to Maclear District, S to Hogsback and Alicedale).

1b Plants large-sized; leaf length (0.15–)0.30–0.55(–0.80) m; tetraploid (2n = 4x = 60)
2a Pedicels of mature flowers 15 mm or longer

comosa (Houtt.) Wehrh.

Krulkoppie, *pynappellelie* (A); *ubuhlungu-becanti* (X, Z)

Perennial geophyte, 0.2–1.0 m high. **Leaves** suberect, oblong-lanceolate, purple speckled beneath, margins undulate or crisped. **Inflorescence**: peduncle cylindric, 0.17–1.00 m long; raceme 100–140-flowered; terminal bracts suberect, much shorter than inflorescence axis. **Flowers**: pedicels 15–30 mm long; sweet scented, greenish, margins mauve-tinged; tepals 8–13 × 3–7 mm. **Stamens** with filaments deltoid, fused below forming a shallow cup. **Ovary** purplish. **Flowering time** Dec.–Feb. Grassland, marshes; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Upper Karoo, Drakensberg Grassland, Sub-Escarpment Savanna (Umtamvuna Nature Reserve S to Queenstown and Cradock, E to Kentani, Grahamstown and East London).

2b Pedicels of mature flowers 12 mm or shorter

amaryllidifolia Baker

Zonneveld and Duncan (2010)

[= *E. autumnalis* (Mill.) Chitt. subsp. *amaryllidifolia* (Baker) Reyneke]

Differs from *E. autumnalis* in its much narrower leaves of 30 mm wide. Small plant, ± 0.13 m high. **Leaves** 130–300 mm long. **Inflorescence**: scape clavate; raceme 30–70 mm long, green to yellow. Grassland, poorly-drained sandy, loam soil, full sun, gentle slope, roadside; Drakensberg Grassland (between Dordrecht and Queenstown).

autumnalis (Mill.) Chitt.

Pineapple flower; *krulkoppie*, *wildepynappel* (A); *maboni* (SS); *ubuhlungu becanti* (X); *umakhondle* (Z)

Perennial geophyte, 0.10–0.55 m high; bulb pyriform, tunics ± dark brown, membranous. **Leaves** synanthous, linear, lanceolate or ovate, green, margins undulate, marginal cuticle dentate or crenate. **Inflorescence**: peduncle cylindrical or club-shaped; raceme 50–125-flowered, topped with coma of leafy bracts. **Flowers** congested; pedicels 3–9 mm long; white to greenish; tepals 6–13 × 4–7 mm, fused at base; lobes lanceolate to ovate. **Stamens** 6, near base of perianth; filaments deltoid, fused below forming a shallow cup; anthers versatile, introrse. **Ovary** ± obovoid, nectariferous above; style cylindrical; stigma small. **Flowering time** Dec.–Feb. **Fruit** a trilocular capsule, papery, pale. Open grassland, sheltered places, even swamps; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Aliwal North to Cedarville southwards, from Middelburg and Graaff-Reinet to Komga and from to Uitenhage to Grahamstown).

humilis Baker

Pineapple flower

Perennial geophyte, 0.15–0.40 m high; bulb pyriform, tunics basally purple-brown. **Leaves** 4–7, ovate, keeled, green with purple spots abaxially, marginal cuticle finely dentate. **Inflorescence**: peduncle cylindrical; raceme 20–60-flowered, topped with coma of leafy bracts. **Flowers** well spaced; pedicels 5–11 mm long; cream-coloured to mauve, bases and margins purple; tepals 10–15 × 4 mm, fused at base; lobes oblanceolate. **Stamens** 6, ± $^{2}/_{3}$ length of perianth; filaments fused below forming a mauve

to green, shallow cup. **Ovary** mauve, shallowly lobed, cream-coloured along sutures. **Flowering time** Dec., Jan. **Fruit** a trilocular capsule, inflated, membranous, purple. Open grassland in valleys of Drakensberg Mountain; Sub-Escarpment Grassland (Kokstad District Weza, Ngeli Mtn).

GALTONIA Decne. see **ORNITHOGALUM** L.

LACHENALIA J.Jacq. ex Murray

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

(= *POLYXENA* Kunth)

Cape cowslip, hyacinth, lachenalia; *viooltjie* (A)

Species ± 120, largest genus of Hyacinthaceae in sthn Afr. with several species known from a single locality only, N, FS, NC, WC, EC.

Occurs in a wide range of habitats. Has been in cultivation for over 200 years, currently with many cultivars and hybrids.

Key adapted from Dold and Phillipson (1998)

1a Scape subterranean or very shortly exposed; flowering axis condensed

ensifolia (Thunb.) J.C.Manning & Goldblatt
[= *Polyxena ensifolia* (Thunb.) Schönland]

Perennial geophyte, up to 60 mm high; bulb subglobose, outer tunics brown and membranous, inner scales white and fleshy; cataphyll tubular, membranous. **Leaves** 2, spreading above; lanceolate to ovate, canaliculate; acute; veins conspicuous, sunken; glabrous. **Inflorescence**: peduncle elongating in fruit; a many-flowered raceme, exserted between leaves above ground level. **Flowers**: pedicels short; regular, honey-scented; tepals fused below forming a long, narrow tube; lobes white to pink-mauve, spreading. **Stamens** 6, in two whorls, arising from perianth tube; filaments free; anthers oblong to linear, yellow, versatile, introrse. **Ovary** ovoid; ovules several per locule; style terete; stigma small, apical. **Flowering time** Apr.–June. **Fruit** a rounded, membranous capsule. Grassy patches outside bush, on sand or clay flats; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore, Addo, Uitenhage, Port Elizabeth, Port Alfred and Humansdorp).

1b Scape erect, reaching well above ground level; flowering axis extended
2a Perianth > 15 mm long, always yellow-green; flowers erecto-patent at and after anthesis; confined to coastal grassland

algoensis Schönland

Perennial geophyte, 0.06–0.30 m high; bulbous. **Leaves** 1 or 2, linear, lanceolate or lorate. **Flowers** shortly pedicellate, fading to dull red; perianth 20–28 mm long, anthers included. **Flowering time** Aug., Sept. Coastal grassland, alt 10–833 m; Eastern Fynbos-Renosterveld, Albany Thicket (Knysna to Port Elizabeth, Bushman's River and Humansdorp).

2b Perianth < 15 mm long, white to deep pink or purple, sometimes dull green with brown markings, rarely yellow-green; flowers cernuous to patent at anthesis; not confined to coastal grassland
3a Inner perianth segments always recurved at apex, usually exceeding outer by 1.4 mm

bowkeri Baker

Perennial geophyte, 0.10–0.26 m high; bulb globose 8–17 mm in diam., inner tunic minutely white-spotted, outer tunics dry, coarsely papery, dark brown. **Leaves** 1 or 2,

lanceolate, mostly 60–120 × 8–10 mm, blade unmarked. **Inflorescence**: peduncle slender, pale green; spicate, 4–25-flowered. **Flowers** shortly pedicellate, oblong-campanulate, pale blue and white with purple markings; tepals 9–11 mm long. **Stamens** declinate; filaments white; anthers exserted and yellow at maturity. **Flowering time** July–Sept. Sandy soil, extending from karoo to coastal areas; Lower Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Graaff-Reinet, Addo, Uitenhage, Port Elizabeth, Alexandria, Riebeek East and Grahamstown).

karooica W.F.Barker ex G.D.Duncan

Perennial geophyte, 0.02–0.22 m high. **Leaves** 1 or 2, lanceolate, irregularly marked with brown, green or maroon blotches on upper surface, margins coriaceous. **Inflorescence**: peduncle ± erect, 20–80 mm long; spicate, few- to many-flowered. **Flowers** sessile or shortly pedicellate, oblong-campanulate, greenish white and pale blue with maroon or brown markings; tepals oblong, 7–10 × 2–3 mm long. **Stamens** pale to dark maroon; anthers exserted. **Ovary** ovoid; style white ± 10 mm long. **Flowering time** Aug., Sept. Dolomite outcrops; Upper Karoo (Albert and Middelburg Districts to Cradock).

latimerae W.F.Barker

Perennial geophyte, 0.15–0.28 m high; bulb globose, up to 20 mm in diam.; outer tunics membranous, brown. **Leaves** 1 or 2, linear-lanceolate, channelled above, plain or spotted with magenta, base clasping, 30–50 mm long. **Inflorescence**: peduncle 30–40 mm long; racemose, many-flowered. **Flowers** on long pedicels, campanulate, pale pink with greenish brown markings; tepals 5–7 mm long. **Stamens** exserted, up to 13 mm long. **Ovary** ovate; style up to 10 mm long. **Flowering time** Aug., Sept. **Fruit** an obovate, membranous capsule. Large colonies, sandy and loose gravel patches, moss-covered bare patches in shade; Eastern Fynbos-Renosterveld, Albany Thicket (Baviaanskloof, Kouga Mts, Patensie).

perryae G.D.Duncan

Perennial geophyte, ± 0.32 m high; bulbous. **Leaf** solitary, narrowly lanceolate, banded beneath with green, shading to maroon on sheath. **Inflorescence** a raceme. **Flowers** shortly pedicellate, oblong-campanulate, very pale blue and white with green or brown markings; tepals 7–9 mm long, outer lobes recurved, lower inner lobe broadly flared. **Stamens** slightly exserted. **Flowering time** July–Sept. Confined to area extending from EC to Karoo, clay or sandy soil among succulents; Albany Thicket, Lower Karoo (Kommadagga).

3b Inner perianth segments straight or slightly spreading but not recurved at apex, ± equal in length to outer segments

[E]campanulata Baker

Perennial geophyte, up to 0.23 m high; bulb globose, outer tunics dry, membranous, pale brownish. **Leaves** (1)2, blade green, covered with minute, red spots, linear, erect, mostly 8.6 × 1–7 mm, entire, base white with purple spots, apex dry. **Inflorescence**: peduncle erect; a dense 16-flowered raceme. **Flowers**: pedicels ± 2.5 mm long, spreading to horizontal; unscented, campanulate, segments spreading, pure white to red, darkening to purple after anthesis; inner tepals oblong 5.5 × 1.3 mm, outer ones oval-elliptic 5.5 × 2.6 mm. **Stamens** exserted. **Ovary** ovoid; style 2.7 mm long. **Flowering time** Nov., Dec. **Fruit** an ovoid capsule, papery, brown. Endemic to high mountains of EC, alt. 1 200–2 400 m; Mesic Highveld Grassland, Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Albany Thicket (Lady Grey to Barkly East southwards, Middelburg to Andriesberg and Cradock to Katberg).

[E]convallarioides Baker

Perennial, winter-growing geophyte, 0.05–0.15 m high; bulb oblong-ovoid, 10–15 mm in diam., outer tunics membranous. **Leaf** solitary, occasionally 2, bright green, fleshy, linear-lanceolate or lorate, 70–250 × 6–20 mm, base clasping, apically conduplicate, purple-spotted. **Inflorescence**: peduncle 40–100 mm long; racemose, few- to many-flowered. **Flowers**: pedicels 3–6 mm long; campanulate, white with brownish magenta, markings green to brownish; tepals fused into tube 1–2 mm long, outer lobes oblong, apex slightly recurved, inner lobes as long as outer lobes, obovate, recurved. **Stamens** included; filaments white, ± 4 mm long; anthers maroon becoming yellow at anthesis. **Ovary** ovoid; style 3–4 mm long. **Flowering time** Sept., Oct. **Fruit** an ovoid, membranous capsule. Stony, rocky soil, outcrops of Witteberg Quartzite; Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Mount Arthur Range near Queenstown, Albany District, Grahamstown).

youngii Baker

Perennial geophyte, 0.07–0.30 m high. **Leaves** 2, narrowly lanceolate. **Inflorescence** very dense. **Flowers** on fairly long pedicels, patent at anthesis, campanulate, at least 8 mm long, pale blue and pink with darker purplish pink markings; tepals with apices spreading. **Stamens** shortly exserted. **Flowering time** July–Nov. Confined to coastal areas of EC in extreme west, alt. 75–490 m; Eastern Fynbos-Renosterveld (Storms River Mouth, Humansdorp District).

LEDEBOURIA Roth

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

[= *DRIMIOPSIS* Lindl. & Paxton (Manning et al. 2004; Wetschnig et al. 2007), *RESNOVA* Van der Merwe]

African squill

Species > 60, sub-Saharan Africa, 1 or 2 in southern tip of India and Island Nossi-Bé of Madagascar; ± 39 in sthn Afr., widespread with greatest diversity in central parts of LIM and M.

Used medicinally and as traditional charms. Occasionally used in the horticultural trade.

1a Tepals usually connivent, occasionally spreading, not reflexed; ovary sessile or subsessile

humifusa (Baker) J.C.Manning & Goldblatt

[= *Drimiopsis maxima* Baker, *Resnova humifusa* (Baker) U.Müll.-Doblies & D.Müll.-Doblies]

Description according to Jessop (1976)

Perennial geophyte; bulb up to 100 mm long. **Leaves** 2–4(8), subpetiolate or narrowing gradually to base, margins sometimes undulate, glabrous to pubescent, up to 300 × 70 mm. **Inflorescence** ± same length as leaves to several times as long; pedicels up to 3 mm long. **Flowers** striped, pink, white, green or brown; tepals ascending, with erect-spreading, minute cucullate apices, up to 9 mm long. **Flowering time** Oct., Nov. Steep forest banks, common, rocky habitat in kloofs; Albany Thicket, Sub-Escarpment Grassland (Bedford above Turpin Dam, Fort Beaufort District, East London near Elizabeth Island). Habitat and distribution information based on *Acocks 16269* and *Galpin 5772* (PRE), quoted by Jessop (1976) as *Drimiopsis maxima* Baker.

lachenalioides (Baker) J.C.Manning & Goldblatt
[= *Drimiopsis lachenalioides* (Baker) Jessop, *Resnova lachenalioides* (Baker) Van der Merwe]

Perennial geophyte, 0.25 m high; bulb globose, white, soft, scaly. **Leaves** elliptic, margins entire, apex acute. **Inflorescence**: peduncle ± 90 mm long; flowers terminally arranged in a dense raceme. **Flowers**: 10 mm or more in length, pink to purple, not conspicuously striped; tepals with apices erect-spreading. **Flowering time** Oct.–Dec. Grassland, forest; Sub-Escarpment Grassland, Indigenous Forests (Mountains in Pondoland, Ngele and Baziya Forest Stations, Bedford District).

petiolata J.C.Manning & Goldblatt
(= *Drimiopsis maculata* Lindl., *non Ledebouria maculate* Dalzell)

Perennial geophyte, 0.3 m high; bulb ovoid. **Leaves** cordate at base. **Inflorescence**: peduncle 150–200 mm long; a few- to many-flowered raceme. **Flowers**: < 5 mm long, always green, often white in bud; tepals with apices incurved to cucullate. **Flowering time** Sept., Oct. Sand, forests, gardens; Indian Ocean Coastal Belt, Indigenous Forests (Port St Johns, Dwessa Forest, East London).

1b Tepals usually reflexed; ovary stipitate
2a Bulb epigeal or semi-epigeal (> 40% above ground)

[E]concolor (Baker) Jessop
iDumu (X)

Perennial geophyte, ± 0.25 m high; bulb obovoid, up to 120 × 50 mm, scales truncate, dead scales purplish brown. **Leaves** 4–6, spreading, lanceolate to oblong, up to 125 × 40 mm, fleshy, glabrous, glossy green, margins entire, apex obtuse. **Inflorescences** up to 3, flaccid; peduncle ± 45 mm long; a 30–50-flowered raceme. **Flowers**: pedicels spreading horizontally, up to 8 mm long; tepals equal, oblong, 4–7 × 2–3 mm, apex obtuse, slightly cucullate. **Stamens** erect, 4–5 mm long; filaments green to pink; anthers yellow. **Ovary** globose, 6-lobed; style purple, 4 mm long with shoulders raised. **Flowering time** Oct.–Mar. **Fruit** a 2- or 3-lobed capsule. Sandstone or shales of Sondags River Formation; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth District E to Bathurst, Kowie West and East London).

socialis (Baker) Jessop

Perennial, gregarious geophyte; bulb ± ovoid 40–50 × 30–36 mm, dead scales purplish brown, live scales fleshy, bulblets on basal stem. **Leaves** synanthous, 3 or 4, oblanceolate, 50–75 × 20–25 mm, apex acute, base canaliculate, margins smooth; upper surface green with silvery sheen or purple blotches. **Inflorescence** solitary, cylindric, erect, up to 50 mm long; a 10–30-flowered raceme; bracts fleshy. **Flowers**: pedicels spreading, 3–4 mm long; perianth up to 4 mm long, whitish green to pink; tepals equal, oblong, green-keeled. **Stamens** up to 4 mm long; filaments epitepalous; anthers ± 0.5 mm long, yellow. **Ovary** ellipsoid, 6-lobed, without raised shoulders. **Flowering time** July–Dec. **Fruit** a 3-lobed, globose capsule. Sandstone, humus-rich sandy soil; Eastern Fynbos-Renosterveld, Albany Thicket (Paardekraal, Hankey, Port Elizabeth, Grahamstown, Peddie and East London).

2b Bulb hypogeal
3a Bulb scales with threads when torn

[E]hypoxidioides (Schönland) Jessop

Perennial, solitary geophyte; bulb 80–100 × 40–60 mm, ovoid, dead scales purplish brown, live scales fleshy, tightly arranged. **Leaves** synanthous, 4–6, spreading, ovate-lanceolate 100–140 × 20–40 mm, fleshy pilose, base canaliculate, venation obscure, apex acute. **Inflorescences** 1 or 2, flaccid; peduncles up to 120 mm long; dense 30–120-flowered racemes, longer than leaves; bracts fleshy. **Flowers**: pedicels spreading, up to 15 mm long; perianth 5 mm long, green tinted pink; tepals recurved, equal, lanceolate, green-keeled, apex cucullate. **Stamens** up to 5 mm long; filaments pink, epitepalous; anthers yellow. **Ovary** ovoid, 6-lobed, apex shoulders raised. **Flowering time** Oct.–Dec. **Fruit** a globose, 3-lobed capsule. Rare, occurring on derived soils of Dwyka Tillite and Dirkskraal Sandstone Formation in open grassy areas; Albany Thicket (Grahamstown).

marginata (Baker) Jessop

Untlokwana (T)

Perennial, solitary geophyte, 0.05–0.70 m high; bulb obovoid, 60–80 × 30–50 mm, dead scales brown, live ones tightly arranged. **Leaves** partly emerged at anthesis, 4–10, lanceolate, 120–150 × 10–100 mm, spirally twisted, leathery, green-purple-spotted, basal parts flat, undulate, margins hyaline, apex acute. **Inflorescences** 4–10, dense, 80–100-flowered racemes; bracts membranous. **Flowers**: pedicels 3–10 mm long; perianth up to 4 mm long, pink to purple; tepals recurved, subequal, oblong-lanceolate, apex cucullate, brown-keeled. **Stamens** 3 mm long; filaments maroon; anthers yellow. **Ovary** globose, 6-lobed, apex shoulders raised. **Flowering time** Aug.–Feb. **Fruit** a 3-lobed, globose capsule. Short and tall grassland, rocky outcrops; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Aliwal North E to Ongeluksnek, southwards from Queenstown to Somerset East, Grahamstown and Amabele).

ovatifolia (Baker) Jessop

Perennial, solitary geophyte, 0.05–0.15 m high; bulb ovoid, 35–70 × 30–50 mm, scales truncate, live scales loosely arranged. **Leaves** partly emerged at anthesis, 4–15, ± ovate, 50–120 × 36–60 mm, fleshy, glossy green, green to purple-blotched above, monochromatic purple below, base canaliculate, apex acute. **Inflorescences** 1–4, dense, ovate, 30–40-flowered racemes, longer than leaves; bracts membranous. **Flowers**: pedicels 7–12 mm long; perianth 5 mm long, pink to purple; tepals recurved, equal, oblong, up to 1.5 mm long, green-keeled. **Stamens** 5 mm long; filaments maroon; anthers yellow. **Ovary** cylindrical, 6-lobed, apex forming shoulders. **Flowering time** Aug.–Mar. **Fruit** a 3-lobed, globose capsule. Grassland or woodland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Ramatseliso's Gate S to, Maclear, Stutterheim, Komga, Enon and Port Elizabeth).

revoluta (L.f.) Jessop

Wave-leaved hyacinth: *boakhoe* (SS); *bogokgwe* (T); *ubuHlungu* (X); *iCubudwane* (Z)

Perennial, solitary geophyte, 0.02–0.25 m high; bulb ovoid, 60–80 × 40–60 mm, dead scales purple-brown, live ones membranous, tightly arranged. **Leaves** synanthous, 5–10, lanceolate, 80–130 × 30–90 mm, fleshy, green, purple-blotched above, green

to purple-marked below, base canaliculate, apex acute. **Inflorescences** 4–10, 30–70-flowered racemes, longer than leaves; bracts membranous. **Flowers**: pedicels 10–13 mm long; perianth 5 mm long, green to dark pink; tepals recurved, oblong 5 × 3 mm long, green-keeled. **Stamens** 5 mm long; filaments maroon; anthers yellow. **Ovary** ellipsoid, 6-lobed, apex forming shoulders. **Flowering time** Oct.–Feb. **Fruit** a 3-lobed capsule. Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Lady Grey E to Bizana, southwards to Somerset East, Hogsback, Stutterheim, Joubertina, Port Elizabeth and Grahamstown).

3b Bulb scales without threads when torn
4a Leaves with threads when torn; rachis ridged

floribunda (Baker) Jessop

Perennial, solitary geophyte, up to 0.35 m high; bulb ovoid, 60–100 × 25–35 mm, dead scales brown, live ones fleshy, tightly arranged. **Leaves** synanthous, 4–6, lanceolate, 200–300 × 40–50 mm, fleshy, green, basally purple, blotched, margins discolorous, base canaliculate, apex acute. **Inflorescences** 1–3, cylindric, 60–100-flowered racemes, as long as leaves; bracts membranous. **Flowers**: pedicels up to 15.6 mm long; perianth 7–9 mm long, green to pink; tepals oblong, 7–9 × 3 mm, green-keeled. **Stamens** 5–6 mm long; filaments purple above; anthers yellow. **Ovary** ellipsoid, shoulders tapering into style. **Flowering time** Oct.–Jan. **Fruit** a 3-lobed, clavate capsule. Quartzites and sandstone, humus-rich soil, scrub, montane forest; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (King William's Town, Komga, Grahamstown, Pirie, East London).

4b Leaves without threads when torn; rachis smooth
5a Bracts fleshy

apertiflora (Baker) Jessop (see 5b below)

Mokxetlepyane (SS)

Perennial, solitary geophyte, 0.05–0.10 m; bulb obovoid, 40–50 × 40–50 mm, dead scales purplish brown, live ones fleshy, tightly arranged. **Leaves** synanthous, 5–10, lanceolate, 100–225 × 7–25 mm; surfaces green, lower surface with purple spots. **Inflorescences** 2, dense, 30–70-flowered racemes, as long as leaves. **Flowers**: pedicels 6–12 mm long; perianth 5–6 mm long, pink to purple; tepals recurved, equal, oblong, 6 × 5 mm, apex cucullate, green-keeled. **Stamens** erect, up to 5.5 mm long; filaments maroon; anthers yellow. **Ovary** ovoid, 6-lobed, apex tapering into style. **Flowering time** Oct.–Dec. **Fruit** a 3-lobed, clavate capsule. Sandy to rocky, sandy loam in shrubland; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland (Middelburg S to Graaff-Reinet, E to Cradock, Somerset-East, Fort Beaufort, Hogsback and Keiskammahoek).

macowanii (Baker) S.Venter

Solitary geophyte, 40–60 mm high; bulb ovoid, 15–30 × 15–30 mm, dead scales brown, live ones tightly arranged. **Leaves** synanthous, 3 or 4, linear-lanceolate, 75–100 × 6–8 mm, fleshy, dull green, purple-spotted below, base canaliculate, apex ± acute. **Inflorescences** 1 or 2, cylindric, 20–40-flowered racemes, longer than leaves. **Flowers**: pedicels 6–7 mm long; perianth stellate, 4 mm long, green tinged pink; tepals ± recurved, oblong, 4 × 1.5 mm, apex obtuse. **Stamens** 3.8 mm long; filaments purple to white; anthers pale violet. **Ovary** globose, 6-lobed, shoulders truncate. **Flowering time** Oct.–Mar. **Fruit** a 3-lobed, clavate capsule. Shallow, humus-rich, sandy soil, shady,

damp cliff ledges; Mesic Highveld Grassland, Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket (Lady Grey southwards, from Lady Frere to Katberg Mtn and King William's Town and from Willowmore to East London).

sandersonii (Baker) S.Venter & T.J.Edwards

Solitary geophyte, 10–40 mm high; bulb ovoid, 10–30 × 10–15 mm, dead scales brown, live ones loose. **Leaves** synanthous, 1–6, ovate, 15–75 × 18–30 mm, fleshy, green, purple-blotched above, green to purple underneath, margins smooth, base canaliculate, apex acute. **Inflorescences** 1 or 2, dense, 12–20-flowered racemes, longer than leaves. **Flowers**: pedicels 6–8 mm long; perianth 3 mm long, pink; tepals recurved, equal, oblong, 3 × 1 mm, apex acute. **Stamens** erect, 2.75 mm long; filaments purple to white; anthers yellow. **Ovary** ovoid, 6-lobed, shoulders rounded. **Flowering time** Aug.–Mar. **Fruit** a 3-lobed, globose capsule. Montane grassland, humus-rich, shallow, sandy soil overlaying rock sheets, edges of shallow seepages; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland, Albany Thicket (Mahlahlane Forest S to Elliot and Elliotdale, from Stutterheim, to Kentani and Gonubie).

5b Bracts membranous

apertiflora (Baker) Jessop (see 5a above)

cooperi (Hook.f.) Jessop

Beokho (SS)

Solitary or gregarious geophyte, 40–150 mm high; bulb subglobose, 10–25 × 10–25 mm. **Leaves** synanthous, 3–8, lanceolate, 200–250 × 16–18 mm, fleshy, glossy, green, purple-spotted above and below, base canaliculate, apex acute. **Inflorescences** 1–3, cylindric, 20–60-flowered racemes. **Flowers**: pedicels 6–12 mm long; perianth 4–7 mm long, deep pink; tepals recurved, oblong, 4–5 × 1.5–2.0 mm, apex cucullate, green-keeled. **Stamens** erect, 3–4 mm long; filaments pink; anthers yellow. **Ovary** ovoid, 6-lobed, shoulders absent. **Flowering time** Oct.–Feb. **Fruit** a globose capsule. Marshy grassland areas; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Herschel E to Ntsikeni Nature Reserve, southwards from Magwa Falls to Boschberg and Kentani, and from Port Elizabeth to East London).

MASSONIA Thunb. ex Houtt.

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Hedgehog lily; *bobbejaanboek*, *krimpvarkie* (A)

Species ± 10, SA, southern Namibia and Lesotho, widespread in semi-arid areas, especially the western fringes of winter rainfall areas of sthn Afr., N, NW, G, FS, L, NC, WC, EC.

Anthers > 2 mm long; leaves usually glabrous or very rarely with a minutely ciliate margin

depressa Houtt.

Botter-, *suikerkannetjie* (A)

Perennial geophyte, 20–30 mm high; bulb ovoid 20–30 mm long, outer scales firm, membranous, brown, inner ones whitish. **Leaves** flat on ground, paired, ± orbicular, 70–150 × 40–100 mm, green- or purple-flecked, acute, coriaceous. **Inflorescences** capitate,

20–30-flowered; lower bracts conspicuous, ovate, green to purplish. **Flowers**: pedicels 5–20 mm long; perianth green, white, yellow, pink to red, brown, tube > 5 mm long, ± cylindrical, segments oblong, longitudinally sigmoid-curved towards base. **Filaments** up to 18 mm long; anthers yellow or purple, up to 4 mm long. **Ovary** obovoid. **Flowering time** July, Aug. **Fruit** an obovoid, 3-winged capsule. Sandy flats and rocky slopes, shade and in open; Upper Karoo, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg, Aberdeen Road, near Mortimer, N of Joubertina, Grahamstown).

Anthers usually < 2 mm long or, if more, then leaves hairy or papillate

echinata L.f.

Perennial geophyte; bulb ovoid 10–20 mm long, outer scales firm, brown, inner ones whitish. **Leaves** flat on ground, paired, ± ovate to oblong, 20–80 × 10–60 mm, longitudinally-grooved, coriaceous, upper surface without papillae or pustules. **Inflorescences** capitate, 5–20-flowered; lower bracts ovate, green-, red- or purple-marked. **Flowers**: pedicels 4–8 mm long; perianth white, yellow or pink, tube 5–7 mm long, segments oblong. **Filaments** narrowly conical, up to 8 mm long; anthers yellow or purple, up to 1.25 mm long. **Ovary** obovoid. **Flowering time** May–July **Fruit** a narrowly obovoid, 3-winged capsule. Open sandy areas, clay soils, sandy flats, rock crevices, rarely in shade; Drakensberg Grassland, Dry Highveld Grassland, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Ben Macdhui southwards, from Somerset East to Prospect Siding near East London and from Steytlerville to Port Elizabeth and Grahamstown, and to Humansdorp).

jasminiflora Burch. ex Baker

Perennial geophyte, 50 mm high; bulb ovoid 10–20 mm long, outer scales firm, brown, inner ones whitish. **Leaves** flat on ground, paired, ± ovate, 30–60 × 15–150 mm, green- or purple-flecked, longitudinally-grooved, coriaceous, glabrous. **Inflorescences** capitate, fewer than 15-flowered; lower bracts ovate to obovate. **Flowers**: pedicels 3–5 mm long; perianth white or pink, tube cylindrical 8–20 mm long, segments half as long as tube, ascending or reflexed. **Filaments** up to 4.5 mm long, deltoid, free parts up to 3 mm long; anthers green, blue, purple or black, up to 1.5 mm long. **Ovary** oblong-obovoid. **Flowering time** May, June. Open grassland, also recorded from limestone gravel and surface calcrete tufa; Mesic Highveld Grassland, Sub-Escarpment Grassland, Upper Karoo, Drakensberg Grassland (Aliwal North and Herschel southwards, Middelburg E to Dordrecht District and from Stockenström to Cathcart).

pustulata Jacq.

Perennial geophyte, 20–50 mm high; bulb globose, 10–25 mm in diam., outer scales up to 20, firm, brown, inner ones whitish. **Leaves** flat on ground, paired, ± ovate, 30–100 × 20–70 mm, green-, red-, brown- or purple-flecked, veins depressed, thin to subfleshy, pustulate. **Inflorescences** capitate, 15–25-flowered; lower bracts ± ovate. **Flowers**: pedicels 10–12 mm long; perianth white, pink, yellow or greenish, tube 6–11 mm long, segments as long as tube, oblong, ± reflexed, longitudinally sigmoid-curved towards base. **Filaments** 4–12 mm long, narrowly deltoid; anthers yellow or reddish, up to 1.75 mm long. **Ovary** obovoid. **Flowering time** June–Sept. **Fruit** a 3-winged, obovoid capsule. Open in coastal sand with fynbos, dry inland areas, humic soils, clay; Upper Karoo, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Cradock to Dohne S, from Willowmore to Port Elizabeth, and to St Francis Bay).

MERWILLA Speta

Manning et al. (2004: 558)

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Species 3, SA, Lesotho, Swaziland, Zimbabwe; restricted to edge of eastern escarpment on cliffs or rock outcrops in grassland, M, S, FS, KZN, L, EC.

plumbea Speta

(= *S. kraussii* Baker, *S. natalensis* Planch., *Scilla plumbea* Lindl.)

Blue-squill; *blouberglelie*, *blouslangkop* (A); *kherere*, *matunga* (SS); *inGuduza*, *imbizenkulu* (Z)

Deciduous, clump-forming geophyte, 0.2–1.0 m high; bulb subterranean to epigeal, outer tunics, firm, cartilaginous, roots several, tapering, contractile. **Leaves** several, synanthous, ovate to lanceolate, firm, striate, margins not cartilaginous, glabrous or pubescent, suberect or spreading. **Inflorescences** few- to many-flowered racemes; peduncles erect; bracts linear-lanceolate, membranous, not spurred. **Flowers** pale to midblue, rarely lilac, rotate, not scented; tepals spreading, fused at base, oblong-lanceolate, persistent. **Stamens** suberect; filaments fused to base of tepals, linear-lanceolate. **Ovary** subglobose, stipitate; style terete; stigma penicillate. **Flowering time** Aug.–Oct. **Fruit** a 3-winged, obovoid capsule, on a short carpophore. Grassland, between rocks derived from Table Mountain Sandstone, hills, riversides; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Bizana and Lusikisiki Districts S to Port St Johns, Komga and Kentani).

NEOPATERSONIA Schönland see **ORNITHOGALUM** L.

ORNITHOGALUM L.

Subfamily Ornithogaloideae Speta, tribe Ornithogaleae (Caruel) J.C.Manning & Goldblatt

(= *ASPASIA* Salisb., *GALTONIA* Decne, *NEOPATERSONIA* Schönland)

Chincherinchee; *tjienk* (A)

Species ± 120, Africa, Mediterranean and Near East, 1 in Madagascar; number of species in sthn Afr. dubious due to taxonomic changes, currently 43 in Cape, widespread.

*1a Flowers erect or nodding, remaining open; tepals fleshy, white or pale green, free or fused into a short tube; filaments ovate-acuminate, inserted near base of tube or tepals; capsule ovoid-triangular or oblong and retuse [*Ornithogalum *subgenus* Galtonia *(Decne.) J.C.Manning & Goldblatt sect.* Galtonia *(Decne.) J.C.Manning & Goldblatt]*

candicans (Baker) J.C.Manning & Goldblatt

[= *Galtonia candicans* (Baker) Decne.]

Perennial geophyte, 0.01–2.00 m high; bulbs ± 350 mm in diam., outer tunics brown. **Leaves** 3–8, erect, lorate 0.4–1.5 m × 20–77 mm, tapering to apex, green to glaucous. **Inflorescence** a 18–55-flowered raceme; peduncle up to 1 m long; pedicels up to 8.5 mm long. **Flowers**: perianth tube up to 20 mm long, pale green; lobes white, dorsal median band pale green; outer lobes oblong, up to 26 mm long, apiculus recurved, inner lobes subrotund, up to 22 × 14.5 mm, shortly clawed, apex rounded, apiculus recurved. **Stamens**: filaments inserted ± halfway up tube, up to 19 mm long; anthers up to 6 mm long, greyish. **Ovary** cylindric, sessile, green. **Flowering time** Dec.–Feb. **Fruit**

a cylindric, sessile capsule. Damp, grassy hollows on mountain slopes, alt. 1 350–2 150 m; Sub-Escarpment Grassland (Cala).

princeps (Baker) J.C.Manning & Goldblatt
[= *Galtonia princeps* (Baker) Decne.]

Perennial geophyte, 1.50–1.67 m high; bulb up to 50 × 40 mm. **Leaves** 4–7, erect, lorate 0.4–0.9 m × 27–50 mm, tapering to apex, green. **Inflorescence** a 12–30-flowered raceme; peduncle 0.5–1.0 m long; pedicels up to 70 mm long. **Flowers**: perianth tube pale green, lobes spreading, pale creamy green, dorsal median band pale green; outer lobes elliptic, up to 17 mm long, apiculus recurved, inner lobes subrotund, up to 14 × 11.5 mm, apiculus recurved. **Stamens**: filaments inserted near base of tube, up to 18 mm long; anthers up to 7 mm long. **Ovary** cylindric. **Flowering time** Nov.–Feb. **Fruit** a cylindric capsule, torus ± 2 mm long. Marshy places along streams, damp places among rocks, alt. 60–1 525 m; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (Fort Donald, Kambi and Mhlahlane Forests, Port St Johns District).

viridiflorum (I.Verd.) J.C.Manning & Goldblatt
(= *Galtonia viridiflora* I.Verd.)

Perennial geophyte, up to 0.9 m high; bulb globose, up to 50 mm in diam. **Leaves** 4–6, elliptic, the outer tapering to acute tip, glaucous. **Inflorescence** a 10–30-flowered raceme; peduncle 0.3–0.5 m long; pedicels up to 50 mm long. **Flowers** pale green; perianth tube up to 15 mm long, lobes spreading, outer elliptic, up to 25 mm long, inner elliptic, up to 23 mm long, all with small, recurved apiculus. **Stamens**: filaments inserted in upper half of perianth tube, ± 8 mm long. **Ovary** sessile, cylindric. **Flowering time** Jan. **Fruit** a conical capsule. Dry cliffs and steep rubbly slopes below them, alt. 2 100–2 530 m; Mesic Highveld Grassland, Drakensberg Grassland (Lady Grey District, Witteberg Mts, Rhodes, Barkly Pass, Kraalberg).

1b Flowers erect or spreading; tepals thin-textured, pure white, yellow or orange, sometimes with dark markings at base or apex, never with dark midrib, diurnal (rarely nocturnal), free or fused at base into a short tube, persistent and becoming papery in fruit, not twisting or reflexing at drying; filaments variable, subulate to basally expanded, inner usually broader than outer; capsule ellipsoid to fusiform, thin-walled, concealed by persistent, papery perianth [Ornithogalum *subgenus* Aspasia *(Salisb.) Oberm.*]

2a Leaves spreading or suberect in basal rosette; bracts boat-shaped, entire; tepals > 10 mm long, without dark midrib [Ornithogalum *sect* Aspasia *(Salisb.) U.Müll.-Doblies & D.Müll.-Doblies*]

3a Flowers without dark centre; seeds 2.0–3.5 mm long [Ornithogalum *series* Aspasia]

[E]synanthifolium F.M.Leight.

Evergreen geophyte, 0.4–0.9 m high; bulb ovoid, outer tunics leathery, greyish to blackish when persisting. **Leaves** synanthous, 5–11, oblong-lanceolate, up to 400 × 30 mm, dark green, soft-textured. **Inflorescence** a 15–40-flowered, subcorymbose, cylindrical, compact raceme; pedicels 15–30 mm long. **Flowers** white; tepals 13–18 × 6–8 mm long. **Stamens**: filaments 5–7 mm long, inner ones subulate or expanded and oblong in lower half. **Ovary** ovoid; style 2–3 mm long. **Flowering time** Sept.–Jan. **Fruit** a 3-lobed, oblong-ovoid capsule. Higher ground fringing coast, moist or marshy grassland along streams and valleys, sometimes in dense colonies; Sub-Escarpment Savanna, Albany Thicket (Mthatha S to King William's Town and Grahamstown).

3b Flowers white, yellow or orange, with or without dark centre; seeds 0.5–1.0 mm long [Ornithogalum *series* Maculata]

dubium Houtt.

[= *Ornithogalum fimbrimarginatum* F.M.Leight. (Manning et al. 2007)]

Geeltjienkerintjie (A)

Bulbous geophyte, 0.1–0.5 m high; outer bulb tunics brown. **Leaves** 3–8, linear to ovate, 50–200 mm long, sometimes dry at flowering, ascending, margins minutely ciliolate. **Inflorescence** a subcorymbose to conical raceme; bracts large. **Flowers** yellow to orange or rarely white, often with a green or brown centre; tepals 10–20 mm long; style very short. **Stamens**: filaments fleshy, the inner with eared expansions folded around ovary. **Flowering time** Aug.–Dec. **Fruit** an oblong capsule, ± 15 mm long. Mountains and flats in grassland, forest, fynbos, closed woodland; Sub-Escarpment Savanna, Indigenous Forests, Eastern Fynbos-Renosterveld, Albany Thicket (Mqanduli S to King William's Town, from Willowmore to Uitenhage, Port Elizabeth, Grahamstown, Bathurst and Humansdorp).

maculatum Jacq.

[= *Ornithogalum rossouwii* U.Müll.-Doblies & D.Müll.-Doblies]

Perennial geophyte, up to 0.55 m high; bulb subglobose, outer tunics whitish or grey-brownish, thin-textured. **Leaves** suberect, 2–5, linear- to oblong-lanceolate, up to 170 × 20 mm, obtuse or acute, clasping at base. **Inflorescence** a shortly cylindrical corymbose to subcorymbose raceme, up to 9-flowered; lowermost pedicels 3–15 mm long, up to 5–27 mm long in fruit. **Flowers** reddish, orange or yellow (rarely white); tepals up to 18 mm long, outer ones obovate-lanceolate and unmarked or with black spot or transverse bar near apex, inner ones obovate. **Stamens**: filaments up to 9 mm long, orange or yellow, subulate or inner ones lanceolate. **Flowering time** Sept., Oct. **Fruit** a 3-lobed, fusiform capsule. Rock outcrops, in shallow humus on granite, sandstone or shale; Albany Thicket (NC to Steytlerville District, S of Jansenville).

2b Leaves often clasping below and pseudocauline, often pilose; bracts linear-lanceolate, often denticulate or fimbriate; tepals usually < 10 mm long, often with dark midrib on drying [Ornithogalum *sect.* Hispidaspasia *U.Müll.-Doblies & D.Müll.-Doblies*]

constrictum F.M.Leight.

Perennial geophyte, 0.2–0.4 m high; outer bulb tunics pale yellow. **Leaves** 1–3, dry at flowering, prostrate, oblong, margins minutely fimbriate. **Inflorescence** a spike-like raceme; pedicels 8–22 mm long. **Flowers** suberect, white with greenish keels below; tepals 10–15 mm long. **Stamens**: unequal, dimorphic, the outer shorter; filaments oblong or tapering, inner ones expanded above. **Flowering time** Nov.–Feb. **Fruit** a fusiform to beaked capsule, 8–22 mm long. Stony, rocky soils; Albany Thicket (Somerset East SE to Alicedale).

1c Flowers erect to spreading, diurnal or remaining open; tepals fleshy or thin-textured, white or pale green, with or without green midrib, free or fused at base, withering or reflexing to expose capsule; filaments various, sometimes toothed; capsule obovoid, subglobose or turbinate, often retuse [Ornithogalum *subgenus* Ornithogalum]

4a Flowers erect, remaining open; tepals fleshy, white or green, free or fused below and shortly tubular; filaments deltoid, inserted at mouth of tube,

connate at base; capsule ovoid-triangular, acute
*[*Ornithogalum *sect* Neopatersonia *(Schönland)*
J.C.Manning & Goldblatt]

[E]**neopatersonia** J.C.Manning & Goldblatt
[= *Neopatersonia uitenhagensis* Schönland]

Perennial geophyte, up to 0.28 m high; bulb flask-shaped, outer tunics light brown, membranous. **Leaves** 1–3, linear, acuminate, up to 28 × 4 mm, margins inflexed, inner face channelled. **Inflorescence** a lax, 3–20-flowered raceme; peduncle 4–15 mm long. **Flowers** yellowish cream-coloured, median stripe reddish brown or green; tepals fused at base, tube ± 2 mm long, segments 5–8 × 3 mm, apex cucullate. **Stamens**: basal parts of filaments connate into a ring, fused to perianth; upper parts subulate, incurved, up to 7 mm long; anthers dorsifixed, introrse. **Ovary** ovoid; style cylindrical; stigma 3-branched. **Flowering time** Sept.–Dec. **Fruit** a sharp-pointed, trisulcate capsule, ± 12 mm long. Grassland in sand; Albany Thicket, Eastern Fynbos-Renosterveld (Greater Addo National Elephant Park, Uitenhage, Port Elizabeth, Bushman's River Mouth).

4b Flowers erect or spreading; tepals thin-textured, white, often with darker midrib, diurnal; filaments subulate to basally expanded, inner usually broader; capsule ellipsoid to ovoid or obovoid, thin-walled, concealed by persistent, papery perianth
*[*Ornithogalum *sect.* Linaspasia *U.Müll.-Doblies & D.Müll.-Doblies]*
5a Bulb with or without subterranean neck; leaves usually > 5, not surrounded by horizontally barred cataphyll
*[*Ornithogalum *ser.* Juncifolia *U.Müll.-Doblies & D.Müll.-Doblies]*

[E]**baurii** Baker

Perennial geophyte, 0.4–0.9 m high; outer bulb tunics grey. **Leaves** 2 or 3, oblong-lanceolate, 60–150 × 8–18 mm, ciliate on margins. **Inflorescence** a 3–13-flowered compact raceme; pedicels exceeding bracts in length; bracts firm, boat-shaped. **Flowers** snow-white, campanulate, lacking green, median band; tepals up to 10 × 4.5 mm. **Stamens**: filaments up to 4.5 mm long; anthers 2 mm long. **Flowering time** Nov., Dec. **Fruit** a turbinate capsule. Growing in patches in marshy ground among flat rocks; Sub-Escarpment Grassland (Mountain Range NW of Mthatha, Baziya Mtn, Mhlahlane Forest Station).

[E]**britteniae** F.M.Leight. ex Oberm.

Perennial geophyte, up to 0.25 m high; bulb ovoid, outer tunics papery to fibrous. **Leaves** 5–7, distichous, ensiform, conduplicate, 50 × 10 mm, glaucous, clasping at base, margins fimbriate to apex. **Inflorescence** a slender, much exserted raceme; pedicels ± 5 mm long. **Flowers** cream- and cinnamon-coloured; tepals narrowly ovate, 6–8 mm long. **Stamens**: filaments narrowly ovate-acuminate, ± 4 mm long. **Ovary** oblong-globose. **Flowering time** Oct.–Dec. Exact habitat and locality not known; Albany Thicket (Grahamstown).

capillare J.M.Wood & M.S.Evans

Perennial geophyte, 0.10–0.15 m high; bulb globose, outer tunics dark. **Leaves** 3–8, narrowly linear, up to 70 × 0.5 mm, glabrous, sheaths forming thin neck below. **Inflorescences** 2 or 3 lax racemes per bulb, up to 15-flowered; pedicels up to 15 mm long. **Flowers** white; tepals fused at very base, narrowly oblong, ± 4 mm long. **Stamens** narrowly ovate, ± 2 mm long. **Ovary** globose. **Flowering time** Nov.–Jan. **Fruit** an obovoid capsule. Bare rock; Sub-Escarpment Savanna or Indian Ocean Coastal Belt (Kentani District).

flexuosum (Thunb.) U.Müll.-Doblies & D.Müll.-Doblies

Like *O. paludosum* but flowers in open, elongate racemes. Perennial geophyte, gregarious, 0.2–0.5 m high; bulb relatively small. **Leaves** 2–9, succulent, semi-terete to channelled, ± 450 mm long, forming a long neck. **Inflorescence** initially subcorymbose, becoming a lax, cylindrical, spreading raceme; pedicels 20–60 mm long. **Flowers**: tepals 6–7 mm long; ovary narrowed below. **Stamens**: filaments awl-shaped. **Flowering time** Nov.–Mar. **Fruit** an obovoid to globose, trigonous capsule, 6–9 mm long. Grassland, open shrubland, mountain summits, dolerite or sandstone, marshes, humus-rich soil; Drakensberg Grassland, Lower Karoo, Sub-Escarpment Savanna, Albany Thicket (Barkly Pass S to Koueveldberge, Blinkberg, King William's Town, Grahamstown and East London).

graminifolium Thunb.

Metsana-a-manyenyane, *nko-ea-ntja* (SS)

Perennial geophyte, 0.1–0.4 m high; outer bulb tunics brown. **Leaves** (2)3(5), linear to lanceolate, 80–250 mm long, often dry at flowering, glabrous or with long hairs along margins near base, reddish below, forming a papery neck (cataphyll). **Inflorescence** a subspicate raceme as long as peduncle; pedicels 1–6 mm long. **Flowers**: white or pinkish with dark keels; tepals 5–10 mm long. **Stamens**: filaments linear, inner ones ovate-acuminate. **Flowering time** Sept.–Mar. **Fruit** an ovoid capsule, 9 mm long. Grassland, open woodland, fynbos, mountain slopes, often moist sites, dolerite, full sun; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East to Naude's Neck southwards, from Middelburg to Maclear, Graaff-Reinet to King William's Town and Baviaanspoort to Bathurst).

juncifolium Jacq.

[= *Ornithogalum comptum* Baker]

Lijo-tsa-noko (SS); *indlolothi encane* (Z)

Perennial geophyte, 0.1–0.5 m high; outer bulb tunics pale to grey. **Leaves** several, suberect, linear to filiform, 100–200 mm long, strongly ribbed, with small hairs arranged in rows; leaf bases persisting as finely fibrous neck. **Inflorescence** a narrow, spike-like raceme; pedicels 2–7 mm long. **Flowers**: white with darker keels, faintly honey-scented; tepals 7–10 mm long. **Stamens**: filaments linear to ovate-acuminate. **Flowering time** Sept.–Mar. **Fruit** an ovoid capsule, ± 5 mm long. Grassland, shallow, loam soil, basalt outcrops, dolerite crevices, moderate to steep slopes; widespread in all bioregions, except Mesic Highveld Grassland, Rainshadow Valley Karoo (Barkly East to Ntsikeni Nature Reserve southwards, Middelburg E to Umtamvuna Nature Reserve, Graaff-Reinet to Kei River Mouth and Willowmore to East London and Humansdorp).

O. juncifolium Jacq. var. **emsii** Van Jaarsv. & A.E.van Wyk: cliffs overlooking Koonap River (3326BA).

paludosum Baker

Perennial geophyte, 0.1–0.7 m high, stiffly erect; bulb elongate and poorly developed, somewhat rhizomatous below. **Leaves** 2–6(9), erect, linear, 80–200 mm long, margins rolled inward, fibrotic. **Inflorescence** a subspicate raceme; pedicels 2–4 mm long. **Flowers**: suberect, white; tepals 6–12 mm long. **Stamens**: filaments awl-shaped, inner ones broader; ovary stalked. **Flowering time** Oct.–Jan. **Fruit** an ovoid capsule, ± 10 mm long. Mountain slopes, catchment areas and riverbanks; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Upper Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad S to Port Grosvenor southwards, Cradock to Dwesa Nature Reserve and Cockscomb Mtn to Uitenhage).

[E]perdurans A.P.Dold & S.A.Hammer

Dwarf xerophyte, 20–30 mm high; bulb globose, epigeal, outer tunics thin, wrinkled, pale brownish grey. **Leaves** 4–13, persistent, semi-terete, linear, up to 60 × 1.4 mm, erect, wiry, apices subacute, blackish green, surface rugose with undulating transverse grooves, occasional short, stiff, whitish trichomes throughout. **Inflorescence** a solitary, 20–40-flowered raceme; pedicels ± 7 mm long. **Flowers** fawn-coloured, midrib thin, green; tepals spreading-reflexed, up to 7.4 mm long, inner elliptic, outer ovate. **Stamens**: filaments lanceolate, inner ones up to 4.5 × 1.6 mm. **Ovary** ovoid. **Fruit** an ovoid-acute, deeply 3-lobed, membranous capsule. Shallow, nutrient poor soils on Grahamstown Silcrete, shales, siltstones and subordinate sandstones on Kommadagga subgroup of the Witteberg group; Lower Karoo (Table and Kommadagga Farms, and W of Grahamstown).

[E]sephtonii Hilliard & B.L.Burtt

Perennial geophyte, up to 0.1 m high. Close to *O. diphyllum* Baker, distinguished by bulb with distinct subterranean neck of 15–25 mm long, leaves (3)4, racemes 1- or 2-flowered, tepals 9–11 mm long, seeds smooth. Known only from type locality, alt. 2 500 m; Drakensberg Grassland (Barkly East District, Ben Macdhui).

tortuosum Baker

Perennial geophyte, 0.1–0.2 m high; outer bulb tunics pale. **Leaves** 4–20, semi-terete, filiform, tortuose, minutely hairy in rows on lower surface. **Inflorescence** a lax, wiry raceme; pedicels 5–7 mm long. **Flowers** white with green keels; tepals ± 5 mm long. **Stamens**: filaments lanceolate. **Flowering time** Aug.–Feb. **Fruit** an ovoid capsule. Sandstone, well-drained loamy soil, cliff faces, clay flats; Rainshadow Valley Karoo, Albany Thicket (Steytlerville, Kouga Dam).

*5b Leaves 1–5, surrounded by membranous, horizontally barred cataphyll [*Ornithogalum *ser.* Vaginaspasia *(U.Müll.-Doblies & D.Müll.-Doblies) J.C.Manning & Goldblatt]*

[E]anguinum F.M.Leight.

Perennial geophyte, 0.1–0.3 m high; bulb globose, outer tunics brown, forming short neck. **Leaves** narrowly linear, up to 0.3 m long, smooth, flaccid, apex acute. **Inflorescence** a raceme; pedicels 1.5–2.0 mm long. **Flowers** white; tepals free, narrowly ovate, 8 mm long. **Stamens**: outer filaments slightly widening below, inner ones ovate-acuminate. **Ovary** sessile, globose. **Flowering time** Sept.–Nov. **Fruit** a globose capsule. In dense, shade, rock crevices, sandstone; Albany Thicket (Suurberg E to Alexandria, Grahamstown and Wooldridge).

[E]monophyllum Baker subsp. **eckardtianum** U.Müll.-Doblies & D.Müll.-Doblies

Delicate geophyte, up to 0.25 m high; bulb globose, outer tunics brown, forming neck up to 100 mm long; sheathing cataphyll up to 1.4 mm wide, upper part with a narrow banding of elevated, dark rings. **Leaves** 1–few, filiform, up to 0.3 × 0.5–0.7 mm. **Inflorescence** a pseudo-spicate raceme, few–20-flowered; pedicels 1–8 mm long. **Flowers** white; tepals up to 8 mm long, fused in lower $^1/_3$, forming short, funnel-shaped tube. **Stamens**: filaments ovate-acuminate, inner ones wider. **Ovary** stipitate. **Flowering time** summer. **Fruit** an oblong-ovoid capsule. Albany Thicket (Eno's Drift on Keiskamma River, NW of Peddie).

POLYXENA Kunth see **LACHENALIA** J.Jacq. ex Murray

PSEUDOPROSPERO Speta

Subfamily Hyacinthoideae Link, tribe Pseudoprospereae J.C.Manning & Goldblatt

Species 1, sthn Afr., EC, endemic to Grahamstown District.

[E]firmifolium (Baker) Speta
[= *Scilla firmifolia* Baker]

Evergreen, clump-forming geophyte, 0.2–0.4 m high; bulb epigeal, subglobose, outer tunics dry, papery, brownish. **Leaves** several, linear, canaliculate, coriaceous, margins not cartilaginous. **Inflorescence** a lax, many-flowered raceme; peduncle decumbent; bracts small, lanceolate, membranous. **Flowers** whitish to lilac, rotate, unscented; tepals persistent, fused at base, oblong-lanceolate. **Stamens**: filaments basally fused and to base of tepals, linear-lanceolate; anthers versatile. **Flowering time** Dec.–Mar. **Fruit** a deeply 3-lobed, turbinate capsule, on a short carpophore. **Seeds** 1 per locule, subglobose, black, testa tightly adhering. Rocky savanna and grassland; Sub-Escarpment Savanna, Albany Thicket (Salem, Hopewell, Peddie, Bathurst, Alexandria District, Bushman's River Poort).

RESNOVA Van der Merwe see **LEDEBOURIA** Roth

SCHIZOCARPHUS Van der Merwe

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Monotypic, tropical E Africa and sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, EC.

nervosus (Burch.) Van der Merwe

Deciduous herb, 0.05–0.30 m high; bulb subterranean, globose, outer tunics firm-papery and fibrous, brownish, decaying above to form a stiffly fibrous neck. **Leaves** several, green at flowering, ± linear-lanceolate, texture firm, striate, margins cartilaginous, often lightly twisted. **Inflorescence** a few- to many-flowered raceme; peduncle flexed sideways at base, then erect; bracts linear-lanceolate, membranous, not-spurred. **Flowers** white, rotate, unscented; tepals spreading, fused at base, oblong-lanceolate. **Stamens** ± spreading; filaments fused to base of tepals, linear-lanceolate. **Ovary** dark bluish. **Flowering time** Nov.–Jan. **Fruit** a 3-lobed, obovoid capsule. **Seeds** 2–4 per locule, subglobose. Grassland, stony to rocky soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Mount Fletcher E to Magusheni, from Queenstown to Mkambati Nature Reserve, Amatole Mts, Kei River Mouth and Alexandria).

URGINEA Steinh. see **DRIMIA** Jacq.

VELTHEIMIA Gled.

Subfamily Hyacinthoideae Link, tribe Massonieae Baker

Species 2, sthn Afr., NC, WC, EC.

Ecological and geographical vicariants, from arid winter rainfall parts and the subtropical southern and eastern coast. Unusual in the family for its large, membranous, inflated capsules. Has been cultivated for over two centuries.

Leaves glossy dark green, seldom all deciduous; bulb tunics fleshy; bracts 10–30 mm long; spring flowering

[E]bracteata Harv. ex Baker

Forest lily; *sandui* (A)

Evergreen geophyte, 0.2–0.6 m high. **Leaves** lanceolate to oblanceolate. **Inflorescence** a many-flowered spike. **Flowers** spreading to nodding, pink or pale yellow, finely speckled with red; tube 20–35 mm long; tepals ovate, ± 3 mm long. **Flowering time** Aug., Sept. **Fruit** an ellipsoid, 3-winged capsule. Coastal scrub amongst rocks and limestone, riverbanks and mouths, forested valleys, alt. 5–610 m; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Eastern Fynbos-Renosterveld, Albany Thicket (Willowvale District E to Kei River Mouth, southwards from Uitenhage to East London and to St Francis Bay).

Leaves glaucous or greyish, deciduous; outer bulb tunics papery; bracts 10–15 mm long; autumn or winter flowering

capensis (L.) DC.

Sand lily, quarobe; *sandlelie* (A)

Geophyte, 0.2–0.4 m high. **Leaves** lanceolate to oblong, sometimes narrowly oblong and strongly crisped. Inflorescences, flowers and capsules as in *V. bracteata*. **Flowering time** Apr.–July. Occasional, below shrubs and small trees in dappled shade, lower S-facing slopes, alt. 100–1 200 m; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (WC to Willowmore District: Gwarriepoort and Witteberg Mts).

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HYDROCHARITACEAE

(= NAJADACEAE)

(Order Alismatales)

Compiled by C.L. Bredenkamp, R.P. Glen & Z.L. Magwaza

1a Aquatic herbs, in brackish or fresh water; leaves sessile in pseudo-whorls of 3 or more, laminas linear, 1-veined, dentate; flowers solitary or few together in axils of leaves, unisexual, perianth absent .... **Najas**

1b Aquatic herbs, marine or fresh water; leaves alternate, opposite, in verticils, radical, in rosettes or cauline, laminas variously shaped, often floating; flowers solitary or 2 or more together in tubular, sessile or pedunculate spathes, bisexual (or plants dioecious), perianth present:

2a Leaves clearly differentiated into petiole and blade at maturity; marine or estuarine habitats.... **Halophila**

2b Leaves not differentiated into petiole and blades; freshwater habitats:

3a Leaves arranged in whorls of 3 or more, apex not recurved, acute, bearing one terminal spine, margins serrulate; male flowers remain attached to mother plant, without staminodes ..... ***Egeria**

3b Leaves spirally arranged, apex often recurved, bearing two spines, margins serrate or toothed; male flowers detached from parent plant, floating to surface, each with 3 erect, papillose staminodes .... **Lagarosiphon**

***EGERIA** Planch.

Species 2, both from subtropical and temperate South America; 1 naturalised in sthn Afr., FS, KZN, WC, EC.

densa Planch.

Ditch moss, water thyme, dense water weed; *waterpes* (A)

Perennial, aquatic herb, permanently submerged. **Leaves** always in whorls of 3 or 4, sessile, serrulate, terminating in a single spine. **Inflorescence** in axil of foliage leaves; spathe sessile, of 2 united bracts. **Flowers** unisexual, arising from spathes situated in upper leaf axils; each flower with a thread-like hypanthium; sepals 3; petals 3, large, 2–3× longer than sepals and alternating with them. **Male flowers** 2 or 4, held above water surface on rigid pedicels; sepals green; petals white; stamens 9, 3 central, erect and

opposite sepals, outer 6 in 2 whorls of 3; pistillodium 3-lobed, green. **Female flowers** solitary; elongated hypanthium bearing flower above water surface; ovary of 3 carpels; enclosed in base of hypanthium; styles 3, flattened. Cultivated for ornament or aquarium trade, still or slow moving water in lakes or ponds; origin South America, declared weed (Category 1); Albany Thicket (Bakens River in Port Elizabeth).

HALOPHILA Thouars

Species 9, tropical to warm seas of the world; 1 in sthn Afr., coastal waters, KZN, WC, EC. The only marine angiosperm with petiolate leaves.

ovalis (R.Br.) Hook.f.

Perennial herb, submerged marine, aquatic plant, dioecious, with much-branched creeping rhizome; rhizomes with long root hairs, with abbreviated shoot and a pair of leaves at nodes. **Leaves** in pairs, petiolate, linear, lanceolate, with a prominent, lateral, marginal nerve, connected to midrib by many oblique secondary nerves. **Flowers** solitary; spathe of 2 free, overlapping, membranous bracts. **Male flowers** shortly pedicelled, with 3 perianth segments; stamens 3; anthers sessile, pollination hydrophilous. **Female flower** sessile; ovary ovoid, beaked, bearing 3 reduced perianth segments near apex; styles 2–6, linear. Shore lines or river mouths; Albany Thicket (Nahoon River Estuary, Bushman's River Mouth, Kowie River).

LAGAROSIPHON Harv.

Species 9, genus endemic to tropical Africa and Madagascar, 8 in Africa south of the Sahara, 1 endemic to Madagascar, 1 naturalised in Europe and New Zealand; 5 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, EC.

major (Ridl.) Moss ex Wager

Coarse oxygen-weed; *growwe babergras* (A)

Perennial, aquatic herb, submerged, dioecious, with a perennial rhizome. **Stems** ± 3 mm in diam., terete. **Leaves** alternate, 6.5–30.0 × 2–5 mm, spreading, recurved. **Male inflorescence** axillary; spathe cup-shaped, containing many pedicellate male flowers, buds become detached and rise to surface (because of an enclosed air bubble) where they expand and recurve suddenly to form a bell-shaped, floating flower; perianth 3 + 3; filaments ultimately parallel to water surface with anthers at right angles to them; staminodes 3, longer than stamens, joined at top (acting as a sail). **Female inflorescence** axillary; spathe valves fused, containing 1–3 flowers; flowers remain attached, mature flowers float on the water surface, styles 3. Widespread, poorly drained water, vleis, ponds, quarries, river systems; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket [Ntsikeni Nature Reserve, King William's Town quarry, Komga, Kouga River, Grahamstown (brick works)].

muscoides Harv.

Fine oxygen-weed; *fyn babergras* (A)

Perennial, aquatic herb, submerged (except for flowers during anthesis), dioecious, with a perennial rhizome. **Stems** slender, 0.5–1.5 mm. **Leaves** alternate, or in consecutive whorls, but not in long continuous whorls, linear, 4.8–20.0 mm long, 0.5–1.4 mm wide, spreading, translucent, teeth sharp pointing towards leaf tip, not borne on triangular bases. **Male inflorescence** and male flowers similar to *L. major*. **Female inflorescence** and female flower similar to *L. major*. Common in water bodies; Sub-Escarpment

Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Matatiele District S to Mjilo near Alice, from Uitenhage to Gamtoos River near Port Elizabeth, Grahamstown and Kowie).

NAJAS L.

Species ± 40; 4 in sthn Afr., 2 widespread, N, B, LIM, G, M, KZN, EC.

horrida A.Braun

Perennial, occasionally annual herb, hydrophyte, forming dense brownish clumps, dioecious; height depending on depth of water; stem ramified, rooting at nodes. **Leaves** ± falcate, narrowly linear, 20–30 × 5–10 mm; spinose-dentate; teeth 6–18, yellow, curving upwards on each side; shoots appearing bushy; sheaths usually auriculate, amplexicaul, minutely dentate; apices attenuate, spinous. **Male flowers** at first enveloped in bud by a closed spathe, with a thin inner membrane; stamen solitary, up to 3 mm long, disintegrating after shedding pollen; anthers 4-lobular; pollen globose. **Female flower** naked, 2 mm long; ovary turbinate; stigma filiform. **Flowering time** Oct.–? Common in fresh or brackish water in inland or coastal lakes; Indian Ocean Coastal Belt (Port St Johns District).

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HYPOXIDACEAE

(Order Asparagales)

Compiled by Y. Singh (*Hypoxis* and *Rhodohypoxis*) & D.A. Snijman (*Empodium*, *Pauridia* and *Spiloxene*)

1a Plants hairy, at least on tepal backs; hairs usually long, varying from irregularly branched to star-like:
2a Flowers star-shaped, free to base, yellow, rarely white ..... **Hypoxis**
2b Flowers cup- or bell-shaped, joined at based into a tube, white, pink or red ..... **Rhodohypoxis**
1b Plants glabrous, or if with a few, short, recurved hairs, then tepals always smooth:
3a Leaves pleated; scape and spathe bracts absent; pedicel flattened on one side, long or often hidden by leaf sheaths; ovary 1-locular, placentation parietal ..... **Empodium**
3b Leaves terete, channelled or V-shaped; scape long to short; spathe bracts 1 or more; pedicel if present, terete; ovary 3-locular, at least in lower half, placentation axile:
4a Flowers with 3 stamens ..... **Pauridia**
4b Flowers with 6 stamens ..... **Spiloxene** (including **Saniella**)

EMPODIUM Salisb.

Autumn star

Species ± 8, sthn Afr., G, M, S, FS, KZN, L, NC, WC, EC.

Anthers without fleshy apical appendages or at most anther connective slightly elongated but not fleshy

elongatum (Nel) B.L.Burtt

Perennial geophyte, similar to *E. gloriosum* but with upper part of basal leaf sheaths mostly very dark brown, leaves often not exserted at flowering, anther connectives occasionally slightly longer than anther sacs, and style shorter to ± equalling stigma. **Flowering time** Oct.–Jan. (Apr.), after rain. On dolerite outcrops; Drakensberg Grassland, Upper Karoo, Dry Highveld Grassland (Mpumalanga Escarpment to Middelburg, Sneeuberg and Cradock).

gloriosum (Nel) B.L.Burtt

Perennial geophyte, 50–200 mm high; corm sheaths light brown, upper part rarely very dark brown. **Leaves** up to 8, lanceolate, 2–10 mm wide, softly pleated, hairless or ribs occasionally hispid when young. **Flowers** yellow, sometimes lemon-scented; tepals 10–25 mm long, outspread from a 20–80 mm long neck; stamens suberect; ovary subterranean; style much longer than stigma,. **Flowering time** Mar.–June. Sandy or loamy soils on lower slopes and flats; Upper Karoo, Dry Highveld Grassland, Albany Thicket, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (SW Cape along coastal plain to Graaff-Reinet, Somerset East and Fort Beaufort, from Steytlerville to Port Elizabeth, Bathurst and East London, and to St Francis Bay).

Anthers each bearing a fleshy, often pointed apical appendage broader than anther connective

flexile (Nel) M.F.Thomps. ex Snijman

Perennial geophyte, up to ± 100 mm high; corm with papery or fibrous sheaths. **Leaves** 3, usually dry at flowering, narrowly lanceolate, ± 5 mm wide, softly pleated with ciliate ribs. **Flower** yellow, scented; tepals 15–30 mm long, recurved from 10–30 mm long neck; stamens spreading, distinctly apically appendaged; ovary mostly hidden in leaf sheaths; style shorter than stigma. **Flowering time** Feb.–June. Clay or sand on stony flats; Rainshadow Valley Karoo (Little Karoo E to near Willowmore).

sp. A

[including *Forbesia flexilis* var. *barberae* (Baker) Nel]

Perennial geophyte, similar to *E. flexile* but leaves present at flowering and longer than inflorescences, and ovary usually exserted from leaf sheaths. **Flowering time** Oct.–Apr., after rain. On rocky slopes and ridges; Dry Highveld Grassland, Upper Karoo (southern FS and Kokstad District through to Mount Hope and Somerset East District).

HYPOXIS L.

Yellow stars

Species ± 85, sthn Afr., trop. Afr., North America, South America and Asia; N, B, G, M, S, FS, KZN, L, NC, WC, EC.

1a Plants medium to large in size, > 150 mm high (if shorter, then leaves > 12 mm wide); flowers yellow, firm, large, tepals of lowermost flowers 12–20 mm long
2a Plants taller than wide; leaves tightly clasping at base to form a false stem
3a False stem widening into the shape of a funnel; leaves erect, converging apically, lanceolate, 25–110 mm wide

colchicifolia Baker

Broad-leaved hypoxis; *igudu*, *ilabatheka*, *ingcobo*, *inkomfe* (Z)

Perennial geophyte, robust, 250–500 mm high; rhizome with strong fibrous tunic. **Leaves** 4–8, clasping at base to form a false stem, opening into funnel above, broadly lanceolate, 100–600 × 30–110 mm, erect, flat, strongly ribbed with veins evenly spaced, thickened and raised on upper surface, almost hairless. **Flowers** 8–17, yellow; tepals 11–19 × 3–5 mm; anther apex entire or split; ovary 4–6 mm long; style shorter than stigma. **Flowering time** Sept.–Feb. Grass slopes and rocky outcrops, sand or loamy soil; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (KZN S to Mkambati Nature Reserve, Lusikisiki and Port St Johns).

galpinii Baker

Perennial geophyte, similar to *H. colchicifolia*. **Leaves** narrow, up to 40 mm wide, veins flush with the leaf surface, few close to margins thickened and raised on the upper surface, hairs on blade sparse, strong on lower surface, along margins and midrib. **Flowering stalks** densely hairy. **Flowering time** Sept.–Feb. Rocky outcrops; Sub-Escarpment Grassland, Albany Thicket (Mount Currie, Maclear and Grahamstown).

3b False stem upright in the form of a column; leaves spreading and recurving apically, linear or filiform, 3–20 mm wide

acuminata Baker

Perennial geophyte, similar to *H. rigidula* but plants shorter, ± 200 mm high. **Leaves** erect or semi-erect, spirally twisting, short and narrow, 130–380 × 4–7 mm, sparsely hairy with long white hairs and flowers few, 2–5. **Flowering time** Sept.–Dec. Damp slopes and streambanks; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (from N along Drakensberg Mts S, from Maclear to Mkambati Nature Reserve and Port St Johns, Amatole Mts to Hogsback and to S of Grahamstown).

longifolia Baker

Perennial geophyte, similar to *H. rigidula* but plants slender. **Leaves** filiform, 150–500 × 2–4 mm, subterete, strongly ribbed, veins close to each other, uniformly thickened and raised on upper surface, straw-coloured, blade hairless, margins and midrib below outlined in white by a thick band of squat hairs. **Flowering time** Aug.–Jan.(–May). Grassy slopes and rocky outcrops; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (from N to Mkambati Nature Reserve and Cathcart, concentrated between East London and Grahamstown, Humansdorp).

ludwigii Baker

Perennial geophyte, similar to *H. rigidula* but plants shorter, 250–350 mm high. **Leaves** linear, 300–450 × 8–20 mm, ribbed, veins evenly spaced, thickened and raised on upper surface, blade hairless, margins and midrib below outlined in white by a band of squat hairs. **Flowering time** Aug.–Feb. Grass slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (from N to Drakensberg Mts, Maclear and Stutterheim).

rigidula Baker

Silver-leaved star-flower; *inkomfe* (Z)

Perennial geophyte, 600–700 mm high; rhizome with strong fibrous tunic, distinct in its slender, tall, strap-like leaves, bending above false stem. **Leaves** 4–12, linear, 320–800 × 4–13(–20) mm, veins flush with surface, few close to margins thickened and raised on upper surface, hairs on blade sparse, strong on margins and lower midrib or forming a furry covering. **Flowers** 3–9, yellow; tepals 8–20 × 3–6 mm; anther apex entire; ovary 4–5 mm long; style shorter than stigma. **Flowering time** Sept.–Mar. Open grassland, rocky outcrops, wetlands and streambanks; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (from N to Maclear and Stutterheim, from Uitenhage E to Grahamstown).

2b Plants as wide as tall; leaves spreading upwards and outwards from base (false-stem absent)
4a Plants in flower large, 150–300 mm high; leaves many (> 7), arranged one above the other in 3 ranks, folded together along the length, sickle-shape; inflorescences produced sequentially throughout the growing season; flowers 4–12
5a Leaves with white-velvety hair layer on lower surface; pedicels soft, flexible, lowermost 20–35 mm long

[E]stellipilis Ker Gawl.

Starry-furred hypoxis

Perennial geophyte, similar to *H. hemerocallidea*. **Leaves** dark green and hairless on upper surface, with distinct silver-white velvety layer on lower surface (tomentose). **Flowering time** Aug.–Apr. Grass patches on dry hill slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Uitenhage to Port Elizabeth, Addo and Grahamstown).

5b Leaves nearly hairless, or if present, then hairs evenly distributed on blade; pedicels firm, erect, lowermost 5–25 mm long

hemerocallidea Fisch., C.A. Mey. & Avé-Lall.

African potato, star-flower; *sterblom*, *gifbol* (A); *inkomfe* (Z)

Perennial geophyte, robust, 100–600 mm high; rhizome with strong fibrous tunic. **Leaves** 8–12, arranged one above the other in 3 ranks, lanceolate or linear-lanceolate, 200–500 × 18–25 mm, sickle-shaped, recurving, veins flush with surface, with an even distribution of hairs, mainly on lower surface and in young leaves, less hairy with age. **Flowers** 4–12, yellow; tepals 12–20 × 4–7 mm; anther apex entire or split; ovary 3–4 mm long; style shorter than stigma. **Flowering time** (Aug.) Sept.–Mar. (–May). Open grasslands and rocky outcrops; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket (from N to Maclear and Port St Johns, from Stutterheim to Grahamstown).

obtusa Ker Gawl.

Mr Burchell's hypoxis; *inkomfe* (Z)

Perennial geophyte, similar to *H. hemerocallidea*. **Leaves** stiff and strongly ribbed, due to the many veins (30–70) close to each other, thickened and raised on upper surface, blade waxy, nearly hairless, margins and midrib outlined in white by a thickened band of squat hairs. **Flowering time** Aug.–Feb. Grass slopes and rocky outcrops; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (from N to Maclear, Stutterheim and Grahamstown).

4b Plants in flower small, 50–120 mm high; leaves few (< 7), overlapping in helical arrangement to give a rosette-like appearance, flat, broadly ovate; inflorescences produced at start of growing season; flowers mostly 2

costata Baker

Perennial geophyte, stout, 100–150 mm high; rhizome with fibrous tunic. **Leaves** 4–6 (–8), bases overlapping in a rosette, erect or semi-erect, oblong-lanceolate, 100–200 × 30–50 mm, elongating in post-flowering, flat, stiff, strongly ribbed; veins 30–50, close to each other, uniformly thickened, with sparse, long, weak, white or yellow hairs, dense on margins and midrib on lower surface. **Flowers** 2(3–5), yellow; tepals 11–17 × 3–5 mm; anther apex entire; ovary 4–5 mm long; style shorter than stigma. **Flowering time** Sept.–Dec. Grass slopes and rocky outcrops; Drakensberg Grassland, Albany Thicket (from N to Katberg, Hogsback and Grahamstown).

multiceps Buchinger ex Krauss

Winter star-flower; *inkomfe* (Z)

Perennial geophyte, similar to *H. costata*. **Leaves** densely covered in short, coarse, yellow hairs (scabrous). **Flowering time** Aug.–Nov. Grass slopes and rocky outcrops; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (from N to Queenstown and Maclear, from Grahamstown to East London).

1b Plants small in size, < 150 mm high (if taller, then leaves < 12 mm wide); flowers yellow or white, delicate, small, tepals of lowermost flowers 4–10(–15) mm long
6a Plants as wide as tall; leaves 10–20 mm wide

obliqua Jacq.

Oblique-leaved hypoxis; *ixalanxa* (Z)

Perennial geophyte, similar to *H. villosa*. **Leaves** tough, twisting obliquely towards apex, blade almost hairless, margins and midrib on lower surface fringed with hairs forming white band. **Flowering time** Sept.–Dec. Rocky outcrops; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Upper Karoo, Albany Thicket (Kokstad S, from Mkambati Nature Reserve to Port St Johns and Cradock to Port Elizabeth).

sobolifera Jacq.

Creeping hypoxis

Perennial geophyte, similar to *H. villosa*. **Leaves** many, 8–12, sparse to densely hairy, hairs in tufts giving a grey-white, coarse appearance. **Flowering time** Oct.–Apr. Open grass patches; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (KZN S to Mkambati Nature Reserve, from Port Elizabeth to Grahamstown and East London).

villosa L.f.

Golden winter star; *sterretjie*, *inkbol* (A)

Perennial geophyte, small, 60–150 mm high; rhizome with fibrous tunic. **Leaves** 4–7, tightly arranged one above the other in 3 ranks, moderately firm in texture, lanceolate, 150–175 × 10–20 mm, sickle-shaped, recurving, sparse to densely hairy; hairs forming thin layer on lower surface, soft, silky-white. **Flowers** 2–6; pedicels slender, lax, unequal in length bringing flowers to ± the same height, yellow; tepals 8–10 × 2–5 mm; anther apex split; ovary 2–3 mm long; style ± equalling stigma. **Flowering time** Oct.–Apr. Open grass patches; Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Mkambati Nature Reserve to Humansdorp).

[E]**zeyheri** Baker

Small yellow star; *sterretjies* (A)

Perennial geophyte, similar to *H. villosa*. **Leaves** almost hairless; hairs indistinct, ± evenly spaced along margins and midrib on lower surface, white or lightly brown, falling off with age. **Flowering time** Oct.–Apr. Open grass patches; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Maclear S to Port Elizabeth, Suurberg, Grahamstown and East London).

6b Plants taller than wide; leaves 3–11(–18) mm wide
7a Leaves membranous in texture, drying papery

angustifolia Lam.

Perennial geophyte, soft almost hairless, 50–150 mm high; rhizome with papery tunic and few fine fibres. **Leaves** 6–10, linear, 50–300 × 3–18 mm, in 3 ranks or hanging laxly in taller plants at end of season, erect or semi-erect, with sparse, long, weak hairs, white on margins. **Pedicels** slender, lax, unequal in length bringing flowers to ± the same height. **Flowers** 2–4(–7), yellow, sometimes red-striped; tepals 3.5–9.0 × 1.5–4.0 mm; anther apex split; ovary 3–4 mm long; style shorter to ± equalling stigma. **Flowering time** (Oct.) Nov.–Jan.(–Mar.). Grass slopes, forest margins, cliff faces, moist, loam soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (from N along Drakensberg to Maclear and Port St Johns southwards, from Cradock to Somerset East and across Amatole Mts to Port Alfred and East London).

membranacea Baker

Small white hypoxis

Perennial geophyte, similar to *H. angustifolia*. **Leaves** broad, flat; translucent and scattered with pustules that are visible against the light; covered in long weak hairs. **Flowers** white. **Flowering time** Nov.–Feb.(–Apr.). Forest margins and cliff faces; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Mkambati Nature Reserve, Mthatha, Port St Johns, Kentani and East London).

nivea Y.Singh

White star-flower

Perennial geophyte, similar to *H. angustifolia*. **Flowers** white; tepals small, 3–6 × 1.5–2.5 mm and delicate. **Flowering time** (Sept.) Oct., Nov. Forest floor, cliff faces, well-drained, sandy soil; Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (along KZN Coast S to Mkambati Nature Reserve and East London).

parvula Baker

Perennial, dwarf geophyte, similar to *H. angustifolia*. **Leaves** few, 3–5. **Flowers** one per stalk (seldom 2), yellow or white. **Flowering time** Nov.–Apr. Grass slopes and rocky outcrops; Drakensberg Grassland, Sub-Escarpment Grassland (Drakensberg Mts to Maclear and Stutterheim).

7b Leaves thick in texture, not membranous
8a Leaves strongly ribbed, with veins uniformly thickened and close to each other; scapes wiry, U-shaped in cross section

filiformis Baker

Grass star-flower; *izinongwe* (Z)

Perennial geophyte, 50–150 mm high; slender, wiry, lightly hairy; rhizome with fibrous sheaths. **Leaves** 4–7, erect, rigid, subterete, 80–200 × 2–3 mm, U-shaped in cross

section, strongly ribbed, sparsely covered in long, weak hairs. **Flowers** 2, one slightly above the other, yellow; tepals 4.5–5.0 × 1.5–2.0 mm; apex of anther split; ovary 2.0–2.5 mm long; style shorter to ± equalling stigma. **Flowering time** (Mar.–)Sept.–Feb.(–May). Grass slopes and moist depressions; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East, Mkambati Nature Reserve and Port St Johns S, across Amatole Mts to Stutterheim and Kei River Mouth, and to Greater Addo Elephant National Park and Humansdorp).

tetramera Hilliard & Burtt

Perennial geophyte similar to *H. filiformis*. **Scapes** decumbent when in fruit. **Flowers** single, tiny, 4-merous. **Flowering time** Nov.–Jan. High altitude, moist grassland depressions and edges of mud pans; Drakensberg Grassland (Lesotho and localised in Amatole and Katberg mts, Hogsback and Katberg).

8b Leaves not ribbed, with veins of uneven thickness; scapes weak, flat in cross section
9a Plants 70–120 mm high; scapes shorter than or as tall as leaves; flowers 2–5

argentea Harv. ex Baker

Small yellow star-flower, star of Bethlehem; *ixalanxa* (X); *inongwe*, *isinana* (Z)

Perennial, silvery-white, slender geophyte, 70–100 mm high; rhizome small, deep seated, oblong. **Leaves** 4–7, clasping at base to form a slender false stem wrapped in membranous brown tunic, arranged loosely in 3 ranks; linear, 50–200 × 3–6 mm, drying grey-white; sparsely to densely hairy, mainly on lower surface; hairs closely pressed, long and silky, sericeous, white or yellow-brown. **Flowers** 1–5, yellow, sometimes red-striped; tepals 6–10 × 2–3 mm; anther apex split; ovary 3–4 mm long; style shorter than stigma. **Flowering time** Aug.–Mar. Grassland, hill slopes in sandy, loamy, moist soil; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Drakensberg Mts to Mount Currie, from Queenstown to Mthatha, Somerset East to Amatole Mts, and to Grahamstown and Humansdorp).

gerrardii Baker

Small yellow star; *inkomfe* (Z)

Perennial geophyte similar to *H. argentea*. **Leaves** rigid in texture and hairs long, weak and golden-brown. **Flowering time** Sept.–Mar. Grassland, full sun; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad S, from Queenstown to Maclear and Mthatha).

9b Plants 30–60 mm high; scapes overtopping leaves; flowers 1 or 2

[E]**flanaganii** Baker

Perennial geophyte, similar to *H. argentea* but dwarf, up to 50 mm high, sparsely hairy with long, weak, white hairs, tepals minute, 4–6 × 1.5–2.0 mm. **Flowering time** Sept.–Dec. Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve S, from Grahamstown to East London and Humansdorp).

floccosa Baker

Sterretjie (A)

Perennial geophyte, similar to *H. argentea* but dwarf, up to 70 mm high, densely hairy with hairs in tufts (floccose), red-brown. **Flowering time** Nov.–May. Hilly areas in loam soil; Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Stutterheim and Butterworth, S to Cockscomb in Uitenhage District).

PAURIDIA Harv.

Klipsterretjie (A)

Species 2, sthn Afr., WC, EC.

minuta (L.f.) T.Durand & Schinz

Perennial geophyte, up to ± 100 mm high; corm covered with reticulate fibrous sheaths. **Leaves** 3–6, linear to broadly channelled, 0.5–5.0 mm wide, glabrous. **Flowers** 1 per scape, bell-shaped, white to pale pink, tube 2–4 mm long; tepals ± twice as long as tube; stamens 3; stigma branches slender with 3 basal appendages; bracts 2, linear. **Flowering time** Apr.–June. Damp flats and rock outcrops; Eastern Fynbos-Renosterveld (WC through to Humansdorp area).

RHODOHYPOXIS Nel

Red or white star; *rooisterretjie* (A)

Species 6, sthn Afr., M, S, FS, KZN, L, EC.

1a Scape reduced; ovary subterranean, with a long beak separating it from the perianth

rubella (Baker) Nel

Small, perennial geophyte, up to 50 mm high, lacking fibrous tunics. **Leaves** 3–7, erect or spreading, filiform, 10–45 × 1.0–1.5 mm, subterete, channelled on inner face, lightly hairy or hairless. **Flower** 1 per scape, bright pink, rarely pale pink or white; perianth tube bell-shaped, ± 1.5 mm long, segments 3–7 × 1.5–2.0 mm; ovary subterranean, beak 7–15 mm long. **Flowering time** Nov., Dec. High altitude seasonal pools and damp silt patches, fine sandy gravel; Drakensberg Grassland (Drakensberg Mts to Barkly East District).

1b Scape distinct; ovary without beak, ovary and perianth contiguous
2a Plants almost hairless; flowers small, < 8 mm long; fruiting stalk deflexed

deflexa Hilliard & Burtt

Small, perennial geophyte similar to *R. baurii*. **Leaves** almost hairless or lightly hairy. **Flowers** small, 3.5–6.5 mm long and scape deflexing at joint in fruiting. **Flowering time** Dec.–Feb. High altitude marsh slopes and streambanks; Drakensberg Grassland (Drakensberg Mts, Rhodes and Barkly East District).

2b Plants hairy; flowers large, > 10 mm long; fruiting stalk erect

baurii (Baker) Nel

Small, perennial geophyte, 30–100 mm high; rhizome erect, tuberous, round or ovoid, lacking fibrous tunics. **Leaves** 4–10, clasped in a false stem up to 50 mm long, erect or spreading, linear to lanceolate, 1.25–12.00 mm wide, keeled, folded, hairy. **Flowers** 1 or 2 per scape, white, pink or red; perianth segments forming a cup-like tube up to 2.5 mm long, spreading in upper part, 10–20 × 4–10 mm, inner segments clawed at base with inflexed knees clasping mouth of tube; stamens in two series; ovary without beak; fruiting stalk erect. **Flowering time** Oct.–Dec. High altitude, damp or marsh slopes along streambanks. Drakensberg Grassland, Sub-Escarpment Grassland (Drakensberg Mts, Qacha's Neck, Barkly East, Rhodes, Maclear and Kokstad).

milloides (Baker) Hilliard & Burtt

Small, perennial geophyte similar to *R. baurii*. **Leaves** bright green, almost hairless. **Flowers** bright red, rarely pink or white. **Flowering time** Oct., Nov. High altitude,

seasonal pools and streambanks; Drakensberg Grassland, Sub-Escarpment Grassland (Naude's Neck to Barkly East and S to Mjika near Mhlahlane Forest Station).

SPILOXENE Salisb.

Cape star; *sterretjie* (A)

Species ± 30, Australia (± 13 spp.) and sthn Afr.; ± 17 in sthn Afr. N, KZN, L, NC, WC, EC.

Flowers funnel-shaped with ovary held below ground

sp. A
(currently named *Saniella verna* Hilliard & Burtt)

Dwarf, perennial geophyte, up to 50 mm high; corm cylindrical, lacking fibrous tunics. **Leaves** 3–6, linear, spreading, 2–4 mm wide, U-shaped in transect, ± succulent. **Flower** 1 per scape, funnel-shaped, elevated on a long, solid neck above subterranean ovary; tepals 14–25 mm long, white with yellow throat; stigma branches short, slender; bract 1, hidden below ovary. **Flowering time** Oct., Nov. High altitude marshland; Drakensberg Grassland (Drakensberg Mts, Barkly East District).

Flowers star-shaped with the ovary held well above ground

aquatica (L.f.) Fourc.
Watersterretjie (A)

Perennial geophyte, 100–300 mm high; corm mostly lacking fibrous tunics. **Leaves** ± 5, erect, firm, 2.0–4.5 mm wide, subcylindrical, ± hollow. **Flowers** 2–7 per scape, in a spreading cluster, star-shaped; tepals 5–17(–36) mm long, white with green reverse; stigma branches long and broad; bracts as many as flowers, broad and spreading. **Flowering time** June–Nov. Pools or marshes; Eastern Fynbos-Renosterveld (WC E to Port Elizabeth).

capensis (L.) Garside
Perennial geophyte, 100–300 mm high; corm capped with short, fine bristles. **Leaves** ± 5, spreading, linear to lanceolate, 2–10 mm wide, V-shaped in transect, keeled. **Flower** 1 per scape, star-shaped; tepals 15–35 mm long, yellow (white or pink in SW Cape), often dark-centred, red-striped on reverse; stigma branches long and broad; bract 1, long, leaf-like, wrapped tightly around pedicel. **Flowering time** July–Oct. Seasonally wet flats and plateaus; Eastern Fynbos-Renosterveld (SW Cape, E to Port Elizabeth).

flaccida (Nel) Garside
Perennial geophyte, 50–250 mm high; corm covered with firm branched dark fibres (in W) to fine brown fibres (in E). **Leaves** 3–6(–9), recurved, 1–4 mm wide, soft, widely V-shaped in transect. **Flowers** 2 per scape, star-shaped; tepals 5–20 mm long, yellow with green backs; stigma branches with broad basal lobes; bracts 2, lanceolate, clasping pedicels at base, pale green with translucent margins, usually drying brown. **Flowering time** July–Sept. Damp flats and slopes; Eastern Fynbos-Renosterveld (SW Cape to Humansdorp District).

[E]**trifurcillata** (Nel) Fourc.
Perennial geophyte, 80–150 mm high; corm covered by fine reticulate brown fibres. **Leaves** 5–8, softly arching above, 2–4 mm wide, V-shaped in transect. **Flowers** 2 per scape, star-shaped; tepals 7.0–8.5 mm long, yellow with green backs; stigma branches

slender with 3 distinctly recurved basal lobes and 3 capitate apical lobes; bracts 2, linear. **Flowering time** Jan.–May. Seasonally damp places; Dry Highveld Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Somerset East and Bedford Districts S, from Port Elizabeth to Grahamstown and to Humansdorp).

[E]sp. B

Dwarf perennial geophyte, 30–70 mm high; corm covered with fine brown fibres. **Leaves** ± 8, spreading to suberect, 2.5–5.0 mm wide, widely U-shaped in transect, bluntly keeled. **Flower** 1 per scape, star-shaped; tepals 6–7 mm long, yellow with pale green backs, stigma branches ± slender throughout; bract 1 linear-lanceolate. **Flowering time** Mar., Apr. Seasonally damp places on flats or steep S-facing slopes; Albany Thicket (Baviaanskloof Mts and Gamtoos River Valley).

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IRIDACEAE

(Order Asparagales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

The Iridaceae, with approximately 2 028 spp., is one of the largest cosmopolitan families in the Asparagales. The infrafamilial taxonomy of the Iridaceae recognises 7 subfamilies (Stevens 2008; Goldblatt et al. 2008):

1. **Isophysidoideae** Takhtajan ex Thorne & Reveal, monogeneric with 1 sp.: *Isophysis tasmanica* T.Moore ex Seemann – Tasmania.
2. **Patersonioideae** Goldblatt, monogeneric with 21 spp.: *Patersonia* – Australia, Borneo, Sumatra, New Guinea.
3. **Geosiridoideae** Goldblatt & J.C.Manning, monogeneric with 1 sp.: *Geosiris* – Madagascar.
4. **Aristeoideae** Vines, monogeneric with 55 spp.: *Aristea* (± 55 sp.) – sub-Saharan Africa and Madagascar.
5. **Nivenioideae** Goldblatt; 3 genera with 15 spp.: *Klattia* (3 spp.) – Cape region, SA; *Nivenia* (11 spp.) – Cape region, SA; *Witsenia* (1 sp.) – Cape region, SA.

6. **Crocoideae** G. T. Burnett (synonym Ixioideae), 29 genera with 1 032 spp.:
   a. Tribe Tritoniopsideae Goldblatt & Manning, monogeneric with 24 spp.: *Tritoniopsis* (incl. *Anapalina*) – southwestern and southern Cape, SA.
   b. Tribe Watsonieae Klatt (incl. *Pillansieae* Goldblatt), 8 genera with 111 spp.: *Cyanixia* (= *Babiana socotrana*) (1 sp.) – Socotra; *Lapeirousia* (42 spp.) – tropical Africa and sthn Afr.; *Micranthus* (3 spp.) – Cape Region, SA; *Pillansia* (1 sp.) – Cape Region, SA; *Savannosiphon* (1 sp.) – south tropical Africa; *Thereianthus* (8 spp.) – Cape Region, SA; *Watsonia* (± 51 spp.) – sthn Afr.; *Zygotritonia* (4 spp.) – tropical Africa.
   c. Tribe Gladioleae Dumortier, 2 genera with ± 263 spp.: *Gladiolus* (incl. *Anomalesia*, *Homoglossum*, *Oenostachys*) (± 262 spp.) – Africa, Madagascar, Eurasia; *Melasphaerula* (1 sp.) – sthn Afr.
   d. Tribe Freesieae Goldblatt and Manning, 4 genera with 26 spp.: *Crocosmia* (8 spp.) – tropical Africa and sthn Afr., Madagascar; *Devia* (1 spp.) – western Karoo, SA; *Freesia* (incl. *Anomatheca*) (15 spp.) – eastern tropical Africa and sthn Afr.; *Xenoscapa* (2 spp.) – sthn Afr.
   e. Tribe Croceae Dumortier, 14 genera with ± 608 spp.: *Afrocarpus* (1 sp.) – southwestern SA; *Babiana* (incl. *Antholyza*) (± 90 spp.) – sthn Afr.; *Chasmanthe* (3 spp.) – southwestern SA; *Crocus* (± 85 spp.) – Europe, Asia, North Africa; *Dierama* (44 spp.) – tropical Africa and sthn Afr.; *Duthieastrum* (1 sp.) – sthn Afr.; *Geissorhiza* (86 spp.) – SA, mainly southwestern Cape; *Hesperantha* (incl. *Schizostylis*) (± 82 spp.) – sub-Saharan Africa; *Ixia* (± 67 spp.) – sthn Afr.; *Radinosiphon* (2 or more spp.) – south tropical and sthn Afr.; *Romulea* (± 95 spp.) – Africa, Mediterranean, Canary Is., Socotra; *Sparaxis* (incl. *Synnotia*) (15 spp.) – Cape region, SA; *Syringodea* (7 spp.) – sthn Afr.; *Tritonia* (± 30) – south tropical Africa and sthn Afr.

7. **Iridoideae**, 29 genera with 890 spp.:
   a. Tribe Diplarreneae Goldblatt, monogeneric with 2 spp.: *Diplarrena* (2 spp.) – Australia, Tasmania.
   b. Tribe Irideae B.M.Kittel, 5 genera with ± 510 spp.: *Bobartia* (15 spp.) – sthn Afr., mainly Cape Region; *Dietes* (6 spp.) eastern Africa and sthn Afr., Lord Howe Island; *Ferraria* (±14) – south tropical Africa and sthn Afr.; *Iris* (incl. *Belamcanda*, *Hermodactylus*, *Pardanthopsis*) (± 275 spp.) – Eurasia, North Africa, North America; *Moraea* (incl. *Barnardiella*, *Galaxia*, *Gynandriris*, *Hexaglottis*, *Homeria*, *Roggeveldia*) (± 200 spp.) mainly sub-Saharan Africa, also Eurasia.
   c. Tribe Sisyrinchieae J.S.Presl, 6 genera with ± 177 spp.: *Libertia* (± 12); *Olsynium* (incl. *Chamelum*, *Ona*, *Phaiophleps*) (± 12); *Orthosanthus* (10 spp.); *Sisyrinchium* (± 140); *Solenomelus* (2 spp.); *Tapeinia* (1 sp.) – South and North America, Australia.
   d. Tribe Trimetzieae Ravenna (= *Mariceae* Hutchinson, *nom. illeg.*) 3 genera with 42 spp.: *Neomarica* (± 18 spp.); *Pseudotrimetzia* (12 spp.); *Trimetzia* (± 12 spp.) – South and Central America, eastern Brazil.
   e. Tribe Tigridieae B.M.Kittel, 15 genera with ± 172 spp.: *Alophia* (± 5 spp.); *Calydorea* (provisionally incl. *Catila*, *Itysa*, *Tamia*) (± 16 spp.); *Cardenanthus* (± 8

spp.); *Cipura* (± 9); *Cypella* (provisionally incl. *Kelissa*, *Onira*, *Phalocallis*) (± 30 spp.); *Eleutherine* (2 spp.); *Ennealophus* (incl. *Tucma*) (5 spp.); *Gelasine* (6 spp.); *Herbertia* (± 6 spp.); *Hesperoxiphium* (4 spp.); *Larentia* (± 5 spp.); *Mastigostyla* (± 15 spp.); *Nemastylis* (± 4); *Tigridia* (provisionally incl. *Ainea*, *Cardiostigma*, *Colima*, *Fosteria*, *Rigidella*, *Sessilanthera*) (± 55) – South and Central America, Mexico, southern North America, Cuba and West Indies.

1a Flowers in umbellate clusters (rhipidia) enclosed by a pair of opposed leafy bracts (spathes), rarely solitary on peduncles, or plants acaulescent, but then style either dividing below anthers into tangentially compressed, petal-like branches or dividing below or above base of anthers and obscurely 3-lobed apically, lobes entire or fringed; individual flowers sessile or pedicellate; flowers with tepals free to basally connate, or united in an extended tube; rootstock a woody caudex, rhizome or corm:

2a Style eccentric, apically notched or lobed, lobes sometimes fringed; flowers usually deep blue (occasionally lilac, white or pale blue); tepals shortly connate basally ..... **Aristea**

2b Style central, usually dividing near base of anthers into distinct branches, these either extending between anthers or appressed against them, sometimes style exceeding anthers; flowers variously coloured; tepals free, connate basally or united in a tube:

3a Rootstock a creeping or erect rhizome; plants evergreen; pedicels hairy above:

4a Tepals with well-defined ascending claws and spreading limbs, outer tepals larger than inner; style branches broad and petal-like, compressed tangentially, terminating in paired erect crests; anthers appressed to abaxial side of style branches ..... **Dietes**

4b Tepals not clawed, inner and outer whorls subequal; style branches filiform, spreading horizontally; anthers ascending, alternating with style branches ..... **Bobartia**

3b Rootstock a corm; plants deciduous; pedicels without hairs near apices or pedicels lacking (flowers sessile):

5a Leaves unifacial, oriented edgewise to stem; corm persisting for some years, with membranous tunics or absent; tepals with crisped edges; style branches terminating in a feathery, plumose tuft..... **Ferraria**

5b Leaves bifacial or terete; corm resorbed annually, with fibrous tunics; tepals with plane edges; style branches not feathery and plumose, rarely so but then other characters not as above..... **Moraea**

1b Flowers arranged in spikes, or solitary on peduncles, sometimes in pseudopanicles, or acaulescent, individual flowers always sessile and style branches filiform, simple or deeply divided; flowers with tepals united below in a tube; rootstock a corm:

6a Outer and inner bracts membranous to scarious, usually translucent to transparent with veins often darkly coloured, occasionally outer solid below but then margins lacerate:

7a Plants acaulescent; leaves usually entirely bifacial, usually channelled to adaxially grooved, sometimes terete; bracts tubular below; corm tunics woody; flowers shades of blue to purple ..... **Syringodea**

7b Plants acaulescent or with aerial stems; leaves unifacial, oriented edgewise to stem, blades plane and linear to lanceolate or oval to terete in transverse section; bracts with margins free to base or united below; corm tunics woody or papery to fibrous; flowers variously coloured:

8a Bracts pale, dry, papery and crinkled or solid, irregularly streaked with dark flecks or veins..... **Dierama**

8b Bracts pale or rust-coloured, membranous or dry, then not papery and crinkled, sometimes streaked with dark flecks or veins:

9a Flowers zygomorphic with stamens unilateral or tepals actinomorphic, but stamens irregularly spreading and style eccentric; stems firm and relatively thick, never wiry..... **Tritonia**

9b Flowers either actinomorphic with stamens erect and symmetrically disposed around a central style, or perianth regular but stamens unilateral with anthers drooping and with a right-angled bend near base; stems ± wiry, branches, when present, usually held at right angles to main axis..... **Ixia**

6b Outer and inner bracts green to brown and dry, soft-textured or firm to leathery, never lacerate, sometimes inner bracts with broad membranous to scarious margins:

10a Style branches dividing at apex of perianth tube or within tube, branches undivided, long and laxly spreading ..... **Hesperantha**

10b Style branches usually dividing well above mouth of perianth tube, branches simple or deeply divided, relatively short and spreading to recurved:

11a Style branches deeply divided, usually once, occasionally multifid:

12a Leaves terete with narrow longitudinal grooves, or 4-winged; corm tunics brittle and woody; flowers actinomorphic, solitary on branches, not arranged in spikes; plants often acaulescent ..... **Romulea**

12b Leaves usually plane but if round in transverse section then without longitudinal grooves; corm tunics leathery to fibrous; flowers zygomorphic, or if actinomorphic, then arranged in spikes; plants never acaulescent:
13a Corms bell-shaped, with a flat base; leaves plane or corrugate:
14a Ovary globose; style branches usually divided for ± half their length, rarely undivided or apically notched; leaves often corrugate, sometimes plane but then usually leathery in texture ..... **Lapeirousia**
14b Ovary deeply 3-lobed above; style branches undivided; leaves plane and soft-textured ... **Melasphaerula**
13b Corms globose to obconic, round or pointed at base, or sometimes bell-shaped with a flat base but then leaves ± terete and 4-grooved:
15a Spikes inclined to horizontal, flowers borne on upper side; bracts green or dry above..... **Freesia**
15b Spikes erect, flowers distichous or spirally arranged; bracts green or partly to entirely dry:
16a Flowers small, < 12 mm long, crowded on dense distichous spikes; bracts solid below with broad membranous margins ..... **Micranthus**
16b Flowers medium to large, usually at least 20 mm long, in distichous or spiral spikes; bracts without membranous margins ..... **Watsonia**
11b Style branches undivided or at most notched apically:
17a Floral bracts fairly short, coriaceous and often partly to entirely dry at flowering time, inner bracts always substantially longer than outer; leaves sometimes with a long pseudopetiole, usually with more than one prominent vein, thus without a midrib..... **Tritoniopsis**
17b Characters not combined as above:
18a Leaves several in a distichous fan, blades plane or plicate but then leaves, stems or bracts never pubescent; flowers shades of orange to scarlet; floral bracts short, ± twice as long as ovary, coriaceous, green or dry, nearly equal:
19a Flowers actinomorphic, or if zygomorphic, then perianth tube not abruptly expanded at top of lower cylindric portion and upper part not forming a pouch at base; seeds dark brown to blackish .... **Crocosmia**
19b Flowers zygomorphic, perianth tube narrow and cylindric below, abruptly expanded into a broad upper cylindrical part and pouched at base of upper part; seeds bright orange..... **Chasmanthe**
18b Characters not combined as above:
20a Leaf blades pleated, sometimes ± linear and striate; stems and/or leaves or bracts pubescent to pilose..... **Babiana**
20b Leaf blades plane, corrugated or rounded in transverse section with or without 4 longitudinal grooves; plants glabrous or sometimes pubescent on leaves and/or bracts:
21a Flowers actinomorphic, or if zygomorphic, then perianth actinomorphic and stamens unilateral and declinate; corm tunics usually composed of hard, brittle woody layers; seeds globose to somewhat angular..... **Geissorhiza**
21b Flowers zygomorphic, tepals usually unequal and stamens unilateral and arcuate (actinomorphic in 2 species but then leaves without thickened margins and seeds winged); seeds either globose or winged ..... **Gladiolus**

ARISTEA Aiton

Subfamily Nivenioideae

Species ± 55, most diverse in sthn Afr., extending to Senegal and Ethiopia in the north, and 7 in Madagascar; ± 47 in sthn Afr., LIM, M, S, FS, KZN, L, NC, WC, EC.

1a Capsules with 3 narrow wings (subgenus Aristea*)*

bakeri Klatt

Tufted, perennial, evergreen herb, 0.6–1.1 m high, rhizomatous; stem rounded, usually branched. **Leaves** linear to ensiform, 6–20 mm wide. **Spathe** ovate, with transparent margins; adaxial surface minutely hairy. **Bracts** broadly ovate, rusty brown, entire, may become irregularly thorny with age. **Inflorescence** rhipidial, spreading, with blue flowers; tepals 14–20 mm long; style minutely 3-notched; flowering stem flexuose, open branching. **Flowering time** Oct.–Apr. **Capsule** elongate, somewhat truncate at apex, may become irregularly torn with age; 3 or 4 lamellate seeds per locule. Stony sandstone slopes; Eastern Fynbos-Renosterveld (Port Elizabeth and Humansdorp districts).

1b Capsules ovoid to oblong or cylindrical, sometimes prominently 3-lobed (subgenus Eucapsulares*)*
2a Capsules ≥ 13 mm long

ecklonii Baker

Blue stars; *blousterre* (A); *phayimashimane* (S); *ikhambi eliluhlaza*, *umabhanjana* (Z)

Perennial, rhizomatous herb, 0.15–0.70 m high, grows in clumps; stem branched, usually winged. **Leaves** lanceolate-apiculate, basal longer than cauline ones, usually exceeding length of stem. **Spathes** green with dry margins. **Bracts** scarious, rust-coloured, margins entire, hyaline. **Inflorescence** a terminal or axillary panicle, usually (2–)4-flowered; flowers blue, stalked or ± sessile in axils; tepals obovate. **Ovary** triangular; style 4.5 mm long, reaching middle of anthers, 3-lobed. **Flowering time** July–May. **Capsule** extremely oblong. In coastal grasslands, streams and forests; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (along coast from Kokstad to Port St Johns, King William's Town to Kentani, Suurberg in Greater Addo Elephant National Park to Grahamstown and to Humansdorp District).

pusilla (Thunb.) Ker Gawl.

Perennial, rhizomatous herb, 0.08–0.15 m high; stem flattened, 2-winged. **Leaves** linear; apices apiculate, margins translucent-whitish. **Spathes** green with hyaline or rusty margins. **Bracts** green or brown, lanceolate, deeply keeled, apex acuminate. **Inflorescence** terminal, with 2 blue flowers; style 3-lobed. **Ovary** distinctly triangular in cross section; stigma with crested, fan-shaped lobes; style 3-lobed. **Flowering time** Aug.–Dec. **Capsule** elongate, cylindrical, walls veined, 3-lobed. In fynbos, clay flats and lower slopes; Eastern Fynbos-Renosterveld (Willowmore District E to Port Elizabeth and Grahamstown, S to Humansdorp).

2b Capsules < 13 mm long
3a Bracts with cleft and incurved apices

angolensis Baker

Perennial, rhizomatous herb, 0.25–1.20 m high, grows solitary; stem slender, robust. **Leaves** lanceolate-acuminate, with dense venation, apex brown, margins usually translucent-brown. **Spathes** lanceolate, finely veined, margins and apex rusty brown. **Bracts** usually ovate, with dark irregular triangle at base and brown streaks at margins, apex acuminate and deeply lacerated. **Inflorescence** unbranched or a lax panicle; 1- or 2-flowered rhipidia, sometimes binate, mostly sessile; outer tepals ± equal to inner tepals. **Ovary** with trilobed stigma, each lobe deltoid and finely crested. **Flowering time** Aug.–Jan. **Capsule** slightly oblong, tricarpellate. In mountain grassland, marshy areas and streambanks; Indian Ocean Coastal Belt (Port Edward District).

3b Bracts without cleft and incurved apices
4a Two seeds per carpel

[E]platycaulis Baker

Perennial, rhizomatous herb, 0.25–0.35 m high, slender to robust. **Leaves** linear, apex acuminate, margins brown; basal ensiform, subcoriaceous, spreading; cauline solitary or absent, with keeled base. **Bracts** lanceolate, scarious, apex ± ovate, margins rusty brown. **Inflorescence** a raceme, branches laterally compressed, ancipitous, 2–4-flowered rhipidia, some binate. **Flowering time** Oct.–? **Capsule** oblong, tricarpellate. In forests; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests (Ntsubane Forest and Msikaba River Gorge).

4b More than two seeds per carpel

abyssinica Pax

Blue-eyed grass; *lethepu-le-lenyenyane* (SS); *phayimashimane* (S); *icebethwane* (Z)

Perennial, rhizomatous herb, 0.1–0.2 m high; stem compressed and 2-winged. **Leaves** linear, usually ± half as long as stem, all basal except for 1(2) near stem apex, apex acuminate. **Spathe** green, with dry margins. **Bracts** broadly lanceolate, scarious with herbaceous keels, margins entire in bud, becoming lacerate. **Inflorescence** terminal or subterminal, 4-flowered; flowers blue, ± sessile; tepals obovate. **Ovary**: style with 3-fid apex. **Flowering time** Sept.–Mar. **Capsule** ovoid. In well-drained loam and thin rocky soils; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Indigenous Forests, Albany Thicket (Griqualand East S to Queenstown, Port St Johns, King William's Town and Kentani, from Grahamstown to Peddie District).

[E]anceps Eckl. ex Klatt

Perennial, rhizomatous herb, 0.30–0.45 m high, robust. **Leaves** linear, apex acuminate, margins usually brown; basal 2–16; cauline usually solitary or absent, arising just below and extending above inflorescence, with keeled base. **Spathes** rusty green. **Bracts** broadly ovate, hyaline or rusty brown. **Inflorescence** usually with 2 separated clusters of binate rhipidia; outer tepals with a pale green midvein region on underside, shorter and thinner than inner ones. **Ovary** with branched style, each lobe deltoid and finely crested. **Flowering time** Aug.–Apr. **Capsule** oblong. In fynbos and grasslands; Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna, Albany Thicket (Port Elizabeth, Grahamstown and East London District).

ensifolia J.Muir

Perennial, rhizomatous herb, 0.25–0.45 m high; stem compressed and 2-winged, few- to many-branched. **Leaves** ensiform, 6–12 mm wide. **Spathe** greenish. **Bracts** dry-membranous. **Inflorescence** with blue flowers; tepals ± 15 mm long. **Flowering time** Sept.–Dec. **Capsule** elongate, cylindrical, indehiscent. Coastal forests and fynbos; Eastern Fynbos-Renosterveld, Indigenous Forests (Willowmore and Humansdorp District).

gerrardii Weim.

Perennial, rhizomatous herb, 0.3–0.5 m high; rhizome 6–7 mm thick. **Leaves** subobtuse, nerves prominent, apex acute; basal 5 mm wide; cauline 3 or 4(5). **Inflorescence** an erect, spreading raceme; rhipidia binate or with up to 4 flowers; pedicels extremely short. **Bracts** foliate; narrow, hyaline-marginate; upper bracts smaller than lower ones. **Perianth**: segments 9–12 × 3.5–4.0 mm, oblong, middle nerve thicker. **Flowering time** Oct.–Dec. **Capsule** ovoid. In damp areas; Indian Ocean Coastal Belt (Port St Johns and Port Edward District).

montana Baker

Perennial, rhizomatous herb, 0.15–0.40 m high; stem moderately slender. **Leaves** linear, falcate, apex acuminate; basal 3–14, with green or brown margins, outer edge translucent; cauline 2–4, linear, with incurved apices. **Bracts** broadly ovate, with dark brown central triangle and brown streaks to margins, scarious or foliaceous, apex usually truncate, finely lacerated. **Inflorescence** terminal, usually with a 1- or 2-flowered, binate rhipidium; outer tepals shorter and thinner than inner ones, with a pale green midvein region on underside. **Ovary** with trilobed stigma, each lobe fan-shaped and finely crested. **Flowering time** Dec.–May. **Capsule** ovoid, with poorly defined carpels. In moist grassland and edges of rocky sheets; Sub-Escarpment Grassland, Drakensberg Grassland (Matatiele District, Barkly Pass and Amatole Mts).

schizolaena Harv. ex Baker

Perennial, rhizomatous herb, 0.4–0.6 m high. **Leaves** linear, apex acuminate; basal ± leathery, spreading, margins translucent, white to brown; cauline curved, keeled, with hyaline margins. **Spathes** rusty brown, becoming torn with age. **Bracts** ovate, with dark triangle at base, midvein raised, torn, apex acute, usually lacerated. **Inflorescence** usually terminal or lateral, binate rhipidia, with blue to deep purple flowers; outer tepals ± equal to inner ones. **Ovary** with trilobed stigma; lobes fan-shaped, finely crested. **Flowering time** Sept.–Mar. **Capsule** oblong. In damp places; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Clydesdale to Port St Johns S, from Seymour to Kentani, Suurberg in Greater Addo Elephant National Park and East London).

torulosa Klatt

Perennial, rhizomatous herb, 0.3–0.5 m high; stem robust, often evidently 2-angled at base, 3–6 mm wide. **Leaves** linear; basal rosulate, loosely arranged, 200–300 × 8–12 mm, with prominent venation, apex obtuse to apiculate; cauline 3–5, apex often falcate, recurved; pedicels extremely short. **Spathes** large, edges become torn and fringed with age. **Bracts** leathery; adaxial surface dark green, apex hyaline-marginate, deeply lacerate. **Inflorescence** a raceme or panicle, oblong to ovoid in outline, rhipidium binate or 3- or 4-flowered; perianth segments 6–9 mm long, obovate; style 7 mm long; stigma subglobose. **Flowering time** Dec.–Mar. **Capsule** 4 mm thick, valvate. In grassland and humus-rich soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad and Maclear District).

BABIANA Ker Gawl.

Subfamily Crocoideae

Species ± 90, sthn Afr. incl. Zimbabwe, mainly WC and Namaqualand (NC), 1 endemic to Socotra; 65 in sthn Afr., N, B, LIM, NW, G, M, FS, NC, WC, EC.

patersoniae L.Bolus

Perennial herb, geophyte, 0.10–0.25 m high; stem suberect, often subterranean or extending above ground, velvety, usually 1- or 2-branched. **Leaves** ensiform, plicate, firm, hairy. **Bracts** green with dry brown apices, divided to base, inner slightly shorter to ± half as long as outer. **Inflorescence** an erect spike; flowers zygomorphic, white to mauve; lower tepals partly cream-coloured to yellow, with darker red to purple markings near base; perianth tube ± cylindrical, slightly flared in upper half, as long as or shorter than tepals; tepals subequal. **Stamens** unilateral; filaments arched; anthers blue to blackish, linear to ± arrow-shaped; pollen cream-coloured. **Ovary** hairy in upper half; style divided between base and middle of anthers; branched with prominent, spathulate apex. **Flowering time** Aug.–Oct. In fynbos; Eastern Fynbos-Renosterveld (Alexandria, Port Elizabeth and Humansdorp District).

sambucina (Jacq.) Ker Gawl.

Perennial herb, geophyte, 0.10–0.15 m high. **Leaves** lanceolate, plicate, hispid. **Bracts** green with rusty, forked apex, scabrid, inner slightly shorter than outer, sometimes united basally around ovary. **Inflorescence** a compact spike, many-flowered; flowers violet to blue; lower tepals each with white median mark edged below in dark blue to red, or sometimes with solid red centre; perianth tube straight, slightly flaring above, hollow throughout or with thick walls below tightly enclosing style; tepals subequal, often overlapping; lower 3 tepals sometimes basally united for up to 2 mm. **Stamens** unilateral;

filaments ± straight; anthers white to cream-coloured. **Ovary** smooth, shortly stipitate at base; style usually dividing between base and upper $^1/_3$ of anthers. **Flowering time** May–Oct. In fynbos; Eastern Fynbos-Renosterveld (Willowmore, Uitenhage, Port Elizabeth and Humansdorp District).

BOBARTIA L.

Subfamily Iridoideae

Rush lily; *blombiesie* (A)

Species 15, endemic to SA, WC, EC.

Flowers with short perianth tube

macrospatha Baker

Bergblombiesie (A)

Perennial herb, 0.6–1.5 m; rhizome stout, corm-like, moderately branched, rugose. **Leaves** striate, suberect, basally expanded; sheaths firm, reddish brown, fibrous. **Peduncle** terete or flat, smooth. **Spathe** conspicuous, ± fibrous, subtending inflorescence. **Bracts** closely imbricate, lower ones broadly lanceolate; upper ones tubular, sheathing ovary and eventually fruit. **Inflorescence** composed of 3–30 cymes; cyme cylindrical to acuminate; single flower per cyme in axils or rarely 2 or 3 developing from base to apex; perianth tube 4–7 mm long, rarely absent; lobes yellow. **Flowering time** Jan., Dec. **Capsule** obovoid, glabrous, smooth, dark brown. In fynbos, on mountain slopes; Eastern Fynbos-Renosterveld (Whiskey Creek Nature Reserve E to Steytlerville southwards to Humansdorp District).

Flowers with tepals free to base

aphylla (L.f.) Ker Gawl.

Biesroei (A)

Perennial herb, 0.3–0.6 m; rhizome corm-like, usually branched, slender. **Leaves** terete; sheath dilated, firm, fibrous. **Peduncle** subterete, inconspicuously striate, smooth. **Spathe** green, rigid, erect, terete, appears as continuation of stem, subtending inflorescence. **Bracts** lanceolate-acuminate, imbricate, sheathing flower bud. **Inflorescence** composed of 3–10 cymes; cymes tubular, lanceolate, usually single flower per cyme in axils; segments lemon-yellow, ovoid to elliptical. **Ovary** tuberculate. **Flowering time** Nov.–Mar. **Capsule** turbinate, ovoid, dark brown. On grassy and coastal slopes; Eastern Fynbos-Renosterveld (Joubertina District).

[E]**gracilis** Baker

Perennial herb, 0.20–0.45 m high; rhizome erect, moderately branched. **Leaves** terete to subterete, rather flexible, basally dilated; sheath purplish, fibrous. **Spathe** green, erect, rigid, terete, exceeding stem, appearing as a straight continuation of stem. **Bracts** imbricate, dull green, sometimes purplish, lower ones broadly lanceolate, upper one tubular, completely sheathing flower bud. **Inflorescence** composed of 2–6 cymes; single flower per cyme in axils or often 2 developing from base to apex; segments yellow, often with a reddish midvein, narrowly elliptical. **Flowering time** July–Apr. **Capsule** broadly obovoid to nearly globose, smooth. In grassy hills; Albany Thicket (Kentani S, from Uitenhage District to Grahamstown and East London).

[E]macrocarpa Strid

Perennial herb, 0.8–1.0 m high; growing in tussocks. **Leaves** terete. **Bracts** closely imbricate, dull green to brownish, the lower lanceolate to acuminate; the upper tubular, sheathing flower buds. **Spathe** green, rigid, erect. **Inflorescence** slender, shortly pedunculate, composed of 2–6 cymes; flowers 2 or 3 per fascicle, developing from base to apex in axils of uppermost bracts; segments yellow, oblong to elliptical; style branched. **Flowering time** Feb., Sept. **Capsule** cylindrical to narrowly obovoid, truncate, dull green to brownish. On grassy slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth, Grahamstown and Humansdorp Districts).

[E?]orientalis J.B.Gillett

Perennial herb, 0.75–1.60 m high; rhizome erect, moderately branched. **Leaves** terete, flexible, basally dilated; sheaths purplish, fibrous. **Peduncle** striate. **Spathe** equalling or exceeding inflorescence, either green and erect or grey papery and ± spreading. **Bracts** firm, closely imbricate; lower ones broadly lanceolate, dull green or brown; uppermost ones tubular, dull green. **Inflorescence** composed of 10–80(–120) cymes; flower usually single in axil of uppermost bract; segments yellow; anthers oblong. **Flowering time** Jan., Dec. **Capsule** subglobose, smooth or slightly tuberculate, greyish green to brown. In fynbos and grassy hillsides; Albany Thicket, Eastern Fynbos-Renosterveld (Willowmore E to East London, and to Humansdorp).

CHASMANTHE N.E.Br.

Subfamily Crocoideae

Cobra lily; *kapelpypie* (A)

Species 3, endemic to SA, NC, WC, EC.

aethiopica (L.) N.E.Br.

Perennial herb, geophyte, 0.25–0.60 m high; corm depressed-globose or disc-shaped, with papery or fibrous tunics; stem simple. **Leaves** mainly basal, ensiform, with prominent midrib. **Bracts** green or flushed-red; inner bidentate. **Inflorescence** a (sub)secund spike; flowers bright orange to scarlet; trumpet-shaped; tube truncate, 3-pouched at base, arching outwards, spirally twisted in lower $^1/_3$; lobes unequal, spathulate, spreading or half-reflexed. **Stamens** inserted, one slightly longer than other two; filaments arching under dorsal tepal; anthers light blue; pollen purple. **Ovary** ellipsoid; style arching behind filaments, stigma minute. **Flowering time** May–Oct. **Capsule** ovoid, 3-lobed, smooth, dark red to purple-black inside. In coastal bush and along forest margins in variety of soil types; Drakensberg Grassland, Albany Thicket (Stutterheim E to Kentani, along coast from East London to Port Elizabeth and Humansdorp).

CROCOSMIA Planch.

Subfamily Crocoideae

Montbretia

Species 8, mostly SE Africa, 1 endemic to Namaqualand (NC), 1 endemic to EC and 1 endemic to Madagascar; 7 in sthn Afr., LIM, G, M, S, FS, KZN, L, NC, EC.

aurea (Pappe ex Hook.f.) Planch.

Perennial herb, geophyte, 0.45–1.60 m high; corm almost globose, forming stolons, tunics papery; stem erect, 7–10-ribbed. **Leaves** ensiform, acuminate, 200–600(–1 200) × 10–30 mm; midvein prominent, margins hyaline. **Bracts** straw-coloured to pale

orange, almost triangular, outer acuminate, 2- or 3-toothed, inner bidentate with acuminate teeth. **Inflorescence** a raceme of spikes, arching slightly towards ground, with ascending-spreading branches; flowers golden-orange, actinomorphic, salver-shaped; tube cylindrical, curved or nodding; lobes elliptical, spreading horizontally. **Stamens** exserted, symmetrically arranged, directed downwards, clasping style below; filaments white; anthers light orange; pollen orange or yellow. **Style** yellow, exserted, directed towards ground. **Flowering time** Dec.–Mar. **Capsule** depressed-globose, 3-lobed. In open woodlands and forest edges; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland (Mount Frere to Insizwa S, from Mthatha to Port St Johns, Stutterheim and Kentani).

[E]**masoniorum** (L.Bolus) N.E.Br.

Perennial herb, geophyte, 0.5–0.8 m high; corm globose, tunics brown, fibrous, in superposed rows; stem suberect, branched. **Leaves** ± lanceolate-acuminate, plicate, up to 600 × 20–50 mm, base stalk-like. **Bracts** green, becoming dry on apex; outer apiculate; inner bifid and shorter than outer. **Inflorescence** a horizontally curved spike, usually simple, may have ascending branches; flowers orange-scarlet, zygomorphic, facing apex, secund on upper side; tube funnel-shaped, curving upwards; lower part smaller and cylindrical; lobes slightly unequal, spreading, dorsal larger, suberect. **Stamens** exserted, unilateral. **Style** exserted, often overtopping anthers; stigma slightly widened or shortly bifid, fimbriate. **Flowering time** Dec., Jan. **Capsule** depressed-globose; 3-lobed. In stony soils; Sub-Escarpment Grassland (Engcobo and Mthatha districts).

paniculata (Klatt) Goldblatt

Perennial herb, geophyte, 1.2–1.5 m high; corm globose, in superposed rows, tunics brown, papery; stem usually dull purplish red, cylindrical, branched. **Leaves** lanceolate, plicate, acuminate, 400–900 × 15–80 mm; veins prominent. **Bracts** submembranous, reddish brown, exceeding length of internode. **Inflorescence** a spicate panicle, arching outwards or horizontal, branches strongly zigzag in upper part; flowers deep orange to orange-brown, (sub)secund, zygomorphic, distichous at first, becoming ± secund on apex of branches; tube cylindrical below, funnel-shaped above; lobes unequal. **Stamens** curved towards posticous lobe; filaments up to 40 mm long; anthers unilateral, contiguous. **Flowering time** Dec.–Feb. **Capsule** globose, 3-lobed. In moist places and forest margins; Sub-Escarpment Grassland (KZN Border: uMzimkhulu).

pottsii (Macnab ex Baker) N.E.Br.

Perennial herb, geophyte, 0.6–1.2 m high; corms depressed-globose, often 2 or more in vertical row or connected by slender stolons, tunics brown, papery. **Leaves** linear-lanceolate, with prominent midvein. **Bracts** membranous, reddish brown, ovate; outer obtuse or bluntly toothed; inner bidentate-acuminate, with papery margins. **Inflorescence** a lax panicle, with ascending faintly zigzag branches; flowers bright deep orange, distichous, zygomorphic; tube funnel-shaped, slightly curved, lobes unequal, obtuse; outer lanceolate, inner elliptical; posticous lobe erect, slightly longer than 5 other spreading lobes. **Stamens** slightly curved to posterior side; anthers contiguous, exserted. **Style** orange; stigma shortly bifid, fimbriate, overtopping anthers. **Flowering time** Dec.–Feb. On streambanks and stony soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Mount Malowe to Kokstad, S to Mthatha River).

DIERAMA K.Koch

Subfamily Crocoideae

Hairbells, wandflower; *grasklokkie* (A)

Species 44, mostly in the summer rainfall region in grassland, extending from Knysna (WC) to Ethiopia, centered in eastern sthn Afr.; 36 in sthn Afr., LIM, G, M, S, FS, KZN, L, EC.

1a Species from M, KZN and L with most southern distribution in Transkei only

ambiguum Hilliard

Perennial herb, geophyte, 0.9–1.1 m high; stems form small clumps; corm 10–15 mm in diam. **Leaves** linear, ± acute; venation pronounced; radical leaves 300–4 050 × 4.0–6.5 mm; reduced sheathing leaves 3 or 4. **Flowering stem** 0.90–1.05 m high. **Bract** light red-brown with broad white margins, lanceolate, tapering, 15–25 × 6–8 mm, ± heavily flecked towards base and along midline. **Inflorescence** a raceme of spikes; pendulous, with 2–6 branches. **Perianth** magenta-pink, 18–26 mm long; tube 6–10 mm long, tepals 11–16 × 4–6 mm. **Anthers** 4.50–5.75 mm long. **Flowering time** Nov.–Feb. In grasslands and forests; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests (Suurberg in Eastern Pondoland, Weza State Forest).

argyreum L.Bolus

Perennial herb, geophyte, 0.65–1.35 m high; stem solitary or up to 5 tufted together; corm 25–30 mm in diam. **Leaves** linear, acuminate; venation pronounced; radical leaves 300–1 000 × 2.5–6.5 mm; reduced sheathing leaves 4 or 5. **Flowering stem** 0.40–1.35 m high. **Bract** white, rarely with few spots, 14–24 × 7–10 mm, elliptic to oblong, acute. **Inflorescence** a raceme of spikes, pendulous, with 2–7 branches. **Perianth** pure white or ivory-white, sometimes tinged mauve-pink at base, 18–35 mm long; tube 4–12 mm long; tepals 14–25 × 5–14 mm. **Anthers** 6–10 mm long. **Flowering time** Oct.–Dec. In forests and mountainous grasslands; Indigenous Forests (Weza State Forest).

dissimile Hilliard

Perennial herb, geophyte, 0.45–0.70 m high; stem solitary or few-tufted; corm 15–20 mm in diam. **Leaves** linear, acute; venation pronounced; radical leaves 300–600 × 1.5–4.0 mm; reduced sheathing leaves 3 or 4. **Flowering stem** 0.5–0.7 m high. **Bract** 13–20 × 6–9 mm, obovate-elliptic, acuminate, flecked, margins sometimes white. **Inflorescence** a raceme of spikes, pendulous, with 2–4(–6) branches. **Perianth** pale pink or mauve-pink to bright magenta-pink, 18–22 mm long; tube 5–8 mm long; tepals 10–16 × 4–6 mm. **Anthers** 5–7 mm long. **Flowering time** Oct., Nov. In grassland; Sub-Escarpment Grassland [Thembuland District (Tamboekieland; mostly EC 3127, including Engcobo and Mthatha)].

latifolium N.E.Br.

Perennial herb, geophyte, 0.9–2.5 m high; stems form large clumps; corm 35–40 mm in diam. **Leaves** linear, ± acute; radical leaves 550–1 500 × 5–15 mm; reduced sheathing leaves 5. **Flowering stem** 1.1–2.7 m high. **Bract** white, sometimes with few brownish spots, 18–27 × 7–10 mm, elliptic-lanceolate, acute to acuminate. **Inflorescence** a raceme of terminal spikes, usually pendulous or suberect, with 6–11 branches. **Perianth** pink or rarely red, (20–)24–33 mm long; tube (5.0–)8.0–10.5 mm long; tepals 12–23 × 5–10 mm. **Anthers** (7–)8–10 mm long. **Flowering time** Oct–May. In grassland; Sub-Escarpment Savanna (Mthatha).

trichorhizum (Baker) N.E.Br.
Perennial herb, geophyte, 0.15–0.60 m high; stem solitary or up to 3 tufted together; corm 15 mm in diam. **Leaves** linear, acuminate; radical leaves 4 growing on separate shoots, 150–400 × 2.0–3.5 mm; reduced sheathing leaves 3–5. **Flowering stem** 0.1–0.6 m high, with 1 or 2 cormlets developing in axil of lower leaf sheath. **Bract** bright red, flecked, 6–14 × 5–8 mm, apex 3-toothed. **Inflorescence** a raceme of spikes, with 1–4 branches, pendulous. **Perianth** pale mauve or light purple, 18–25 mm long; tube 4.5–7.0 mm long; tepals 12–19 × 4–7 mm. **Anthers** 5–8 mm long. **Flowering time** Aug.–Nov. In moist grasslands; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Matatiele S to Maclear and Suurberg Districts).

tysonii N.E.Br
Perennial herb, geophyte, 0.45–0.85 m high, stems forming clumps; corm 20–37 mm in diam. **Leaves** linear, acuminate; venation pronounced; radical leaves 300–600 × 3.5–8.0 mm; reduced sheathing leaves 3 or 4. **Flowering stem** 0.45–0.85 m high. **Bracts** translucent, whitish to pale orange, lightly flecked, midline or upper part orange-brown, 14–20 × 4–6 mm, oblong or lanceolate, acuminate. **Inflorescence** a raceme of spikes, erect, with 4–8 dense branches. **Perianth** light to bright pink, 19–23 mm long; tube 5–6 mm long; tepals 14–18 × 4.5–7.0 mm. **Flowering time** Sept.–Feb. On grassy mountain slopes; Sub-Escarpment Grassland (Matatiele E to Kokstad).

1b Species from northern provinces distributed throughout EC (excluding most north-western part)
2a Perianth dark maroon-red to purple-black or deep purple-red

[E]atrum N.E.Br.
Perennial herb, geophyte, 0.75–1.30 m high, stem solitary; corm 25–30 mm in diam. **Leaves** linear-acuminate; venation pronounced; radical leaves 300–750 × 3.0–6.5 mm; reduced sheathing leaves 4 or 5. **Flowering stem** 0.75–1.25 m high. **Bract** pale brown, 17–26 × 8–11 mm, elliptic-lanceolate, acute to acuminate, flecked. **Inflorescence** a raceme of spikes, pendulous, with 1–6 branches. **Perianth** dark maroon to purple-black, 21–32 mm long; tube 8–12 mm long; tepals 15–22 × 5–9 mm. **Anthers** 6–9 mm long. **Flowering time** Oct.–Jan. In grasslands, mountain slopes and forests; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (Jamestown E to Dordrecht, Lusikisiki and Port St Johns S, from Stutterheim to King William's Town).

[E]pulcherrimum (Hook.f.) Baker
Perennial herb, geophyte, 1.0–1.8 m high, stem solitary or tufted, robust; corm 30–40 mm in diam. **Leaves** linear, apiculate; radical leaves 500–900 × 4–11 mm; reduced sheathing leaves 4 or 5. **Flowering stem** 0.9–1.8 m high. **Bracts** brown, 23–34 × 10–12 mm, elliptic-lanceolate, acute, flecked. **Inflorescence** a raceme of spikes, with 4–8 branches. **Perianth** magenta-pink or purple-red, 35–54 mm long; tube mainly 10.0–15.5 mm long; tepals 23–39 × 10–19 mm. **Anthers** 8–11 mm long. **Flowering time** Nov.–Mar. In grasslands and forests; Sub-Escarpment Grassland, Drakensberg Grassland, Albany Thicket, Sub-Escarpment Savanna, Indigenous Forests (Queenstown District S to Fort Beaufort, Stutterheim and Kentani Districts).

reynoldsii I.Verd.
Perennial herb, geophyte, 0.8–2.0 m high; stem solitary or 2 or 3 tufted together; corm 30 mm in diam. **Leaves** linear, acute; venation pronounced; radical leaves 450–950 × (3–)4–6 mm; reduced sheathing leaves 5. **Flowering stem** 1–2 m high. **Bracts** white,

slightly flecked, 18–32 × 7–10 mm, elliptic-lanceolate, acuminate. **Inflorescence** a raceme of spikes, pendulous, with 3–8 branches. **Perianth** dark red, 20–30 mm long; tube 6–12 mm long; tepals 13–20 × 5–9. **Anthers** 7.5–10.5 mm long. **Flowering time** Oct.–Feb. In grasslands; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Matatiele S to Engcobo, Elliot and Mthatha districts).

2b Perianth whitish, pale pink, mauve-pink or magenta-pink
3a Plants consisting of big clumps of flowering stems; perianth up to 29 mm long

dracomontanum Hilliard

Perennial herb, geophyte, 0.30–1.05 m high; stems form clumps; corm 10–20 mm in diam. **Leaves** linear, acute; venation pronounced; radical leaves, 300–650 × 3.5–6.5 mm, reduced sheathing leaves 3 or 4. **Flowering stem** 0.30–1.05 m high. **Bract** red-brown between veins and along midline, with whitish margins, 13–20 × 6–12 mm, obtuse to acute. **Inflorescence** a raceme of spikes, pendulous or suberect, with 2–5 branches. **Perianth** pink or red, with shades of mauve, 19–29 mm long; tube 5–7 mm long; tepals 13–20 × 5–8 mm. **Anthers** 5.0–6.5 mm long. **Flowering time** Nov.–Feb. In humid soil of grasslands and mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland (Kokstad District SW to Maclear).

floriferum Hilliard

Perennial herb, geophyte, 0.40–0.75 m high; corm 10–20 mm in diam. **Leaves** linear, acuminate; venation pronounced; radical leaves 380–700 × 2.5–5.0 mm; reduced sheathing leaves usually 4. **Flowering stems** 0.40–0.75 m high. **Inflorescence** a raceme of spikes, pendulous, with 3–9 dense branches. **Bracts** pure white sometimes with light brown spots, obovate-lanceolate, acute, 10–17 × 5–8 mm, usually flecked in lower half, margins pure white in upper half. **Perianth** white to deep mauve or pinkish purple, 15.5–20.5 mm long; tube 4.0–6.5 mm long; tepals 10.0–14.5 × 4–6 mm. **Anthers** 4.5–6.0 mm long. **Stigmas** 3.5–7.5 mm below top of perianth. **Flowering time** Aug.–Dec. In grasslands; Sub-Escarpment Grassland (Maclear District).

jucundum Hilliard

Perennial herb, geophyte, 0.80–0.95 m high, tufted; corm 30 mm in diam. **Leaves** linear, acute; venation slightly pronounced; radical leaves 450–650 × 4.5–7.0 mm; reduced sheathing leaves 4. **Flowering stems** 0.80–0.95 m high. **Inflorescence** a raceme of spikes, pendulous, with 3–5 lax branches. **Bracts** 15–19 × 8–11 mm, broadly obovate, acute, flecked, with broad white margins, sometimes flecked along midline. **Perianth** pale mauve, 25–28 mm long; tube 6–9 mm long; tepals 18–23 × 8–12 mm. **Anthers** 6.0–8.5 mm long. **Flowering time** Sept., Oct. On rocky slopes; Drakensberg Grassland (Barkly East District).

pauciflorum N.E.Br.

Perennial herb, geophyte 0.35–0.60 m high; stems may form clumps; corm 15 mm in diam. **Leaves** linear, acute; radical leaves 100–400 × 1–4 mm; reduced sheathing leaves 3. **Flowering stem** 0.3–0.6 m high. **Inflorescence** a raceme of spikes; with 5 branches, pendulous, lax. **Bracts** bright rusty brown, 12–18 × 7–10 mm, obovate-oblong to lanceolate-elliptic, flecked. **Perianth** bright pink or reddish, rarely with white spots, 20–28 mm long; tube 5–7 mm long; tepals 14–22 × 4.5–8.5 mm. **Anthers** 5–7 mm long**. Flowering time** Nov.–Jan. In gentle slopes of grasslands; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East and Matatiele districts).

3b Either flowering stems solitary to a few tufted together, or perianth mostly > 29 mm long

[E]grandiflorum G.J.Lewis

Perennial herb, geophyte, 1.3–1.5 m high; stem slender; corm 25 mm in diam. **Leaves** linear, acuminate, lacerate at margins; radical leaves 600–900 × 4–8 mm; reduced sheathing leaves 3 or 4. **Flowering stems** 1.35–1.50 m high. **Inflorescence** a raceme of spikes, with 4–10 lax branches. **Bracts** white with pale brown streaks, 7–30 long, elliptic, acute, flecked all over and margins. **Perianth** blue-purple, 50–70 mm long; tube cylindrical, 15–24 mm long; tepals 33–46 × 10–16 mm, ± folded towards apex, curving outwards at maturity, dainty appearance. **Anthers** 8.5—11.0 mm long. **Flowering time** Oct.–Dec. In grassy slopes and among rocks; Dry Highveld Grassland (Somerset East).

igneum Klatt

Perennial herb, geophyte, 0.50–1.35 m high, robust; corm whitish, 15–30 mm in diam. **Leaves** linear, acute; radical leaves 300–900 × 2.5–6.0 mm; reduced sheathing leaves 3 or 4. **Flowering stems** 0.40–1.35 m high. **Inflorescence** a raceme of spikes, with 4–8 lax branches. **Bracts** flecked, 10–25 × 5–8 mm, lanceolate to oblong-ovate, ± acuminate, margins white. **Perianth** lilac, pink or whitish, 16–34 mm long; tube 5–9 mm long; tepals 10–25 × 4.5–11.0 mm. **Anthers** 5–8 mm long**. Flowering time** July–Apr. In grasslands and forests; Indian Ocean Coastal Belt, Dry Highveld Grassland, Sub-Escarpment Savanna, Indigenous Forests, Albany Thicket (Port St Johns District S to Tarkastad, Manubi Forest, Grahamstown and Peddie).

[E]pendulum (L.f.) Baker

Perennial herb, geophyte, 1–2 m high, robust; corm 25–40 mm in diam. **Leaves** linear, apiculate; venation pronounced; reduced sheathing leaves 5. **Flowering stems** 1–2 m high. **Inflorescence** a raceme of spikes, with 3–7 lax branches. **Bracts** brown, 18–30 × 8–13 mm, narrowly obovate-oblanceolate to elliptic, ± acuminate, flecked. **Perianth** purplish pink, campanulate, rounded at base, 28–48 mm long; tube 8–13 mm long; tepals 20–32 × 8–12 mm. **Flowering time** Mar.–Dec. In grassy, stony slopes and fynbos; Upper Karoo, Drakensberg Grasslands, Albany Thicket, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Cradock District SE to Amatole Mts, southwards, from Uitenhage to Grahamstown and Humansdorp).

robustum N.E.Br.

Perennial herb, geophyte, 0.8–2.0 m high, robust; corm 25–40 mm in diam. **Leaves** linear, acute; venation pronounced; radical leaves 400–1 200 × 3–10 mm; reduced sheathing leaves 4 or 5. **Flowering stems** 0.7–2.0 m high. **Inflorescence** a raceme of spikes, with 3–7 dense branches. **Bracts** brown, rarely white, flecked, 20–35 × 8–14 mm, obovate, ± acuminate. **Perianth** creamy white to mauve-pink, 24–35 mm long; tube 8–13 mm long; tepals 16–26 × 7–13 mm. **Anthers** 8–10 mm long. **Flowering time** Nov.–Feb. In grasslands and mountain slopes; Mesic Highveld Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt (Zastron and Barkly East S to Molteno and Dordrecht, and to Kentani).

DIETES Salisb. ex Klatt

Subfamily Iridoideae

Species 6, 1 widespread in eastern Africa, 1 on Lord Howe Island, Australasia; 5 in sthn Afr., LIM, M, S, KZN, WC, EC.

bicolor (Steud.) Sweet ex Klatt
Perennial herb, 0.7–1.0 m high; stem erect. **Leaves** pale green, linear, distichous; central vein usually double. **Spathe** herbaceous, apex obtuse or emarginate, margins free to base. **Bracts** folded, amplexicaul, margins scarious. **Inflorescence** ± as long as leaves; perianth saucer-shaped, yellow; outer segments broadly obovate, sometimes with dark brown nectar guides or with dotted tepal claws; outer tepals speckled orange, bearded. **Stamens** inserted, appressed against petaloid style crest; filaments 6 mm long; anthers 4–8 mm long. **Ovary** ± 10 mm long; style 2 mm long. **Flowering time** Aug.–May. **Capsule** up to 25 mm long, globose-truncate, dehiscent only in upper half. Along streams and vleis; Drakensberg Grassland, Indian Ocean Coastal Belt, Albany Thicket (Stutterheim E to Kentani southwards, Albany and Grahamstown).

butcheriana Gerstner
Perennial herb, 0.8–1.2 m high; stem thick, often flexuous. **Leaves** distichous, erect, ensiform, coriaceous, arranged in a fan-shaped manner. **Bracts** alternate, spathe-like, sheathing; apices brown. **Spathe** 45–60 mm long, robust, apex obtuse or emarginate. **Inflorescence** erect with slight zigzag curvature; perianth white with yellow nectar guides on outer tepals; tepal claws speckled orange, bearded. **Stamens** pressed against petaloid style; filaments filiform, 6 mm long; anthers 4 mm long. **Ovary** green, inferior, turbinate, 10 mm long; style 3 mm long, with white, acuminate branches. **Flowering time** Sept.–? **Capsule** subglobose, 25–35 × 20 mm, subpendulous, indehiscent, walls disintegrating when mature. In deep shade and mist belt forests; Sub-Escarpment Grassland, Indigenous Forests (Hluleka Nature Reserve).

flavida Oberm.
Perennial herb, geophyte, 0.8–1.0 m high; stem irregularly branching. **Leaves** light greyish green, arranged distichously, linear-ensiform, 15–22 mm wide. **Bracts** tubular. **Spathe** 45–50 mm long, apex obtuse to emarginate. **Inflorescence** with pale yellow flowers; nectar guides orange-brown or occasionally flushed blue; claw spotted; outer tepals with horizontal limbs; inner tepals up to 38 mm long. **Stamens** free; filaments 4–6 mm long, broadened at base. **Ovary** cylindrical, green, 10–14 mm long; style fused near base, petaloid, 2–3 mm long; branches yellow with 2 mauve stripes. **Flowering time** Mar.–? **Capsule** ovoid, pendulous, smooth, irregularly dehiscing. Along forest margins and lightly shaded areas; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

grandiflora N.E.Br.
Perennial herb, 0.75–1.00 m high; stem irregularly branching. **Leaves** linear. **Bracts** entirely sheathing; apices obtuse or apiculate. **Spathe** 50–80 mm long, apex obtuse or emarginate, margins free to base. **Flowers** white; nectar guides yellow; limbs horizontal to recurving; outer tepals with dense yellow beard on midline; inner tepals with dark brown markings. **Stamens** with tapering filaments, contiguous at base; anthers 7–10 mm long. **Style** 5 mm long, with pale mauve branches. **Flowering time** Sept.–Mar. **Capsule** 28–50 mm long, cylindrical, ridged and furrowed vertically, splitting into 3 locules when mature. Along forest margins and streams; Drakensberg Grassland, Indian Ocean Coastal Belt, Albany Thicket (King William's Town E to Kentani southwards from Steytlerville to East London).

iridioides (L.) Sweet ex Klatt
Perennial herb, geophyte, 0.3–0.6 m high; stem irregularly branching. **Leaves** crowded at dense fan-shaped basal rosettes, linear-ensiform, sheathing. **Spathe** 35–50 mm long,

apex obtuse-emarginate. **Flowers** white; nectar guides yellow; tepal claws orange-dotted; outer tepals ciliate in midline, papillate; limbs spreading to recurved. **Stamens** free, united or contiguous in lower half; anthers 3–6 mm long. **Ovary** 8–15 mm long, ridged; style 2–3 mm long, with blue or white branches. **Flowering time** Sept.–Apr. **Capsule** 20–30 × 14 mm, ovoid-cylindric, usually rostrate. In forests and well-drained soil; Sub-Escarpment Grassland, Indigenous Forests, Drakensberg Grassland, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Weza State Forest SE to Maclear District southwards, from Somerset East to Kei River Mouth, Steytlerville, Uitenhage and Humansdorp).

FERRARIA Burm. ex Mill.

Subfamily Iridoideae

Spider iris

Species 18, Baviaanskloof Mts to WC, through Namibia to tropical Africa; 9 in sthn Afr., N, WC, EC.

variabilis Goldblatt & J.C.Manning

Plants usually robust, up to 500 mm high; stem much branched in upper half, sheathed by leaf bases below. **Leaves** several, linear to sword-shaped, 6–12 mm wide, basal leaves longest with visible main vein. **Inflorescences** 2-flowered rhipidia; spathes green with membranous margins. **Flowers** on pedicels 40–60 mm long, lasting a single day, pale yellow to beige with brown to dull purple mottling, strongly scented; tepals widely divergent forming a shallow bowl, limbs spreading horizontally; outer tepals 28–35 mm long, inner tepals slightly shorter and narrower. **Ovary** spindle-shaped, not beaked; style branches forked in upper half with diverging arms 4–5 mm long prominently fringed; stigmas terminal on style arms. **Flowering time** Aug.–Oct. **Capsule** 15–25 mm long, ovoid to oblong. **Seeds** angular, 5-sided, ± 4 mm long, facets wrinkled. Coastal species, also along streams in deep, coarse sand on seasonally moist S-facing slopes; Eastern Fynbos-Renosterveld (WC to Georgida in Baviaanskloof Mts).

FREESIA Klatt

Subfamily Crocoideae

Species 15 (incl. *Anomatheca*), mainly in the sthn Afr., winter rainfall region, 2 in eastern SA and south tropical Africa, 1 extending to Sudan; 16 in sthn Afr., N, LIM, NW, G, M, S, FS, KZN, NC, WC, EC.

1a Floral bracts membranous, transparent and dry; inner tepals ovate or cordate and widest at base
2a Flowers usually 50–65 mm long

andersoniae L.Bolus

Perennial herb, geophyte, 0.1–0.2 m high; stem erect, smooth, simple or 1- or 2-branched, usually as long as leaves; corm up to 20 mm in diam., conical, with light brown tunics. **Leaves** several, linear-ensiform, 100–180 × 5–10 mm long. **Bracts** brown-veined; apices rusty. **Inflorescence** a horizontal spike, 2–5-flowered; perianth white to cream-coloured; tube curved towards apex; throat with purple lines; tepals unequal, inner erect, ovate, outer with yellow markings, outspread. **Stamens** 25–35 mm long; filaments 18–25 mm long; anthers 8–10 mm long. **Ovary** with style dividing near anther apices. **Flowering time** Aug., Sept. In rocky koppies; Upper Karoo (Middelburg District).

2b Flowers usually 25–40 mm long

corymbosa (Burm.f.) N.E.Br.

Flissie, *kammetjie* (A)

Perennial herb, geophyte, 0.15–0.30 m high; corm globose-conic; stem erect, smooth, usually several-branched, exceeding leaves, up to 25 mm in diam., tunics light brown. **Leaves** linear-ensiform, 100–200 mm long, $< {}^{1}/_{2}$ as long as stem. **Bracts** brown-veined, apex rusty. **Inflorescence** a 6–10-flowered spike; perianth usually pale yellow or pink with yellow throat; tepals unequal, cordate. **Stamens** up to 21 mm long; filaments 15 mm long; anthers 4–6 mm long. **Ovary** with style dividing just beyond anther apex. **Flowering time** July–Mar. **Capsule** 6–8 mm long, rugulose, appearing smooth when ripe. Common in sandy soil in coastal grasslands and fynbos; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore E to East London, and to Humansdorp).

1b Floral bracts herbaceous, dark green with narrow hyaline margins; inner tepals oblong to broadly ovate and widest in lower third to midline

laxa (Thunb.) Goldblatt & J.C.Manning

Perennial herb, geophyte, 0.1–0.3 m high; corm conical, 10 mm in diam.; stem erect, unbranched. **Leaves** lanceolate, usually exceeding spike. **Bracts** with dark brown apex; outer bracts bifid. **Inflorescence** a 2–6-flowered spike, horizontal, secund; perianth zygomorphic, pink to red or pale blue to white; tube erect, slender, widening at apex; tepals unequal, held at right angles to tube. **Stamens** unilateral, arcuate; anthers 3–4 mm long. **Ovary** with style branching between base and middle of anthers, branches 2.5 mm long, usually tangled among anthers. **Flowering time** Oct.–Feb. **Capsule** 9–12 × 8–10 mm; upper half lightly papillose. In rocky, moist soil; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Dry Highveld Grassland, Albany Thicket (Kokstad S to Port St Johns southwards, from Somerset East to Kentani, Uitenhage and Grahamstown).

verrucosa (Vogel) Goldblatt & J.C.Manning

Perennial herb, geophyte, 0.08–0.20 m high; corm conical with finely fibrous tunics; stem terete. **Leaves** ensiform, acute or subobtuse. **Bracts** often with brown apices. **Inflorescence** an inclined or horizontal spike; perianth pink with white and deep pink markings; tube cylindrical, uniformly narrow, 10–15 mm long; tepals spreading, ± 9 mm long, subequal. **Flowering time** Aug.–Oct. In clay soils near streams; Eastern Fynbos-Renosterveld (Willowmore and Humansdorp Districts).

GEISSORHIZA Ker Gawl.

Subfamily Crocoideae

Species 86, sthn Afr., NC, WC, EC.

1a Stamens unequal, one at least 0.5 mm and usually > 2 mm shorter than other two

heterostyla L.Bolus

Perennial herb, geophyte, 0.12–0.45 m high; corm symmetric, globose, tunics blackish; stem erect, ± ciliate, simple. **Leaves** 3, linear, sheathing for most of its length. **Bracts** pale green with hyaline margins or flushed red, becoming transparent and dry. **Inflorescence** a 2–7-flowered spike, flexed at base; flowers white, flushed pink or purple on reverse side of tepal, stellate; perianth tube 1–2 mm long, throat white to yellow or dark blue; tepals 10–18 mm long, obovate. **Stamens** 3–6 mm long; anthers 4–6 mm long; pollen yellow or blue-black. **Ovary** 1.5–4.0 mm long; style recurved, dividing near

or at base or apex of anthers. **Flowering time** Aug.–Oct. **Capsule** globose, 5–8 mm long. In moist loamy soil and fynbos; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp District).

1b Stamens equal
2a Leaves ± plane (margins and midrib sometimes slightly thickened)
3a Leaves linear to ensiform, narrow, 1–2(–3) mm wide, never pubescent; plants with 1 or 2 flowers

bracteata Klatt

Perennial herb, geophyte, 0.08–0.20 m high; corm ovoid, asymmetric, tunics pale to dark brown, concentric; stem erect, single or 2–5 produced from base. **Leaves** 4–several, ensiform, falcate; cauline bract-like. **Bracts** green, margins often reddish. **Inflorescence** a 1-flowered spike; flowers white, outer tepals often flushed red on reverse, stellate; perianth tube funnel-shaped; tepals 8–12 mm long, obovate. **Stamens** 5–7 mm long; anthers 2.0–3.5 mm long, pollen yellow. **Ovary** 2–3 mm long; style dividing at apex of anthers, branches recurved. **Flowering time** Aug., Sept. **Capsule** narrowly ovoid. In grassland and edges of forests; Eastern Fynbos-Renosterveld, Indigenous Forests (Hankey E to Grahamstown S to Humansdorp).

ornithogaloides Klatt

Perennial herb, geophyte, 0.04–0.10 m high; corm ± ovoid or campanulate, tunics light brown, concentric, fragmenting into elliptical sections or in 2 parts; stem erect, usually branching. **Leaves** usually 4; basal leaves linear, erect to falcate. **Bracts** pale green, becoming dry above. **Inflorescence** of 1- or 2-flowered spikes; flowers yellow, stellate; perianth tube 2–3 mm long; tepals obovate. **Stamens** 2–4 mm long, erect; anthers 3.0–4.5 mm long; pollen yellow. **Ovary** 2 mm long; style dividing at apex of anthers, branches 2–3 mm long, recurved. **Flowering time** Aug.–Oct. **Capsule** obovate, usually exceeding bracts in length. Mostly clay or granitic flats and lower slopes, sometimes thin, rocky sandstone soil; Eastern Fynbos-Renosterveld (WC to Humansdorp District).

roseoalba (G.J.Lewis) Goldblatt

Perennial herb, geophyte, 0.15–0.20 m high; corm ± asymmetric, globose, tunics dark brown, woody; stem erect, simple or 1-branched. **Leaves** 3–5, erect to falcate, linear-ensiform. **Bracts** herbaceous, margins ± reddish. **Inflorescence** a 1–3-flowered spike; flowers whitish inside with red markings near base of tepals, zygomorphic; perianth tube 8–10 mm long, cylindric; tepals reddish on reverse, oblong to obovate. **Stamens** declinate, 12–20 mm long; anthers 6–8 mm long; pollen yellow. **Ovary** 4 mm long; style dividing at apex of anthers, branches 3–4 mm long, recurved. **Flowering time** Aug., Sept. In dry fynbos and along riversides; Rainshadow Valley Karoo, Albany Thicket (Steytlerville and Uitenhage Districts).

3b Leaves ovate, ensiform or lanceolate, (2–)3–10 mm wide, smooth or pubescent; plants with (1–)3–10 flowers

inconspicua Baker

Perennial herb, geophyte, 0.1–0.3 m high; corm globose, asymmetric; tunics concentric, dark brown, outer layers becoming papery and soft; stem erect, simple or more often 2–5-branched. **Leaves** 3–5, usually erect, ensiform. **Bracts** herbaceous, becoming membranous above, margins usually reddish. **Inflorescence** a 3–7-flowered spike; flowers blue to purple, purple-pink or white to cream-coloured, stellate; perianth tube cylindric, reaching near bract apex; tepals 8–11 mm long, obovate. **Stamens** 4–6 mm

long; anthers 3–4 mm long; pollen yellow. **Ovary** 2–3 mm long; style dividing at apex of anthers, branches recurved. **Flowering time** Sept.–Nov. **Capsule** obovoid. In montane fynbos or on flats along the coast; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Uniondale E to Steytlerville and Port Elizabeth District).

2b Leaves not plane, either terete or nearly so, or margins and other veins thickened or raised significantly

fourcadei (L.Bolus) G.J.Lewis

Perennial herb, geophyte, 0.12–0.30 m high; corm tunics brown, woody to soft papery, layers concentric; stem erect, smooth, simple or 1- or 2-branched. **Leaves** 3–5, terete, margins and midrib enlarged; uppermost ± sheathing. **Bracts** herbaceous, drying near apex. **Inflorescence** a 1-flowered spike; flowers pink to mauve, salver-shaped; perianth tube cylindric, widening towards apex; tepals 25–30 mm long, oblanceolate. **Stamens** 13–20 mm long; anthers 10–12 mm long. **Ovary** 4 mm long; style declinate, dividing beyond anthers, branches recurved. **Flowering time** Jan.–May. On streamsides and marshes; Eastern Fynbos-Renosterveld (Uniondale SE to Humansdorp District).

inflexa (D.Delaroche) Ker Gawl.

Perennial herb, geophyte, 0.12–0.35 m high; corm symmetric, tunics blackish, imbricate; stem erect, smooth, simple or rarely branched. **Leaves** 3, hairy, linear-ensiform, margins extended outwards at right angles to blade; midrib raised and winged. **Bracts** reddish brown, membranous, dry. **Inflorescence** a 2–6-flowered spike, flexed at base; flowers purple, pink, red or cream-coloured; tepals red-flushed on reverse; perianth tube 1.0–2.5 mm long; tepals 10–18 mm long, obovate. **Stamens** 4–7 mm long; anthers 3–6 mm long. **Ovary** 2–3 mm long; style dividing near apex of anthers, branches recurved above. **Flowering time** Aug., Sept. **Capsule** globose to oblong. In sandy flat areas; Eastern Fynbos-Renosterveld (Humansdorp District).

GLADIOLUS L.

Subfamily Crocoideae

Species ± 262 (incl. *Anomalesia*, *Homoglossum*, *Oenostachys*), SA through tropical Africa and Madagascar to Europe and Middle East; ± 165 in sthn Afr., centred in the WC with secondary centres in the eastern sthn Afr. highlands, widespread.

Following Goldblatt and Manning (1998).

Key to sections

1a Leaves sword-shaped to lanceolate, usually at least 4 mm wide, often well-developed secondary veins, sometimes the secondary veins fine and closely set; flowers mostly slightly bilabiate with lower tepals not narrow and clawed below:

2a Leaves in a distichous fan, glabrous or puberulous:

3a Flowers usually small; capsules oblong, fairly small and < 15 mm long; seed wings often reduced, usually < 6 mm long ..... Section 1: **Densiflorus**

3b Flowers usually large, capsules oblong, large, usually > 20 mm long; seeds large with well-developed wings, usually > 8 mm long:

4a Flowers variously coloured, but rarely white to pink, when red, the lower tepals white below or with transverse white banding ..... Section 2: **Ophiolyza**

4b Flowers usually shades of cream or pale to deep pink or salmon-orange, the lower tepals with red spade-, diamond- or spear-shaped markings, or a median streak (rarely without markings), sometimes flowers red, then with longitudinal markings ..... Section 3: **Blandus**

2b Leaves usually superposed, sheath and sometimes blades with long hairs, rarely scabrid; leaf blades of flowering stem often reduced; corm tunics consisting of flattened, parallel vertical fibres, often dark brown ..... Section 4: **Linearifolius**

1b Leaves linear, usually < 5 mm wide, usually without well-developed secondary veins, rarely broader, but then without a well-developed midrib; flowers usually strongly bilabiate with lower tepals narrow and clawed:
5a Leaves usually several, at least 3 basal ..... Section 5: **Hebea**
5b Leaves occasionally 2, usually 3 or 4 ..... Section 6: **Homoglossum**

Section 1: *Densiflorus*

1a Flowers uniformly pigmented in shades of pink to mauve, the lower tepals with longitudinal reddish streaks; perianth tube 20–50 mm long

[E]**mortonius** Herb.

Perennial herb, geophyte, 0.4–0.7 m high; corm globose to depressed-globose, tunics coriaceous to coarsely papery; stem erect, simple, rarely 1-branched. **Leaves** in a tight distichous fan, mostly basal, sometimes minutely ciliate on margins, (8–)15–25 mm wide, margins and midribs moderately thickened. **Bracts** pale green, sometimes glaucous. **Inflorescence** an 8–16-flowered spike, flexed at base; flowers pink; perianth tube cylindric, curving outward above; tepals unequal, lanceolate-ovate, margins undulate. **Stamens** ± exserted; anthers with short apiculi, usually purple; pollen whitish. **Ovary** oblong; style arching over stamens, with branches expanding distally. **Flowering time** Jan.–Apr. **Capsule** narrowly obovoid-oblong, 3-lobed, retuse above. In humus-rich soil; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket (Barkly East S to Queenstown, Seymour, Kentani, Uitenhage and Grahamstown).

1b Flowers variously coloured but, if uniformly pigmented in shades of pink, then perianth tube < 20 mm long

crassifolius Baker

Perennial herb, geophyte, 0.2–1.2 m high; corm with coriaceous to ± fibrous tunics; stem erect below, flexed above. **Leaves** 4–8, usually emerging at flowering time, 5–12 mm wide; midribs, margins and 2 or more pairs of secondary veins hyaline and thickened. **Bracts** usually pale green or flushed purple, apically forked. **Inflorescence** 16–22-flowered, ± inclined; flowers pale to deep pink or light purple, occasionally orange or cream-coloured; perianth tube obliquely funnel-shaped, cylindric below, widening and recurving outward near apex; tepals broadly ovate, unequal, the dorsal largest and arched to hooded over stamens. **Stamens** exserted; anthers pale lilac to purple; pollen whitish to pale yellow. **Ovary** obovoid, 3-lobed, retuse. **Flowering time** Dec.–Mar. In open grasslands; Drakensberg Grassland, Sub-Escarpment Grassland (Qacha's Neck E to Kokstad, S to Maclear District).

ochroleucus Baker

Perennial herb, geophyte, 0.4–0.8 m high; corm globose to depressed-globose, tunics coriaceous to coarsely papery; stem erect, simple or shortly 1- or 2-branched. **Leaves** 7–12, in a tight distichous fan, mostly basal, (8–)15–25 mm wide, margins ciliate to scabrid. **Inflorescence** a 12–18-flowered spike, flexed at base; flowers light purple or reddish or whitish with shades of pink or yellow, flushed brownish on reverse; perianth tube obliquely funnel-shaped; tepals unequal, ovate, margins undulate. **Stamens** exserted; anthers pale mauve; pollen cream-coloured. **Ovary** oblong, weakly 3-lobed; style arching over stamens; branches expanded distally. **Flowering time** Dec.–June. **Capsule** narrowly obovoid-oblong, 3-lobed, retuse above. Grassy hills and slopes near coast, maritime scrub; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-

Escarpment Savanna, Albany Thicket (Barkly East S to Mthatha, King William's Town, Komga, Grahamstown and East London).

papilio Hook.f.

Perennial herb, geophyte, 0.3–1.2 m high; stem erect or inclined, simple. **Leaves** 6 or 7(–9), lanceolate, 9–14(–19) mm wide, margins and midribs thickened. **Bracts** green or flushed grey-purple abaxially. **Inflorescence** a 4–13-flowered spike; flowers nodding, cream-coloured to greenish, upper tepal translucent-pink or light purple inside, greenish to grey or purple on the reverse; perianth tube obliquely funnel-shaped, curving outward above; tepals obovoid, unequal, the dorsal largest, hooded over stamens, horizontal or tilted toward ground; lower tepals joined. **Stamens** exserted; anthers purplish on dorsal surface, cream-coloured below; pollen cream-coloured. **Ovary** ovoid; style arching over stamens, branches broader on upper halves. **Flowering time** Nov.–Mar. **Capsule** ovate-oblong, 3-lobed; apices retuse. In montane grassveld; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Lady Grey E to Kokstad District, S to Kei River Mouth).

Section 2: *Ophiolyza*

Margins of inner bracts united below and enclosing the ovary, or spikes distichous and erect; bracts somewhat inflated below and apices dry and light brown, attenuate and deflexed; plants usually with a fan of several rigid basal leaves often shortly hairy or at least scabrid

oppositiflorus Herb.

Perennial herb, geophyte, 0.5–1.2 m high; corm depressed-globose, tunics papery to coriaceous; stem erect, often pubescent, simple. **Leaves** usually 7 or 8, imbricate and concealing, ensiform-linear, 12–18(–24) mm wide, margins and midribs thickened, velutinous between veins. **Bracts** green, pubescent or velutinous below. **Inflorescence** a spike, straight, erect, (sub)distichous; flowers up to 26, salmon to pale pink or mauve, lower 3 petals paler in midline; throat red or purple; perianth tube narrow, curving outward; tepals unequal, lanceolate-elliptic, margins undulate, lower 3 united. **Stamens** exserted; anthers light mauve; pollen cream-coloured. **Ovary** oblong; style arching over stamens; branches expanded above. **Flowering time** Nov.–Mar. **Capsule** obovoid-oblong, 3-lobed, truncate to retuse apically. In montane grassland; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland (Matatiele E to Kokstad southwards, from Mthatha to Port St Johns and Stutterheim to Kentani).

sericeovillosus Hook.f.

Perennial herb, geophyte, 0.5–1.1 m high; corm depressed-globose, tunics firm-papery to coriaceous; stem straight, erect, occasionally branched, pubescent. **Leaves** 5–7, ensiform to linear, sheaths villous to pubescent, 3–16 mm wide, margins, midribs and secondary veins thickened and hyaline. **Bracts** pale green, villous to pubescent or smooth, apex membranous, often twisted. **Inflorescence** a 12–20(–40)-flowered spike, distichous, erect; flowers greenish to cream-coloured, pale lilac or dull red; tepals sometimes minutely dotted; perianth tube obliquely funnel-shaped, widening or recurving outward near apex; tepals unequal, dorsal longest and hooded over stamens. **Stamens** exserted, yellow; pollen whitish. **Ovary** narrowly oblong; style arching over stamens. **Flowering time** Feb.–Apr. **Capsule** obovoid to oblong, apex 3-lobed, auriculate above. Mostly in light woodland and open bushes; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad District).

Margins of inner bracts free and spike never distichous, often inclined; bracts not normally inflated below, green or dry but then apices never deflexed; plant habit varied

dalenii Van Geel

Perennial herb, geophyte, 0.35–1.60 m high; corm with reddish brown tunics; stem simple. **Leaves** 4–6(7), lanceolate, (5–)10–30(–70) mm wide; foliage leaves synanthous, often imbricate (produced simultaneously with flowers). **Bracts** pale green to grey-purple adaxially. **Inflorescence** a 3–8-flowered spike, erect; flowers either red to orange with yellow marks on 3 lower tepals or yellow to greenish with red to brown streaks on upper tepals; perianth tube cylindric, widening and curving outward above; tepals unequal, the upper 3 elliptic-obovate, dorsal largest, horizontal to down-curved. **Stamens** exserted; anthers yellow to brownish; pollen pale yellow. **Ovary** oblong; style arched over stamens, branches broadened above. **Flowering time** Nov.–May. **Capsule** ellipsoid to ovoid, apically 3-lobed. In montane and coastal grasslands and savannas; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad S to Maclear, Mkambati Nature Reserve, King William's Town and Kentani).

ecklonii Lehm.

Perennial herb, geophyte, 0.25–1.00 m high; corm depressed-globose, tunics brittle-papery to cartilaginous; stem erect below, inclined above, simple. **Leaves** (6)7–9, lanceolate, 15–30(–53) mm wide, basal forming distichous fan, midribs and margins ± thickened. **Bracts** bright green, or flushed with purple below, keels reddish. **Inflorescence** an inclined spike; flowers 8–12(–26), spotted pink, red or purple; tepals unequal, ovate-elliptic, arching outward and downwards, 3 lower tepals with yellow to cream-coloured, broad to narrow nectar guides, apex emarginate-apiculate, dorsal horizontal, hooded over stamens. **Stamens** exserted; anthers cream-coloured; pollen white. **Ovary** oblong; style arching over stamens. **Flowering time** Dec.–Mar. **Capsule** obovoid, weakly 3-lobed above, apex retuse. In montane grassveld; Sub-Escarpment Grassland, Indigenous Forests, Indian Ocean Coastal Belt (Kokstad District to Baziya Forest, Katberg Mtn and Kentani).

saundersii Hook.f.

Perennial herb, geophyte, 0.4–0.7 m high; corm depressed-globose, tunics of dry papery layers, bearing many purplish brown cormlets; stem erect, simple. **Leaves** 7–9, lanceolate, 15–25 mm wide, midrib strongly thickened, margins slightly thickened. **Bracts** green, lightly folded in midline, apex twisted, sometimes forked into linear cusps. **Inflorescence** a 2–9-flowered spike, erect or lightly inclined; flowers bright red, facing sideways or drooping; perianth tube obliquely funnel-shaped; tepals lanceolate, unequal, 3 upper largest, the dorsal extending horizontally or tilted downward over stamens. **Stamens** exserted; anthers purple, with minute apiculus; pollen cream-coloured. **Ovary** oblong; style arching over stamens. **Flowering time** Dec.–Mar. **Capsule** oblong-obovoid, 3-lobed, retuse apically. Montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey to Kokstad District and Barkly Pass).

Section 3: *Blandus*

1a Flowers carmine or red, sometimes with white median streaks or spots on lower tepals

sempervirens G.J.Lewis

Perennial herb, geophyte, 0.4–0.6 m high; corm producing rhizome-like stolons from base, tunics coriaceous; stem erect or inclined, flexed above. **Leaves** 7–12, lanceolate 6–18 mm wide, midrib and one pair of veins lightly thickened, margins not thickened.

Bracts green. **Inflorescence** a 4–8-flowered spike, inclined, bearing flowers on upper side; flowers deep carmine-red, lower 3 tepals with a narrow longitudinal streak in lower midline; perianth tube funnel-shaped; tepals elliptic, the dorsal broad and largest, lower 3 fused. **Stamens** exserted; anthers purple; pollen yellow. **Ovary** oblong; style arching over stamens. **Flowering time** Feb.–May. **Capsule** oblong, 3-lobed and retuse above. In moist habitats; Eastern Fynbos-Renosterveld (Tsitsikamma to Humansdorp District).

1b Flowers various colours except carmine to red, with various markings on lower tepals
2a Leaves in a tight distichous fan; leaf blades firm-textured with strongly thickened margins and midribs; corm tunics of dense texture, always accumulating with remains of the leaf bases in a course fibrous neck around underground part of stem

floribundus Jacq.

Perennial herb, geophyte, 0.3–0.6 m high; corm ± globose; stem erect below, flexed outward above. **Leaves** 6–8, ensiform, 12–20 mm wide. **Bracts** dull green to grey-purple. **Inflorescence** a 3–8-flowered spike, ± horizontal; flowers cream-coloured or pale green to ivory-coloured, occasionally pale pink, all tepals with a broad streak of darker colour midline; perianth tube obliquely funnel-shaped; tepals unequal, lanceolate to elliptic, obtuse to retuse, margins usually undulate, the dorsal largest, inclined over stamens. **Stamens** exserted; anthers purple; pollen cream-coloured to purple or brownish. **Ovary** oblong; style arching over stamens; branches arching outward. **Flowering time** Sept.–May. **Capsule** oblong-ellipsoid, 3-sided. In dry stony soils; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore to Steytlerville, Port Elizabeth and Humansdorp).

grandiflorus Andrews

Perennial herb, geophyte, 0.25–0.50 m high; corm ± globose; stem erect below, simple. **Leaves** 4–7, ensiform, 6–15(–20) mm wide, margins, midribs and 2 other veins thickened, margins minutely crispulate. **Bracts** green, flushed brownish or purple. **Inflorescence** a spike, sometimes horizontal, slightly flexuose; flowers 2–9, cream-coloured, whitish or pale pink; tepals darker on reserve, throat yellow, sometimes reddish at base; perianth tube obliquely funnel-shaped; tepals (sub)equal, obovate to lanceolate, margins sometimes undulate or lightly crisped, obtuse to retuse. **Stamens** exserted; filaments cream-coloured or pink; anthers white, cream-coloured or purple; pollen white or mauve. **Ovary** oblong; style usually arching over stamens, rarely suberect; branches spathulate, held above stamens. **Flowering time** Aug.–Oct. **Capsule** narrowly obovoid to elliptic. In moist clay soil, renosterveld vegetation; Eastern Fynbos-Renosterveld (Humansdorp).

gueinzii Kunze

Perennial herb, geophyte, 0.2–0.5 m high; corm globose, tunics dark brown, coriaceous, forming cormlets around base; stem erect, branching. **Leaves** 4–6, only midvein evident, 4–6 mm wide. **Bracts** pale green or greyish pink. **Inflorescence** a spike, ± inclined, flexuose; flowers (2–)4–8, zygomorphic or actinomorphic, mauve to light purple, upper 3 tepals with red-purple median streaks, lower 3 with white median streaks outlined red-purple; perianth tube cylindric; tepals subequal, obovate, outcurving distally. **Stamens** exserted; filaments unilateral or symmetrically disposed; anthers purple; pollen grey-blue to cream-coloured. **Ovary** ovoid-oblong; style branches expanded above. **Flowering time** Oct.–Jan. **Capsule** obovoid to ellipsoid. On sandy beaches and dunes at and above high tidal mark; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (along coast from Kentani SW, from Port Alfred to East London, and Humansdorp).

2b Leaves in a loose distichous fan or superposed; leaf blades soft-textured with margins often lightly thickened; corm tunics of medium textured fibres not accumulating markedly and not extending in a neck

aquamontanus Goldblatt

Perennial herb, geophyte, 0.4–1.0 m high; corm vestigial, resembling an erect rhizome, tunics softly papery, brown; stem inclined to drooping, simple. **Leaves** (4)5 or 6, narrowly lanceolate, 8–15 mm wide; midrib lightly raised. **Bracts** green. **Inflorescence** a 4–8-flowered spike, drooping; flowers pale mauve-pink, lower 3 tepals with broad, dark purple, longitudinal, median streak in lower $^{2}/_{3}$; perianth tube cylindric, curving outward and flared; tepals lanceolate, the dorsal largest, inclined to arching over stamens, the upper laterals directed forward below. **Stamens** exserted; anthers dark purple; pollen cream-coloured. **Ovary** oblong; style arching over stamens. **Flowering time** Nov., Dec. **Capsule** narrowly obovoid. In perennial mountain streams and on wet cliffs; Rainshadow Valley Karoo (Swartberg Mts near EC Border).

geardii L.Bolus

Perennial herb, geophyte, 0.7–1.2 m high; corm depressed-globose, tunics of membranous layers; stem erect below, flexed outward below base of spike and inclined, 1- or 2-branched or simple. **Leaves** 7–9, plane, 14–28 mm wide. **Bracts** green. **Inflorescence** a 6–10-flowered spike, inclined, lightly flexuose; flowers pinkish purple, lower 3 tepals with dark purple spear-shaped mark in lower midline; perianth tube obliquely funnel-shaped; tepals unequal, lanceolate, dorsal largest, extending ± horizontally over stamens, upper laterals patent, lower 3 tepals ± straight. **Stamens** exserted; anthers purple; pollen cream-coloured. **Ovary** oblong; style arching over stamens, branches broadened and bilobed at apices. **Flowering time** Nov., Dec. **Capsule** ovoid-elliptic. In moist montane habitats; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Steytlerville to Hankey, Uitenhage and Port Elizabeth).

Section 4: *Linearifolius*

Summer rainfall area; perianth tube 4–12 mm long; capsules oblong to globose, lightly 3-lobed and retuse apically; leaf blades usually reduced, shorter than sheaths or vestigial.

parvulus Schltr.

Perennial herb, geophyte, 0.15–0.40 m high; corm globose, tunics of coriaceous to almost woody layers; stem erect, slender and wiry, flexed outward. **Leaves** 2, basal prominent, ± 2 mm wide; sheath ribbed, slightly villous; non-flowering plants with single linear leaf, midribs and margins hyaline. **Bracts** grey-purple, apex brownish dry. **Inflorescence** a 2–5-flowered spike, inclined, lightly flexuose; flowers pale pink; throat with narrow, paired, red lines; perianth tube funnel-shaped; tepals lanceolate, equal, flared. **Stamens** unilateral, arcuate, exserted; anthers pale pink; pollen creamy yellow. **Ovary** ovoid; style arching over stamens, branches recurving, expanded in upper half. **Flowering time** Sept.–Jan. In thin soil and cracks of sandstone; Sub-Escarpment Grassland, Sub-Escarpment Savanna (KZN Border: Alfred and uMzimkhulu districts).

pubigerus G.J.Lewis

Perennial herb, geophyte, 0.2–0.4 m high; corm globose, tunics of coriaceous layers; stem erect below, flexed, inclined. **Leaves** 2 or 3, narrowly lanceolate, lightly villous, 3–4 mm wide; sheath lightly ribbed, pubescent, margins hyaline. **Bracts** pale grey-green or flushed with grey-purple or pink on dorsal surfaces. **Inflorescence** a 4–9-flowered

spike, deflexed at base, inclined, flexuose or nearly straight; flowers pale lemon-yellow tinged with green or bluish mauve, horizontal to drooping; perianth tube narrowly trumpet-shaped, widening evenly from base; tepals subequal, narrowly lanceolate-attenuate, the upper 3 larger. **Stamens** exserted; anthers dull yellow or purple; pollen cream-coloured. **Ovary** obovoid; style arching over stamens. **Flowering time** Sept.–Nov. In montane grassland and along streams; Drakensberg Grassland, Albany Thicket (Katberg and Hogsback Mts).

Section 5: *Hebea*

Flowers zygomorphic with upper lateral and lower median tepals (the outer whorl) heart-shaped at base with a short stalk and filaments long and strongly arched (sometimes shorter and sparsely pilose); sutures between tepals forming iridescent papillose ridges

virescens Thunb.

Perennial herb, geophyte, 0.10–0.25 m high; corm (depressed-)globose, tunics soft papery becoming fibrous; stem ± erect below, flexed, inclined, seldom branched. **Leaves** 3(–5), linear to terete, scabrid, 1–3 mm wide, margins raised, edges arching toward raised midribs. **Bracts** green; veins ± transparent. **Inflorescence** a 3–7(–12)-flowered spike, straight or lightly flexuose; flowers yellow to yellow-orange or pink; upper 3 tepals flushed green, brownish purple or dark pink; lower 3 tepals with deep yellow to white band across base and pale distally; perianth tube narrowly and obliquely funnel-shaped; tepals unequal; the dorsal longest, ± spathulate, margins recurved. **Stamens** exserted; anthers pale or dark; pollen yellow. **Ovary** oblong; style arching over stamens. **Flowering time** Aug., Sept. **Capsule** oblong-ellipsoid. On stony shale slopes and in clay soils; Eastern Fynbos-Renosterveld (Humansdorp).

Flowers actinomorphic or zygomorphic with upper lateral tepals obscurely or not at all heart-shaped, with short stalk at base; filaments short to long, horizontal, ascending or strongly arched but never sparsely pilose; sutures between tepals never forming iridescent papillose ridges

inandensis Baker

Perennial herb, geophyte, 0.20–0.45 m high; corm globose, tunics of fine, densely matted fibres; stem erect or inclined, simple or 1-branched, flexed above. **Leaves** 4–6, fleshy, 1.5–2.0 mm wide; midrib thickened and prominent when dry. **Bracts** green, sometimes flushed purple above. **Inflorescence** a 4–12-flowered spike; flowers white to cream-coloured, the reverse of 3 upper tepals usually flushed pink to dull purple towards apex, no nectar guides; perianth tube narrowly funnel-shaped; tepals oblanceolate, unequal, the dorsal largest, hooded over stamens, upper laterals directed forward. **Stamens** exserted; anthers mauve; pollen cream-coloured. **Ovary** ovoid; style arching over stamens. **Flowering time** Oct.–Jan. **Capsule** narrowly ovoid-ellipsoid. In rocky grasslands on sandstone hillsides; Sub-Escarpment Grassland (Matatiele District S to Queenstown).

involutus D.Delaroche

Perennial herb, geophyte, 0.3–0.5 m high; corm depressed-globose; stem usually erect below, sometimes inclined, flexed outward, simple or 2- or 3-branched. **Leaves** 7–9, linear, 1.7–3.0 mm wide, midline thickened, margins hyaline, not thickened. **Bracts** pale green, flushed greyish purple on upper surface. **Inflorescence** a 4–7-flowered spike, lightly inclined, barely flexuose; flowers predominantly white; tepals flushed pink toward bases or pale pink, lower 3 tepals pale greenish yellow below; perianth tube obliquely fun-

nel-shaped, curving outward near apex; tepals unequal, lanceolate. **Stamens** exserted; anthers dull purplish; pollen pale orange. **Ovary** oblong; style arching over stamens. **Flowering time** Aug.–Dec. **Capsule** obovoid-ellipsoid, apex acute or obtuse. In clay soils in open ground or at edge of clumps of bushes; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Steytlerville to Humansdorp District).

leptosiphon F.Bolus

Perennial herb, geophyte, 0.3–0.5 m high; corm with tunics composed of fairly coarse fibres; stem erect, flexed, simple or branched. **Leaves** ± 6, linear, 2.0–2.5 mm wide; midrib thickened, margins not thickened. **Bracts** light green, usually becoming pale and dry above. **Inflorescence** a 6–9-flowered spike, inclined; flowers cream-coloured to pale yellow, lower 3 tepals with dark red to purple median streak in lower half; perianth tube cylindric, curving gently outward, expanding to wider throat; tepals unequal, upper 3 largest, narrowly lanceolate, attenuate. **Stamens** exserted; filaments light purple; anthers dark blue-purple; pollen purplish. **Ovary** oblong; style arching over stamens. **Flowering time** Sept., Oct. **Capsule** obovoid-ellipsoid; apices obtuse. In dry habitats and arid fynbos; Rainshadow Valley Karoo, Albany Thicket (Steytlerville, Baviaanskloof Mts and Uitenhage District).

permeabilis D.Delaroche

Perennial herb, geophyte, 0.20–0.45 m high; corm globose to conic; stem usually erect, flexed, simple or 1- or 2-branched. **Leaves** 4–7, linear, 1.0–2.0(–3.5) mm wide; midrib and margins thickened. **Bracts** pale grey-green, sometimes flushed purplish above. **Inflorescence** a 4–8-flowered spike, inclined, flexuose; flowers whitish to greenish cream-coloured, dull blue-grey, dull purple or yellow brown; upper tepals with brown to purplish longitudinal median stripe; lower tepals and throat streaked reddish to purplish; perianth tube obliquely funnel-shaped; tepals unequal, attenuate, dorsal largest, inclined over stamens, arching near apex. **Stamens** exserted; anthers dull cream-coloured to grey-purple; pollen whitish. **Ovary** oblong; style arching over stamens. **Flowering time** Aug.–Dec. **Capsule** ovoid-ellipsoid, 3-lobed, emarginate at apices. Dry and stony habitats; Drakensberg Grassland, Upper Karoo, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Lady Grey S to Middelburg, Mthatha, Graaff-Reinet, King William's Town, Grahamstown and Humansdorp districts).

stellatus G.J.Lewis

Perennial herb, geophyte, 0.2–0.5 m high; corm globose, tunics of fine to coarse fibres, producing stolons at base; stem ± erect, inclined, usually 1- or 2-branched. **Leaves** (4–)6–9, linear, (1–)2–3 mm wide; midrib thickened, margins not raised or prominent. **Bracts** pale green, becoming dry and light brown above. **Inflorescence** a 5–12-flowered spike; flowers white to cream-coloured or pale lilac, actinomorphic, stellate; tepals with narrow brownish or purple median streak; perianth tube shortly funnel-shaped; tepals subequal, elliptic. **Stamens** exserted; filaments parallel, contiguous; anthers pale yellow; pollen yellow. **Ovary** oblong; style central, enclosed by filaments, branches slightly expanded above. **Flowering time** Aug.–Nov. **Capsule** elongate-ellipsoid to oblong. In dry and stony grasslands on hilltops; Rainshadow Valley Karoo, Albany Thicket (Willowmore, Steytlerville and Port Elizabeth districts).

E uitenhagensis Goldblatt & Vlok

Perennial herb, geophyte, 0.25–0.40 m high; corm with tunics of coarse fibres; stem erect, usually simple. **Leaves** 7 or 8, linear, 1.5–2.0 mm wide; midrib thickened, margins barely raised. **Bracts** grey-green. **Inflorescence** a 5–8-flowered spike; flowers mauve, lower tepals with yellow spear-shaped mark outlined in purple in midline; perianth tube obliquely funnel-shaped; tepals unequal, lanceolate, dorsal largest, inclined over stamens. **Stamens** exserted; anthers yellow; pollen yellow. **Ovary** oblong; style arching over stamens, branches wider in upper half. **Flowering time** Sept. On drained, stony sandstone slopes; Rainshadow Valley Karoo (Steytlerville, Great Winterhoek Mts).

E wilsonii (Baker) Goldblatt & J.C.Manning

Perennial herb, geophyte, 0.3–0.6 high; corm globose; stem erect, simple or 1- or 2-branched. **Leaves** 6–8, linear, 1–3 mm wide; midrib thickened, margins rarely lightly thickened. **Bracts** green, sometimes flushed purple above. **Inflorescence** a 4–12-flowered spike, inclined, lightly flexuose; flowers white to cream-coloured, reverse of upper 3 tepals flushed pink to dull purple toward apex and midline; lower tepal with short, pale mauve streaks near base; perianth tube obliquely funnel-shaped; tepals oblanceolate, unequal; dorsal largest, hooded over stamens, directed forward. **Stamens** exserted; anthers purple; pollen cream-coloured. **Ovary** ovoid; style arching over stamens. **Flowering time** Aug.–Apr. **Capsule** ellipsoid. Open grassland in light loamy soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Queenstown S to King William's Town, Kentani, Port Elizabeth, Grahamstown and East London).

Section 6: *Homoglossum*

1a Bracts 14–30 mm long, or if longer, then perianth tube < 25 mm long; perianth tube short to long, usually shorter than bracts, but if longer, then flowers with pink to reddish markings on lower tepals.

nigromontanus Goldblatt

Perennial herb, geophyte, 0.3–0.4 m high; corm globose, tunics of coarse, reticulate fibres. **Leaves** 3, erect, terete with 4 longitudinal grooves, ± 1 mm wide; midrib and margins heavily thickened. **Bracts** pale green or flushed with grey-purple. **Inflorescence** a 3–6-flowered spike, inclined; flowers white to pale pink, lower 3 tepals with dark red longitudinal streaks widest at base of tepal limbs; perianth tube narrowly and obliquely funnel-shaped, curved outward beyond bracts; tepals unequal, the dorsal largest, obovate, inclined to hooded over stamens. **Stamens** exserted; anthers dark purple; pollen cream-coloured. **Ovary** narrowly ovoid; style arching over stamens. **Flowering time** Feb.–May. **Capsule** obovoid, rounded at apex. In montane fynbos; Eastern Fynbos-Renosterveld (Willowmore District).

patersoniae F.Bolus

Perennial herb, geophyte, 0.3–0.5 m high; corm globose, tunics of hard, coarse fibres, usually thickened below into claw-like ridges; stem erect, flexed, simple. **Leaves** 3, terete, with 4 narrow, longitudinal grooves, ± 2 mm wide. **Bracts** grey-green, flushed light purple, margins hyaline, forked apically. **Inflorescence** a 2–4(5)-flowered spike; flowers pale to deep blue, greyish or cream-coloured, inflated, campanulate, dorsal tepal usually densely coloured; lower 3 tepals with a flexuose transverse yellow band across distal $^1/_3$; perianth tube obliquely funnel-shaped, geniculate; tepals unequal, upper broadly obovate, the dorsal largest, hooded over stamens. **Stamens** exserted; anthers whitish;

pollen whitish. **Ovary** oblong; style arching over stamens, branches extending beyond anthers. **Flowering time** Aug., Sept. **Capsule** ovoid-ellipsoid. In dry grassland and stony sands; Rainshadow Valley Karoo (Willowmore E to Steytlerville District).

1b Bracts 30–80 mm long; perianth tube always fairly long, at least 25 mm long and often ± as long as or up to twice as long as bracts
2a Leaves with midrib and margins thin, not thickened nor raised above or below plane of leaf blade

[E]**albens** Goldblatt & J.C.Manning

Perennial herb, geophyte, 0.3–0.8 m high; corm globose, tunics papery; stem erect, lightly flexed above. **Leaves** 3(4), plane, linear, with 3 equal veins, 1–2 mm wide. **Bracts** green or greyish on upper surface. **Inflorescence** a 1–3(–5)-flowered spike, flexed at base, inclined, flexuose; flowers cream-coloured to white, sometimes with small speckles or faint red-brown streaks in throat or all over petals; perianth tube narrowly and obliquely funnel-shaped; tepals subequal, ovate, the dorsal slightly larger, margins undulate. **Stamens** exserted; anthers cream-coloured; pollen yellow. **Ovary** oblong; style arching over stamens. **Flowering time** Mar.–May. On grassy slopes in low fynbos-like vegetation; Albany Thicket (Alexandria and Kowie districts).

fourcadei (L.Bolus) Goldblatt & M.P.de Vos

Perennial herb, geophyte, 0.4–0.6 m high; corm globose-obconic, tunics of firm cartilaginous layers; stem erect, flexed outward above, simple. **Leaves** (2)3, centric, midrib raised, margins thickened, fused below. **Bracts** pale brownish green. **Inflorescence** a 3–5-flowered spike, erect; flowers yellowish green on tepals, the upper 3 tepals flushed and veined with dusky red, the reverse of tepals and tube red; perianth tube slender, cylindric below, curving, ascending to almost horizontal; tepals unequal, the dorsal ovate, ascending; laterals patent. **Stamens** exserted; anthers light purple; pollen yellow. **Ovary** cylindric; style extending horizontally over stamens. **Flowering time** Sept.–Nov. In heavy soils, either clay or clay loam; Rainshadow Valley Karoo (WC Border: Langkloof District).

huttonii (N.E.Br.) Goldblatt & M.P.de Vos

Perennial herb, geophyte, 0.3–0.6 m high; corm globose, tunics of firm cartilaginous layers; stem erect, lightly flexed above, simple. **Leaves** 3, erect or trailing above, 2.5–4.0 mm wide, centric; midribs raised. **Bracts** green or flushed purple. **Inflorescence** a 3- or 4-flowered spike, erect or slightly inclined; flowers orange-red, dorsal tepal with broad translucent edges below, lower tepals light orange to yellow below, sometimes yellow on reverse; perianth tube narrow and cylindric below, ascending; tepals unequal, broadly lanceolate, the dorsal largest, ascending. **Stamens** exserted; anthers orange; pollen yellow. **Ovary** cylindrical; style arching over stamens, branches broad above. **Flowering time** July–Dec. **Capsule** elongate-ellipsoid. In fertile soils derived from sandstones; Eastern Fynbos-Renosterveld, Albany Thicket (Tsitsikamma to Grahamstown and Humansdorp districts).

hyalinus Jacq.

Perennial herb, geophyte, 0.3–0.6 m high; corm globose-conic, tunics of ± woody layers; stem erect below, flexed above, simple. **Leaves** 3, imbricate, linear, 1.7–2.5 mm wide, margins and midribs strongly thickened. **Bracts** pale green to greyish, long-attenuate. **Inflorescence** a 1–3(–6)-flowered spike; flowers cream-coloured with shades of light to reddish brown; tepals usually darker along midlines, dorsal tepals transparent on

edges below; throat transparent on lower surface; perianth tube erect, cylindrical below, abruptly bent, flared outward; tepals unequal, lanceolate to ovate, dorsal largest, arching over stamens. **Stamens** exserted; anthers cream-coloured; pollen yellow. **Ovary** oblong; style arching over stamens; branches broadly expanded above. **Flowering time** June–Aug. **Capsule** elongate-ellipsoid, 3-sided. On heavy soils or along transition zone between sandstone and shale; Albany Thicket (Port Elizabeth District).

liliaceus Houtt.

Perennial herb, geophyte, 0.35–0.70 m high; corm globose, tunics ± woody to coriaceous layers; stem erect or inclined, simple. **Leaves** 3, linear, (1.5–)2.0–4.0(–6.0) mm wide, margins and midrib thickened, scabrid. **Bracts** pale green, long-attenuate, twisted above. **Inflorescence** a 1–4(–6)-flowered spike, inclined, lightly flexuose; flowers light brown, dull pinkish, red, tan, purplish or cream-coloured to greenish yellow; tepals darker along midlines, lower tepals pale yellow to cream-coloured below; perianth tube narrowly and obliquely funnel-shaped, pubescent below; tepals lanceolate-attenuate, twisted above, margins undulate, crisped apically, the dorsal largest. **Stamens** exserted; pubescent below; anthers brown or dull purple, nearly horizontal; pollen pale yellow or cream-coloured. **Ovary** oblong; style arching over stamens, pubescent below. **Flowering time** Sept.–Jan. **Capsule** oblong-ellipsoid. In clay fynbos soils; Eastern Fynbos-Renosterveld (Steytlerville and Humansdorp Districts).

longicollis Baker

Perennial herb, geophyte, 0.3–0.5 m high; corm with tunics of fine to moderately coarse layers; stem erect, simple, flexed above. **Leaves** 3, terete. **Bracts** grey-green. **Inflorescence** a 1–3-flowered spike; flowers white to pale yellowish, uniformly coloured or mottled with brown, outer tepals flushed and veined purplish to brown or green on reverse, tube lined with green or purple on veins, margins transparent; perianth tube slender and cylindrical, ± horizontal and slightly curved above; throat papillose; tepals (subequal)unequal, acute to acuminate or attenuate, dorsal nearly horizontal. **Stamens** usually included in tube; anthers green or purplish; pollen cream-coloured to yellow. **Ovary** cylindrical; style arching over stamens, puberulous below. **Flowering time** Aug.–Feb. **Capsule** elongate-ellipsoid. In low or rocky grassland; Mesic Highveld Grassland, Sub-Escarpment Grassland, Upper Karoo, Indian Ocean Coastal Belt, Albany Thicket (Zastron E to Kokstad, southwards from Middelburg to Port St Johns, Fort Beaufort to Kentani and Grahamstown).

maculatus Sweet

Perennial herb, geophyte, 0.3–0.6 m high; corm globose, tunics papery; stem erect, lightly flexed above. **Leaves** 3 or 4, ± plane, 1.0–1.5 mm wide. **Bracts** green or greyish to dull purple on upper surface. **Inflorescence** a 1–3(–5)-flowered spike, usually flexed at base, inclined, flexuose; flowers dull yellow to lilac, densely to lightly speckled throughout with light to dark brown or purplish spots; perianth tube obliquely funnel-shaped, papillose below; tepals lanceolate-attenuate, margins undulate, dorsal slightly larger extending horizontally over stamens. **Stamens** exserted; anthers brown to cream-coloured; pollen yellow. **Ovary** oblong; style arching over stamens. **Flowering time** Mar.–June. **Capsule** ovoid-ellipsoid. On clay soils in renosterveld vegetation; Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown, Alexandria and Humansdorp districts).

meridionalis G.J.Lewis
Perennial herb, geophyte, 0.35–0.45 m high; corm globose, tunics papery to coriaceous; stem erect, slightly flexed above, simple. **Leaves** 3, ± plane. **Bracts** green or greyish to dull purple on upper surface. **Inflorescence** a 1- or 2(3)-flowered spike, inclined, flexuose; flowers pale to deep pink or cream-coloured, often with darker spots at base of lower tepals; perianth tube slender and cylindric below; tepals ovate, subequal, the dorsal extending ± horizontally over stamens. **Stamens** exserted; anthers light brown; pollen yellow. **Ovary** globose; style extending horizontally over stamens. **Flowering time** Apr.–June. **Capsule** ovoid-ellipsoid. In stony sandstone soils on mountain slopes; Albany Thicket (Port Elizabeth).

mutabilis G.J.Lewis
Perennial herb, geophyte, 0.25–0.50 m high; corm elongate-obconic, tunics of cartilaginous layers; stem erect, flexed outward above. **Leaves** 4, ± linear, imbricate, 1.0–1.3 mm wide. **Bracts** pale green, glaucous, the outer elongate and attenuate, apex and margins inrolled, slightly twisted. **Inflorescence** 2–5-flowered, inclined, lightly flexuose; flowers pale or dark blue, mauve or brownish to cream-coloured shaded with brown, lower 3 tepals yellow across the midline; perianth tube obliquely funnel-shaped; tepals unequal, the upper obovate, larger, the lower laterals oblanceolate, margins undulate to crisped, the dorsal arched to hooded over stamens. **Stamens** exserted; anthers lilac to cream-coloured; pollen pale yellow. **Ovary** ovoid; style arching over stamens. **Flowering time** May–Sept. **Capsule** ellipsoid. In sandstone-derived soils; Eastern Fynbos-Renosterveld (Assegaaibos E to Port Elizabeth, S to Humansdorp).

tristis L.
Perennial herb, geophyte, 0.45–1.50 m high; corm with firm papery to hard tunic layers; stem erect, flexed above. **Leaves** 3, terete, centric, imbricate below, 2–4 mm wide; midrib raised. **Bracts** pale to dark green, sometimes flushed greyish above. **Inflorescence** a 1–4-flowered spike, lightly inclined; flowers pale yellow to greenish yellow or cream-coloured; tepals darker on midlines or with purple to reddish median streaks, reverse usually dark grey-purple to reddish on midlines; perianth tube narrowly and obliquely funnel-shaped, papillose below; tepals lanceolate, unequal, dorsal largest, inclined to ± horizontal. **Stamens** included; anthers pale yellow to light purple; pollen pale yellow. **Ovary** oblong; style arching over stamens, scabridulous below. **Flowering time** Sept.–Jan. **Capsule** ± oblong-ellipsoid. In montane habitats; Eastern Fynbos-Renosterveld, Albany Thicket (Tsitsikamma to Port Elizabeth).

2b Leaves with both or either margins or midrib thickened or raised above or below plane of leaf blade

rogersii Baker
Perennial herb, geophyte, 0.3–1.0 m high; corm globose, tunics of soft-textured layers of fine fibres; stem erect below, flexed outward above, simple. **Leaves** 3 or 4(5), linear, rarely ensiform, ± terete, 1.5–4.0(–6.5) mm wide, margins and midrib thickened. **Bracts** green or lightly flushed with grey to purple above, margins transparent. **Inflorescence** a 1–3(–6)-flowered spike, inclined; flowers pale to dark blue or purple, darker on reverse of upper tepals, lower tepals slightly spotted with purple in lower half, inflated and campanulate; perianth tube obliquely funnel-shaped, lower half erect and cylindric, upper half flared; tepals unequal, upper obovate, lower spathulate, dorsal largest extending horizontally over stamens. **Stamens** exserted; anthers lying ± horizontally, blue;

pollen cream-coloured. **Ovary** oblong; style arching over stamens. **Flowering time** July–Dec. In rocky sites on S-facing slopes; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp District).

HESPERANTHA Ker Gawl.

Subfamily Crocoideae

Species ± 82 (incl. *Schizostylis*), SW Western Cape to Ethiopia, with major centres of diversity in the southwestern Cape, the western Karoo and the Drakensberg; 82 in sthn Afr. (43 in winter rainfall and 39 in summer rainfall area), LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Species of sthn Afr. winter rainfall area (Namaqualand to southern Cape as far as Grahamstown), H. helmei *occurs at high elevations at southern edge of interior escarpment)*

bachmannii Baker

Perennial herb, geophyte, 0.40–0.45 m high; corm globose, base oblique bearing several bulbils, tunics notched into segments; stem erect, 1- or 2-branched. **Leaves** 3 or 4, linear to slightly falcate, sheathing. **Bracts** herbaceous with hyaline margins, acute. **Inflorescence** a 2–6(–9)-flowered spike, slightly flexuose; flowers white to cream-coloured, facing downwards; perianth tube ± 10 mm long, recurved, shorter than bracts; tepals subequal, outspread when open, elliptic, 14–20 × 5–8 mm, obtuse. **Stamens** up to 14 mm long; anthers articulate, usually pendent. **Ovary** 3–4 mm long; style branches pendent, reaching to near apex of anthers. **Flowering time** July–Dec. **Capsule** ovoid, 6 mm long. On clay slopes and flats of grassland; Sub-Escarpment Grassland, Albany Thicket (Fort Beaufort S to Uitenhage, Port Elizabeth and Grahamstown districts).

falcata (L.f.) Ker Gawl.

Perennial herb, geophyte, 0.08–0.25 m high; corm ± symmetric, campanulate to triangular, base flat, tunics imbricate; stem erect, single or 3–5-branched. **Leaves** 3 or 4(5), falcate or erect and ensiform, obtuse, margins slightly thickened, hyaline. **Bracts** herbaceous, reddish, becoming dry at apices. **Inflorescence** a (1–)3–8-flowered spike; flowers salver-shaped, white, pale to deep yellow or cream-coloured, outer tepals flushed red, pink or brown on reverse; perianth tube cylindric, 4–9 mm long; tepals subequal, 12–18 × 5–7 mm, ovate to elliptic. **Stamens** up to 12 mm long. **Ovary** 2–3 mm long; style branches 6 mm long. **Flowering time** Aug., Sept. **Capsule** obovoid, 7–10 mm long. On various soils from heavy clay to coarse sand; Eastern Fynbos-Renosterveld (Willowmore to Uitenhage and Humansdorp).

helmei Goldblatt & J.C.Manning

Perennial herb, geophyte, 180–250 mm high; corm globose, ± 9 mm in diam., asymmetric with concentric tunics. **Leaves** 3, lower 2 terete and finely ribbed, blades 8–15 × 1.2 mm, uppermost leaf scale-like, sheathing lower $^{1}/_{2}$–$^{2}/_{3}$ of stem. **Inflorescence** a 1- or 2-flowered spike, bracts green; flowers relatively small, pale mauve; perianth tube 6–8 mm long, tepals narrow ± 8.0 × 2.5 mm. **Stamens** with filaments exserted ± 2 mm from tube; anthers ± 4 mm long. **Ovary** ovoid, ± 2 mm long; style dividing at mouth of perianth tube, branches ± 3.5 mm long. **Flowering time** Nov., Dec.? High elevations in regularly burned, rocky grassland, covered in snow during winter; Dry Highveld Grassland (Graaff-Reinet, Nardousberg).

This species is probably related to a small group of species allied to *H. pilosa* (L.f.) Ker Gawl, all native to winter rainfall area.

1b Species of tropical and eastern sthn Afr. (the summer rainfall part of the subcontinent with prolonged dry season in winter and spring months–extending from the EC to Cameroon)
2a Flowers white to cream-coloured, the outer tepals brown on outside; perianth tube curved just below apex and flowers nodding

bulbifera Baker

Perennial herb, geophytes, 200–300 mm high; corm globose, base oblique, with small downward projections, tunics woody, notched below into segments; stem simple or 1-branched, bearing bulbils in leaf axils. **Leaves** 3–5, linear to slightly falcate. **Bracts** herbaceous, margins hyaline, acute. **Inflorescence** a 2–6-flowered spike, slightly flexuose; perianth tube 9–15 mm long, recurving; tepals subequal, outspread when open, elliptic, obtuse. **Stamens**: filaments 6–7 mm long; anthers articulated, usually pendent. **Ovary** 3–4 mm long; style branches pendent. **Flowering time** May–Oct. **Capsule** ovoid. In moist, shady, montane habitats; Dry Highveld Grassland/Albany Thicket (Somerset East).

radiata (Jacq.) Ker Gawl.

Perennial herb, geophyte, 0.15–0.25 m high; corm symmetrical, ± campanulate, base oblique or flat, tunics imbricate, unbroken or notched below; stem erect, unbranched. **Leaves** 3 or 4, linear, erect, ± succulent, rarely falcate. **Bracts** imbricate in bud. **Inflorescence** a 6–15-flowered spike, straight, secund; flowers creamy white or greenish, usually with reddish brown to purple on reverse of outer tepals, recurved; perianth tube 10–18 mm long; tepals 7–15 mm long, slightly reflexed when fully open, ovate-lanceolate. **Stamens** up to 11 mm long; anthers usually pendent. **Ovary** 4–5 mm long. **Flowering time** Aug.–Dec. **Capsule** narrow, dehiscent in top $^1/_3$. In grasslands and forests; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Indigenous Forests, Eastern Fynbos-Renosterveld, Albany Thicket (Ben Macdhui to Kokstad S, from Middelburg to Gomo Forest, King William's Town, Steytlerville and Grahamstown).

2b Flowers variously pink to mauve, red or white to creamy yellow, sometimes outer tepals darker on outside; perianth tube mostly straight, weakly curved in some species, but flowers not nodding
3a Perianth tube (14–)18–60 mm long, sometimes curved near apex; seeds (where known) often with prominent wing or thread-like appendage at one or both ends

coccinea (Backh. & Harv.) Goldblatt & J.C.Manning.

Perennial herb, geophyte, 0.20–0.45 m high; rootstock rhizomatous; stem slender, terete. **Leaves** usually 2 or 3, in basal rosette, linear, erect, glabrous. **Bracts** green, herbaceous, lanceolate. **Inflorescence** a 6–8-flowered, lax spike, distichous; flowers deep crimson; perianth tube straight, erect; tepals as long as tube, oblong acute. **Stamens** with anthers ± 8 mm long, equaling filaments. **Flowering time** Dec.–Apr. **Capsule** sessile, obtuse. On streambanks and marshes; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna (Kokstad S to Engcobo, Katberg and King William's Town).

grandiflora G.J.Lewis

Perennial herb, geophyte, 0.15–0.35 m high; corm turbinate, tunics concentric, often truncate, lacerate; stem simple, erect, straight. **Leaves** 4, obtuse to subacute, lowermost basal, others inserted on stem. **Bracts** green, often reddish at apex. **Inflorescence** a 1–6-flowered spike, straight or slightly flexuose; perianth tube dilated in throat; tepals subequal, elliptic, obtuse to subacute, bright magenta-pink. **Stamens** exserted; filaments 8–14 mm long; anthers 8–13 mm long. **Flowering time** Feb.–Apr. **Capsule** oblong,

15 × 4–5 mm. In moist, shady grasslands; Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey S to Maclear District).

hutchingsiae Hilliard & B.L.Burtt

Perennial herb, geophyte, ± 0.3 m high; corm 8 × 8 mm, tunics not evident; stem simple, rigid, erect. **Leaves** 4, lower 3 basal, uppermost sheathing, unfolded, 10–22 × 1.5–2.0 mm, linear, acute, margins thickened; midrib prominent, veins smooth on both sides. **Bracts** green, tinged brownish, with red-purple. **Inflorescence** a spike; perianth 37 mm long, tube 21 × 0.5 mm, throat abruptly dilated; tepals subequal, 16 × 5.5 mm, elliptic, obtuse, rosy purple. **Stamens** exserted; filaments 5 mm long; anthers 7.5 mm long. **Flowering time** Mar.–? In moist habitats; Drakensberg Grassland, Sub-Escarpment Grassland (Naude's Neck District).

[E]huttonii (Baker) Hilliard & B.L.Burtt

Perennial herb, geophyte, 0.25–0.60 m high; corm turbinate, tunics concentric, base truncate, lacerate, cormlets often produced in axils of lower leaves; stem simple, weak. **Leaves** 5(6), slightly falcate, acute to subobtuse, lowermost basal, others inserted on stem, uppermost reduced to sheathing bracts. **Bracts** 20–40 mm long. **Inflorescence** a 2–7-flowered spike, ± straight; flowers bright pink; perianth tube dilated in throat; tepals subequal, elliptic, obtuse to subacute. **Stamens** exserted; filaments 6.0–7.5 mm long; anthers 7.5–10.0 mm long. **Flowering time** Jan.–June. **Capsule** 13–20 × 4–5 mm. In damp, partially shaded, rocky sites; Indian Ocean Coastal Belt, Drakensberg Grassland (Port St Johns to Katberg and Stutterheim districts).

longituba (Klatt) Baker

Perennial herb, geophyte, 0.10–0.22 m high; corm ovoid, tunics with imbricate layers; stem erect, simple or bearing bracts at base. **Leaves** 3 or 4, basal or uppermost inserted shortly above ground, sheathing, margins hyaline, slightly raised. **Bracts** 15–20 mm long, herbaceous, margins hyaline. **Inflorescence** a 2–6-flowered spike, flexuose; flowers white, often pink or brownish on reverse of tepals, salver-shaped; perianth tube 12–18 mm long, exserted, straight, cylindrical; tepals ovate. **Stamens** up to 20 mm long; filaments 5–8 mm long; anthers 8–12 mm long, articulated. **Ovary** 4–5 mm long; style branches up to 16 mm long. **Flowering time** Aug.–Oct. **Capsule** ovoid. In montane grassland; Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket, Drakensberg Grassland (Aliwal North S to Queenstown, from Graaff-Reinet to Somerset East and to Kubusie in Amabele District).

pulchra Baker

Perennial herb, geophyte, 0.4–0.8 m high; corm with concentric tunics; stem simple, erect, straight. **Leaves** 4, lowermost basal, uppermost inserted on stem, reduced to sheathing bracts. **Bracts** up to 36 mm long. **Inflorescence** a 5–11-flowered spike, straight or slightly flexuose; flowers bright pink, 28–52 mm long; perianth tube straight, dilated in throat, 14–25 mm long; tepals subequal, elliptic, obtuse or subacute. **Stamens** exserted; filaments 4–6 mm long; anthers 7–11 mm long. **Flowering time** Nov.–Apr. **Capsule** oblong. In moist grassy places; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (King William's Town to Kentani District).

schelpeana Hilliard & B.L.Burtt

Perennial herb, geophyte, up to 0.1 m high; corm turbinate; stem simple, erect. **Leaf** 1, hysteranthous, falcate, sheathing, midrib strongly raised, margins thickened. **Bracts** subequal, green, often suffused purple. **Inflorescence** 1-flowered; flower whitish or pale

pink inside; perianth tube funnel-shaped; tepals elliptic obtuse, the 3 outer feathered red outside. **Stamens** exserted; filaments 1.5–3.0 mm long. **Flowering time** Oct., Nov. **Capsule** 6–8 × 4–6 mm. In short wet turf or in grassy, stony places; Sub-Escarpment Grassland (Naude's Neck Pass S to Maclear District).

woodii Baker

Perennial herb, geophyte, 0.20–0.45 m high; corm conic, tunics woody; stem erect, simple. **Leaves** usually 4, ± linear, lower basal, upper sheathing, midrib prominently raised, margins slightly thickened. **Bracts** 22–30 mm long, green, becoming dry and brownish above. **Inflorescence** a 2–4-flowered spike; flowers bright mauve-pink, pale yellow in mouth of tube; perianth tube 22–38 mm long, cylindrical, slightly curving towards apex, with nectar at base; tepals weakly ascending, elliptic. **Stamens** ascending; filaments 6–8 mm long; anthers diverging, 9–10 mm long, tailed in lower 2 mm, yellow; pollen yellow. **Ovary** ellipsoid, 6–8 mm long; style branches longer than stamens, laxly spreading. **Flowering time** Feb., Mar. **Capsule** oblong. On stony slopes and rocks near stream and montane habitats; Sub-Escarpment Grassland (Matatiele District to Queenstown).

3b Perianth tube 3–15(–22) mm long, always straight; seeds (where known) globose or slightly angled, sometimes ridged on angles, but never winged

baurii Baker

Perennial herb, geophyte, 0.1–0.3 m; corm turbinate with concentric tunics; stem simple or rarely 1-branched, erect. **Leaves** 4, lower 2 basal, the other sheathing, straight or falcate, (sub)acute, margins thickened; midrib raised, secondary veins visible on both surfaces. **Bracts** green, often reddish at apex. **Inflorescence** a 5–15-flowered spike; flowers bright magenta-pink; perianth tube 6.0–12.5 mm long, dilated in throat; tepals subequal 12–16 × 4.5–5.0 mm, open in sunlight. **Stamens** exserted; filaments 3–4 mm long; anthers 6.0–8.5 mm long. **Flowering time** Dec.–Mar. **Capsule** oblong. On grassy slopes and along riverbanks; Sub-Escarpment Grassland (Matatiele S to Engcobo District).

candida Baker

Perennial herb, geophyte, 0.1–0.2 m high; corm globose with crustaceous tunics; stem simple or rarely 1-branched, terete, straight or curved. **Leaves** 3 or 4, linear, uppermost inserted on lower part of stem, sheathing, oblong, obtuse, slightly falcate, margins thickened, midribs prominent**. Bracts** green with reddish apex, with 7 principal veins. **Inflorescence** a 1–4(–6)-flowered, lax, erect spike; flowers pale pink or pale lilac to almost white inside, 3 outer tepals flushed brownish pink or greenish outside, veins reddish, open during the day; perianth tube cylindrical; tepals spreading, subequal, elliptic, obtuse. **Stamens** exserted; filaments (2–)3(–4) mm long; anthers 5–10 mm long. **Flowering time** Aug.–Nov. **Capsule** oblong. In moist montane grassland and in sandstone; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Naude's Neck to Kokstad, Maclear, Victoria East and Grahamstown).

hygrophila Hilliard & B.L.Burtt

Perennial herb, geophyte, 0.3–0.5 m; corm turbinate, tunics concentric; stem erect, simple or 1-branched. **Leaves** 4, lower 2 basal, the other inserted on lower part of stem, sheathing, developed leaves straight to slightly falcate, margins thickened; midrib raised but flattened, secondary veins clearly visible. **Inflorescence** a 3–6-flowered spike; flowers reddish; perianth tube 5–7 mm long, dilated in throat; tepals subequal, elliptic, subacute, snow-white or rarely cream-coloured, outer tepals flushed with pink or red out-

side, opening in sunlight. **Stamens** exserted; filaments 2–3 mm long. **Flowering time** Nov.–Feb. In grassy or rocky marshes; Sub-Escarpment Grassland (Maclear District).

ingeliensis Hilliard & B.L.Burtt

Perennial herb, geophyte, 0.12–0.18 m high; stem curved, simple. **Leaves** 3, lower 2 basal, sheathing, falcate, subacute, margins thickened, midrib prominent, veins visible below. **Bracts** 7 mm long, 7-nerved, green, apex becoming red, interior short. **Inflorescence** a 2-flowered spike; perianth 15–17 mm long; perianth tube 5 × 0.75 mm, throat dilated; tepals subequal, 10–12 × 4.0–5.5 mm, elliptic, obtuse; pale purple or rosy. **Stamens** exserted; filaments 2 mm long. **Flowering time** Jan.–Mar. On damp cliffs and flat rocky areas; Sub-Escarpment Grassland, Indigenous Forests (Ngeli Mtn SW to Mhlahlane Forestry Reserve).

lactea Baker

Perennial herb, geophyte, 0.45–0.50 m high; corm turbinate with concentric tunics; stem erect, simple or branched. **Leaves** 4, straight or slightly falcate, acute, margins thickened, midrib raised, lower 2 basal, uppermost sheathing. **Bracts** green, sometimes with red apex. **Inflorescence** a 4–14-flowered spike; flowers creamy yellow; perianth tube 21–27 mm long, dilated in throat; tepals 14–20 × 4–6 mm, elliptic, subacute, open in sunlight. **Stamens** exserted; filaments (3–)4 mm long. **Flowering time** Nov., Dec. **Capsule** oblong. Habitat?; Indian Ocean Coastal Belt (Port Edward District).

leucantha Baker

Perennial herb, geophyte, 0.1–0.2 m high; corm turbinate with dark brown concentric tunics; stem simple or 1-branched, erect or curved. **Leaves** 4 or 5, lower 2 or 3 basal, others inserted on stem, straight or slightly falcate, acute, margins thickened, midrib raised. **Bracts** 8–18 mm long, green, sometimes reddish at apex. **Inflorescence** a 1–6-flowered spike; flowers white, pale pink or pale lilac-mauve; outer tepals washed pale green outside, open during day. **Stamens** exserted; filaments 2.5–3.5 mm long; anthers 4–6(–7) mm long. **Flowering time** Mar.–? **Capsule** oblong. In moist soils; Drakensberg Grassland (Barkly East District).

longituba (Klatt) Baker. (see 3a above)

modesta Baker

Perennial herb, geophyte, 0.15–0.25 m high; corm conic, tunics woody. **Leaves** 3(4), linear, 2–3 mm wide, firm, erect, midribs and margins slightly raised; lower basal, the uppermost inserted at middle of stem, sheathing. **Bracts** 12–15 mm long, green, inner translucent with 2 green keels. **Inflorescence** a 2- or 3-flowered, lax spike; flowers bright mauve-pink, pale yellow in mouth of tube; perianth tube 6–9 mm long, cylindrical, expanded near mouth; tepals 10–15 × 3.5–5.0 mm, spreading, elliptic, acute. **Stamens** inserted just above mouth of tube; filaments erect, decurrent; anthers diverging, shortly tailed, yellow; pollen yellow. **Ovary** oblong; style branches reaching to anther apices, laxly spreading in an open flower. **Flowering time** Aug.–Oct. In marshy grassland, vlei edges and streambanks; Indian Ocean Coastal Belt (Port St Johns District).

IXIA L.

Subfamily Crocoideae

Species ± 78, mainly in the winter rainfall region of sthn Afr., NC, WC, EC.

flexuosa L.

Perennial herb, geophyte, 0.3–0.6 m high; corm ovoid or subglobose, tunics of fine fibres, confluent and reticulate above; stem wiry, often simple. **Leaves** 3–5, linear

to ensiform, usually spirally twisted, 50–350 × 2–5 mm, (sub)erect, midrib slightly prominent. **Bracts** ovate, shortly tricuspidate or tridentate, pellucid, usually pinkish with dark veins. **Inflorescence** a short, compact, subcapitate spike, 4–12-flowered; rachis ± flexuose; flowers pink, mauve or white with darker streaks; perianth tube filiform, 4–6 mm long; tepals spreading, oblong, obtuse, connate, subequal. **Stamens** exserted, tapering above; anthers linear-oblong. **Ovary** rotund; style usually reaching middle of filaments; branches oblanceolate or linear and slightly expanded towards apex, conduplicate. **Flowering time** Aug., Sept. In clay flats and mountain slopes; Albany Thicket (Hankey to Uitenhage).

orientalis L.Bolus

Perennial herb, geophyte, 0.2–0.6 m high; corm ovoid or subglobose, tunics of reticulate fibres; stem slender, simple or with 1–3 erect, filiform branches. **Leaves** 4 or 5, linear 15–50 × 1.5–6.0 mm, suberect or erect, midrib prominent. **Bracts** oblong or ovate, sometimes shortly tridentate, pellucid, or pinkish mauve. **Inflorescence** a 5–10-flowered, lax spike; rachis ± flexuose; flowers cream-coloured to mauve pink; perianth tube 7–10 mm long, funnel-shaped; tepals oblong, obtuse, (sub)equal. **Stamens** exserted; filaments decurrent, 3.5–6.0 mm long; anthers 4–5 mm long, linear-oblong. **Ovary** oblong; style reaching above middle of filaments; branches linear, conduplicate, ciliate towards apex. **Flowering time** Aug.–Dec. In sandy flats, hills and slopes; Drakensberg Grassland, Rainshadow Valley Karoo, Albany Thicket, Eastern Fynbos-Renosterveld [Amatole Mts (below Gaika's Kop) and Stutterheim SW, from Willowmore E to Port Elizabeth, Grahamstown and Southwell in Bathurst District, and to Plettenberg Bay and Humansdorp].

LAPEIROUSIA Pourr.

Subfamily Crocoideae

Species 42, widespread across sub-Saharan Africa from Nigeria and Ethiopia to WC, most diverse in Namaqualand and western Karoo (NC) in semi-arid habitats; 35 in sthn Afr., N, B, LIM, NW, G, M, FS, NC, WC, EC.

plicata (Jacq.) Diels

Perennial herb, geophyte, 0.03–0.05 m high; corm campanulate, tunics brown, with thickened, crenate margins. **Leaves** linear to ensiform, 2–6 mm wide, ribbed. **Bracts** green, usually undulate or crisped, inner shorter and notched apically. **Inflorescence** a paniculate spike; flowers basally tufted, pale blue to whitish, actinomorphic; tube slender, cylindrical, 12–25(–35) mm long; tepals subequal, spreading, lanceolate, 6–10 mm long. **Stamens** exserted; anthers lanceolate, sagittate at base; pollen monosulcate, operculate. **Ovary** with filiform style. **Flowering time** July–Sept. **Capsule** ± globose. In dry shale flats, succulent karoo or renosterveld; Upper Karoo (Middelburg SE to Cradock).

MELASPHAERULA Ker Gawl.

Subfamily Crocoideae

Monotypic, widespread in winter rainfall region, N, NC, WC, EC.

ramosa (L.) N.E.Br.

Perennial herb, geophyte, 0.40–0.85 m high; corm bell-shaped, tunics woody brown; stem slender. **Leaves** several, linear-lanceolate, in a distichous fan, with a definite midrib. **Bracts** green, submembranous, notched apically. **Inflorescence** a lax, compound

spike, with flexuose, slender rachis; flowers cream-coloured to pale yellow with dark median streaks, zygomorphic; perianth tube ± 1 mm long; tepals bilabiate, lanceolate-attenuate, dorsal largest. **Stamens** unilateral, arcuate, exserted. **Ovary** triquetrous; style exserted, short, filiform. **Flowering time** Aug., Sept. **Capsule** coriaceous, depressed triquetrous, winged. In stony slopes; Rainshadow Valley Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Steytlerville to Uitenhage and Humansdorp).

MICRANTHUS (Pers.) Eckl.

Subfamily Crocoideae

Species ± 3, sthn Afr., mostly in sandstone soils and often in damp sites, unusual in blooming in late spring or early summer, N, NC, WC, EC.

alopecuroides (L.) Rothm.

Perennial herb, geophyte, 0.18–0.40 m high; corm globose, tunics densely fibrous, reticulate; stem usually simple. **Leaves** ensiform, acute, ribbed, with distinct midvein, 5–12 mm wide. **Bracts** brown with broad membranous margins, dry, rigid, imbricate. **Inflorescence** a dense, distichous spike; flowers usually pale to deep blue; perianth tube as long as tepals; tepals unequal; style branches reaching to top of filaments. **Stamens** unilateral and arcuate. **Ovary** with filiform style. **Flowering time** Dec., Jan. Grassland in sand; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp).

junceus (Baker) N.E.Br.

Perennial herb, geophyte, 0.25–0.50 m high; corm globose, tunics densely fibrous; stem aerial, rarely branched. **Leaves** terete, slender, hollow, mostly 3–6 mm in diam. **Bracts** dry, rigid, brown with broad membranous margins, imbricate. **Inflorescence** a dense, distichous spike; flowers usually dark blue, occasionally white; tepals unequal. **Stamens** unilateral and arcuate. **Ovary** with filiform style. **Flowering time** Nov.–Jan. In sandstone soils and damp sites; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage to Humansdorp).

MORAEA Mill.

Subfamily Iridoideae

Species ± 200 (incl. *Barnardiella*, *Galaxia*, *Gynandriris*, *Hexaglottis*, *Homeria*, *Roggeveldia*), throughout sub-Saharan Africa, with 2 in Mediterranean and Middle East, concentrated in WC; ± 180 in sthn Afr., widespread in a variety of open habitats, never in forests.

Key to Groups

According to Goldblatt, Manning and Snijman (2002).

1a Flowers with perianth tube; style lobed apically, lobes entire or fringed ..... Group 1: **Galaxia**
1b Flowers usually without a perianth tube; style dividing below or opposite anthers, branches filiform or flattened, appressed to anthers, terminating in paired erect crest 2
2a Style branches filiform, simple or each divided to base, thus with 6 branches extending between stamens ..... Group 2: **Hexaglottis**
2b Style branches flattened tangentially, as wide or much wider than anthers, ascending to upright and opposite anthers, sometimes concealed by them 3
3a Ovary ± sessile, extended distally in an elongate tubular sterile beak ..... Group 3: **Gynandriris**
3b Ovary borne on long pedicels or occasionally subsessile with tepals united in tube, without an elongate sterile beak 4
4a Flowers with prominent style branches wider than anthers and terminating in paired erect crests; outer tepals mostly larger than inner and often with long ascending claws ..... Group 4: **Moraea**

4b Flowers with style branches as wide or narrower than anthers, often hidden by them, with short bilobed apex, opposite stigmatic lobe(s); outer tepals only slightly larger than inner, with long or short claws. ..... Group 5: **Homeria** (p. 1867)

Group 1: *Galaxia*

fugacissima (L.f.) Goldblatt

Perennial herb, geophyte, 0.03–0.06 m high; solitary or forming thick clumps; corm with brown, fibrous tunics. **Leaves** 30–80 mm long, linear, grass-like, bifacial, canaliculate ± erect, spreading or falcate, unifacial distally, margins with hyaline borders, smooth or minutely ciliate. **Inflorescence** with pale yellow flowers in basal tufts; perianth tube 10–24 mm long; tepals 15–19 × 4–9 mm, subequal, ovate, obtuse. **Stamens**: filaments usually entirely united, 3–6 mm long; anthers 1.5–4.0 mm long, diverging. **Ovary** with style usually exceeding anthers; stigma fringed. **Flowering time** July–Sept. In moist sandy and clay flats; Eastern Fynbos-Renosterveld (Humansdorp District).

Group 2: *Hexaglottis*

lewisiae (Goldblatt) Goldblatt

Perennial herb, geophyte, 0.2–0.9 m high; corm symmetric, tunics brown, fibrous; stem usually with 1–3 branches near base. **Leaves** 1–3(4), ascending, linear, canaliculate, margins sometimes inrolled or rarely undulate. **Spathe** herbaceous, dry above, attenuate. **Inflorescence** a spike; flowers golden-yellow, stellate, nectar guides deeper yellow, surrounded by dark greenish spots; tepals free, 19–30 × 7–13 mm, limbs horizontal, outer ovate, inner ± cuneate. **Stamens**: 4–6 mm long; filaments united for 1.0–1.5 mm; anthers 5–7 mm long. **Ovary** exserted at flowering time; style ± 2 mm long, style branches spreading, 6–7 mm long. **Flowering time** Sept.–Nov. **Capsule** narrowly cylindric. Dry sandstone and clay slopes; Eastern Fynbos-Renosterveld (Humansdorp).

longifolia (Jacq.) Pers.

Perennial herb, geophyte, 0.6–1.5 m high; corm with tunics of fine light brown fibres; stem straight, simple or 1–3-branched. **Leaves** 3–5, linear, ascending, flat or canaliculate, bending or trailing above. **Spathes** cylindric, herbaceous, apex attenuate, dry. **Inflorescence** a spike; flowers pale yellow, stellate; tepals free, subequal, spreading, with claws ± 2 mm long. **Stamens** 4–6 mm long; filaments united for 2–3 mm; anthers 5–6 mm long. **Ovary** with long filiform beak, 8–12 mm long, exserted; style branches 4–6 mm long, ascending, reaching base of anthers. **Flowering time** Oct., Nov. **Capsule** obovoid-clavate, truncate. Along streams, marshes and damp sites; Eastern Fynbos-Renosterveld (Swartberg E to Essenbos).

virgata Jacq.

Perennial herb, geophyte, 0.20–0.85 m high; corm with tunics of coarse, dark brown to blackish fibres; stem with one main axis or with 1–3 diverging, secondary branches, straight or slightly flexuose. **Leaves** (1)2 or 3(4), linear, ascending, trailing distally, canaliculate, margins curving inwards. **Spathe** usually herbaceous, attenuate. **Inflorescence** a spike; flowers stellate, pale yellow; nectar guides deep yellow; perianth tube cylindric, narrow, slightly curved outward; tepals spreading, 14–32 mm long; outer lanceolate to ovate; inner lanceolate to cuneate. **Stamens**: filaments 3.3–6.0 mm long, united for 1–2 mm; anthers 6–9 mm long. **Ovary** sessile, cylindric; style with 6 filiform arms extending between filaments. **Flowering time** Sept.–Jan. **Capsule** narrowly ellipsoid. In shale and granite soils; Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp).

Group 3: *Gynandriris*

australis (Goldblatt) Goldblatt

Perennial herb, geophyte, 0.08–0.25 m high; corm with soft, pale tunics; stem usually branching, elongate or barely produced above ground with branches clustered near base. **Leaf** 1, linear, canaliculate, trailing above. **Spathes** dry-membranous, outer slightly shorter. **Inflorescence** with pale to deep blue flowers; nectar guides cream-coloured; tepals lanceolate, outer 23–28 mm long, spreading horizontally or ± reflexed, inner 18–22 mm long, suberect. **Stamens**: filaments united for 1 mm, 5.0–5.5 mm long; anthers ± 5 mm long. **Ovary** with tubular beak; style branches 8–9 mm long. **Flowering time** Sept.–Nov. In coastal sand dunes; Eastern Fynbos-Renosterveld (Humansdorp to Jeffreys Bay).

setifolia (L.f.) Druce

Perennial herb, geophyte, 0.05–0.20 m high; corm with pale tunics; stem usually branched, very short or elongate. **Leaves** 1 or 2, linear, canaliculate, 2–3 mm wide. **Spathes** usually dry, outer slightly shorter. **Inflorescence** with small flowers enclosed by translucent spathes; flowers pale mauve, occasionally white; nectar guides orange and white; tepals reflexed, outer 12–18 mm long, inner 12–16 mm long. **Stamens**: filaments united in lower $^1/_3$–$^1/_2$, 3.5–6.0 mm long; anthers 2.5–4.0 mm long. **Ovary** with long tubular beak; style branches 4–7 mm long. **Flowering time** Sept.–Nov. In sandy flats and slopes; Albany Thicket (Grahamstown).

simulans Baker

Perennial herb, geophyte, 0.10–0.25 m high; corm with pale to dark tunics of ± entire layers or coarse fibres, often bearing a cormlet in leaf axil; stem either contracted, sometimes with many basal branches or extended with short, ± sessile, aerial branches. **Leaves** 1 or 2, linear, canaliculate, ribbed, 2–4 mm wide. **Spathes** usually dry, occasionally herbaceous at base and dry towards apex, cylindric. **Inflorescence** with pale blue-lilac flowers with darker speckles over outer tepals; nectar guides yellow; tepals spreading to reflexed, outer 17–28 mm long, inner 15–19 mm long. **Stamens**: filaments united only near base, 5–6 mm long. **Ovary** cylindrical, with long beak; style branches 8–12 mm long. **Flowering time** Aug., Sept. **Capsule** oblong. In xeric grass-bushland; Dry Highveld Grassland, Upper Karoo (Aliwal North SW to Middelburg).

Group 4: *Moraea*

(modified from Goldblatt 1986a)

1a Winter rainfall species
2a Plants 3–several-branched; stem conspicuously sticky

inconspicua Goldblatt

Perennial herb, geophyte, 0.20–0.45 m high; corm tunics dark brown, sticky; stem branched, viscous below node. **Leaves** usually 2, straight or tightly coiled distally, flat or canaliculate, bent or trailing. **Spathes** herbaceous, subequal, becoming dry and nerved with age, apex acute to obtuse, brown, rarely lacerate. **Inflorescence** with inconspicuous, yellow, cream-coloured to dark brown flowers; tepals reflexed, lanceolate, outer 13–18 mm long, inner 12–17 mm long. **Stamens**: filaments 5–6 mm long, contiguous below, diverging near apex; anthers 3–7 mm long; pollen yellow or orange. **Ovary** ± 3 mm long, narrowly conic, exserted from spathes; style branches 3–5 mm long. **Flowering time** Sept.–Dec. **Capsule** ovate to globose. In dry exposed habitats; Albany Thicket (Port Elizabeth).

2b Plants either branched or simple; stems rarely sticky and if so simple
3a Stems entirely underground or barely emergent at anthesis; capsules usually borne near ground level within spathes

ciliata (L.f.) Ker Gawl. subsp. **ciliata**

Perennial herb, geophyte, 0.05–0.20 m high, dwarfed in dry habitats. **Leaves** 3 or 4, axillary cormlets usually present, erect, ± 300 × 3–8 mm, ± falcate, canaliculate above, pubescent, margins ciliate, undulate or crisped. **Inner spathe** glabrous or variously hairy 35–55(75) mm long. **Inflorescence** solitary. **Flowers** in shades of blue, less often white or pinkish; tepals 24–34 mm long, outer tepal claws often dark blue to purple, limbs with small yellow nectar guides at bases outlined dark blue. **Stamens** with filaments 5–10 mm long, united for 1.5–2.0 mm; anthers 5–8 mm long. **Ovary** spindle-shaped, 11–14 mm long; style branches 9–16 mm long, crests 9–15 mm long. **Flowering time** July–Sept. **Capsules** 12–20 mm long. **Seeds** ± globose, 2.0–2.5 mm diam. Extended from sthn Afr. winter rainfall zone to summer rainfall region of northern EC, in grassland; Mesic Highveld Grassland, Upper Karoo (Templevale Farm near Lady Grey, Sneeuberge near Graaff-Reinet).

Basic chromosome number for subsp. *ciliata* is x = 10.

falcifolia Klatt

Perennial herb, geophyte, 0.05–0.10 m high; corm tunics of dark fibres; stem subterranean. **Leaves** forming rosette, slender, canaliculate, lanceolate, falcate, margins undulate or crisped. **Spathes** herbaceous, margins membranous, apex monofacial, leaf-like. **Inflorescence** with white to cream-coloured flowers; nectar guides yellow, outlined in purple; tepals unequal, with spreading limbs, outer 15–22 mm long, inner 13–20 mm long. **Stamens**: filaments up to 6 mm long, united in lower half; anthers 3–4 mm long; pollen white. **Ovary** 4–5 mm long; style branches up to 8 mm long; crests 5–8 mm long. **Flowering time** Apr.–Sept. **Capsule** globose to obovoid. On dry open stony or clay flats; Eastern Fynbos-Renosterveld (WC Border: Langkloof).

3b Stems produced above ground; capsules borne well above ground, usually exserted, sometimes included in spathes

algoensis Goldblatt

Perennial herb, geophyte, 0.2–0.4 m high; corm tunics brown, coarse, fibrous; stem usually with secund branches. **Leaf** 1, linear, canaliculate. **Spathes** herbaceous, apex brownish, attenuate. **Inflorescence** with purple flowers; nectar guides cream-coloured to yellow; tepals unequal, outer 27–30 mm long, reflexed, inner 6–10 mm long, entire, with expanded limb, erect, lanceolate to rhomboid. **Stamens**: filaments 3.5–7.0 mm long, united below; anthers 4–7 mm long, appressed to style branches; pollen yellow. **Ovary** ± 5 mm long; style branches 5–8 mm long; crests linear, up to 8 mm long. **Flowering time** July–Nov. **Capsule** ellipsoid to obovoid. In clay flats of renosterveld or dry fynbos; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore SE to Port Elizabeth and Humansdorp).

bellendenii (Sweet) N.E.Br.

Perennial herb, geophyte, 0.5–1.0 m high; corm with light-brown tunics of netted fibres; stem several-branched. **Leaf** 1, linear, canaliculate, trailing above. **Inflorescence** with yellow flowers; outer tepals darkly speckled in centre; tepals unequal, outer 22–33 mm long, spreading, margins curving upwards, inner tepals 8–10 mm long, tricuspidate, with short, obliquely twisted, central cusp. **Stamens**: filaments 3–5 mm long, free for upper 1 mm; anthers 4–5 mm long, appressed to style branches; pollen yellow. **Ovary** 8–10 mm

long; style branches 6 mm long; crests 3–5 mm long, narrowly triangular. **Flowering time** Sept.–Nov. **Capsule** narrowly obovoid. In sandy slopes and flats; Eastern Fynbos-Renosterveld (WC Border: Keurbooms River on road to Plettenberg Bay).

bipartita L.Bolus

Perennial herb, geophyte, 0.1–0.3 m high; corm tunics of dark brown to black fibres; stem erect, flexuose, several-branched. **Leaves** 2–4, canaliculate, linear. **Spathes** herbaceous, apex dark brown, attenuate. **Inflorescence** with blue or violet flowers; nectar guides yellow; tepals lanceolate, with reflexed claws, outer 16–23 mm long. **Stamens**: filaments united in lower half, 4–6 mm long; anthers ± 5 mm long, appressed to style branches; pollen whitish. **Ovary** globose, 4–5 mm long; style branches ± 5 mm long; crests erect, prominent. **Flowering time** June–Oct. **Capsule** oblong to broadly obovate. In dry and fynbos habitats; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore SE to Port Elizabeth and Humansdorp).

crispa Thunb.

Perennial herb, geophyte, 0.08–0.20 m high; corm tunics of blackish, wiry fibres. **Leaf** 1, basal, canaliculate, trailing, terete and filiform, linear, undulate or twisted, margins rarely crisped. **Spathes** ± dry, attenuate. **Inflorescence** with blue-mauve flowers; nectar guides yellow to orange; tepals spreading, claws erect, outer 12–21 mm long, inner 11–18 mm long. **Stamens**: filaments 5–8 mm long, united below in smooth cylindric column; anthers 3–5 mm long, diverging, exceeding style branches, arched after anthesis, apex curved inward. **Ovary** 3–6 mm long, globose; style branches 2–3 mm long, diverging, appressed to anthers, bilobed, crests lacking. **Flowering time** Oct.–Dec. **Capsule** globose-oblong. In stony clay or sandy montane flats; Upper Karoo, Rainshadow Valley Karoo (Middelburg S to Swartberg and Steytlerville).

elliotii Baker

Perennial herb, geophyte, 0.12–0.55 m high; corm tunics of dark brown, wiry fibres; stem usually simple, erect. **Leaf** 1, linear, canaliculate to terete, margins slightly rolled. **Spathes** herbaceous, attenuate, margins and apex brown, membranous to dry. **Inflorescence** with blue-violet flowers; nectar guides yellow; tepals unequal, spreading, outer 19–30 mm long, inner 15–24 mm long, entire, with expanded limb, linear-lanceolate. **Stamens**: filaments 3.5–4.0 mm long, united in lower half; anthers 5–6 mm long, appressed to style branches; pollen yellow. **Ovary** 6–8 mm long; style branches 8–10 mm long; crests 5–10 mm long, erect. **Flowering time** Sept.–Mar. **Capsule** ± obovoid. In moist montane grasslands and marshes; Sub-Escarpment Grassland, Albany Thicket, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Kokstad SW to Queenstown, Somerset East, Komga and Humansdorp).

gawleri Spreng.

Perennial herb, geophyte, 0.15–0.45 m high; corm tunics light brown, fibres coarse, vertically ridged; stem with 3–5 branches or rarely simple. **Leaves** (1)2 or 3, linear, erect or spreading, trailing, margins plane, undulate or crisped. **Spathes** herbaceous, acute, apex dry, attenuate. **Inflorescence** with yellow, cream-coloured, brick-red or bicoloured flowers; tepals unequal, reflexed, outer 18–25 mm long. **Stamens**: filaments 4–6 mm long, united up to lower half; anthers 2–3 mm long; pollen yellow. **Ovary** 2–3 mm long, ovoid; style branches 5–8 mm long. **Flowering time** Sept.–Nov. **Capsule** globose to broadly obovoid. In clay or sandy flats and slopes; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore E to Steytlerville, SE to Humansdorp).

polyanthos L.f.
Perennial herb, geophyte, 0.10–0.45 m high; corm tunics black, coarsely reticulate; stem erect, often several-branched. **Leaves** 2 or 3, linear, canaliculate. **Spathes** herbaceous, apex becoming dry. **Inflorescence** with blue or white flowers; nectar guides yellow; tepals subequal, spreading, claws form narrow cup, outer 23–40 mm long, inner 18–35 mm long. **Stamens**: filaments united in slender, minutely papillate column; anthers 5–7 mm long, diverging; pollen yellow. **Ovary** 5–7 mm long; style branches diverging, 4–5 mm long, apically forked, crests lacking. **Flowering time** Aug.–Nov. **Capsule** obovoid. In karroid habitats and dry rocky or shale flats; Sub-Escarpment Grassland, Lower Karoo, Rainshadow Valley Karoo, Albany Thicket [Queenstown District (Malabar) SW to Rietbron, Willowmore and Port Elizabeth].

polystachya (Thunb.) Ker Gawl.
Perennial herb, geophyte, 0.5–0.8 m high; corm tunics of dark brown, coarse fibres; stem erect, usually several-branched. **Leaves** 3–5, canaliculate, ± falcate or trailing above. **Spathes** 50–70 mm long, green, becoming dry above, attenuate. **Inflorescence** with violet to blue flowers; nectar guides yellow; tepals unequal, claws spreading, outer 36–55 mm long, reflexed, inner usually erect. **Stamens**: filaments united for lower $^{2}/_{3}$, ± 10 mm long; anthers 8–10 mm long; pollen yellow. **Ovary** 6–10 mm long, cylindric to narrowly obovoid, with reddish veins; style branches ± 10 mm long, diverging; crests ± 20 mm long. **Flowering time** Jan.–Sept. **Capsule** ovoid, erect. In dry stony or shale flats; Sub-Escarpment Grassland, Upper Karoo, Lower Karoo, Rainshadow Valley Karoo, Albany Thicket (Queenstown SW to Graaff-Reinet, Willowmore and Peddie).

ramosissima (L.f.) Druce
Perennial herb, geophyte, 0.5–1.2 m high; roots spiny; corm surrounded by small cormlets at base; stem bearing cormlets in lower axils, terete or grooved above, several-branched. **Leaves** several, in a 2-ranked fan, linear, canaliculate. **Spathes** herbaceous, apex dry, attenuate. **Inflorescence** with bright yellow flowers; nectar guides dark yellow; tepals unequal, reflexed, outer 30–50 mm long, inner 35 mm long. **Stamens**: filaments usually free, 10–15 mm long; anthers ± 10 mm long. **Ovary** 3–5 mm long, obovoid-truncate; style branches 20–25 mm long; crests well developed. **Flowering time** July–Dec. **Capsule** ± globose, truncate. In wet montane habitats and along streams; Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown, Humansdorp).

spathulata (L.f.) Klatt
Perennial herb, geophyte, 0.35–1.50 m high, solitary or in clumps; corm tunics of brown, coarse fibres; stem simple, sheathed with large overlapping bracts. **Leaf** 1, linear, flat or canaliculate, trailing above. **Spathes** herbaceous, apex dry, attenuate. **Inflorescence** with yellow flowers; nectar guides dark yellow; tepals unequal, outer 35–50 mm long, reflexed, inner 30–40 mm long, entire, with expanded limb, erect. **Stamens**: filaments 8–12 mm long, united in lower half; anthers 8–12 mm long. **Ovary** 20–30 mm long; style branches 12–18 mm long; crests up to 10 mm long. **Flowering time** Apr.–Dec. **Capsule** cylindric. In montane areas and along coast; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Upper Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck to Matatiele and Kokstad S, from Queenstown to Port Edward, Graaff-Reinet to Kentani, Willowmore to Grahamstown and to Humansdorp).

speciosa (L.Bolus) Goldblatt

Perennial herb, geophyte, 0.40–0.75 m high; corm with dark brown, fibrous tunics. **Leaves** several, canaliculate, sometimes twisted towards apex. **Spathes** herbaceous, sometimes becoming membranous above. **Inflorescence** with pale blue-mauve, ± pendent flowers; nectar guides yellow; tepals subequal, outer 35–45 mm long. **Stamens**: filaments 10–13 mm long, puberulous below, united in slender cylindrical column; anthers 12–17 mm long, erect, contiguous, appressed to style; pollen yellow. **Ovary** 8–12 mm long; style divided ± above at apex of anthers, crests lacking. **Flowering time** May–Sept. **Capsule** oblong, nodding to pendent, sometimes sparsely papillate. On exposed flats; Albany Thicket (Port Elizabeth).

unguiculata Ker Gawl.

Perennial herb, geophyte, 0.2–0.4 m high; corm tunics of brown netted fibres; stem simple or few-branched. **Leaf** 1, linear, canaliculate, usually trailing above. **Spathes** herbaceous, partly dry, attenuate. **Inflorescence** with white to cream-coloured, brownish, rarely violet flowers; nectar guides white to cream-coloured or yellow; tepals unequal, inner 12–22 mm long, lanceolate, reflexed, villous, inner 7–12 mm long, erect, tricuspidate. **Stamens**: filaments 4–6 mm long, free only near apex; anthers 3–4 mm long, apiculate, appressed to style branches; pollen usually yellow. **Ovary** 6–8 mm long, nearly cylindric; style branches ± 5 mm long; crests erect, 2.5–4.0 mm long. **Flowering time** Sept.–Jan. **Capsule** obovoid. In variety of soil types, from sandy soils to dry shales; Sub-Escarpment Grassland, Albany Thicket (Queenstown S to Uitenhage).

1b Summer rainfall species
4a Plants acaulescent; leaves several and hardly distinct from inflorescence spathes

ciliata (L.f.) Ker Gawl. subsp. **ciliata** (see 3a above)

falcifolia Klatt. (see 3a above)

4b Plants with produced aerial stem; leaves solitary, or if more than one, then distinct from inflorescence spathes
5a Flowers large, with outer tepals at least 35 mm long and inner tepals entire, with expanded blade

alticola Goldblatt

Perennial herb, geophyte, 0.3–0.9 m high, in large clumps; corm tunics of coarse fibres; stem erect, usually simple. **Leaf** 1, basal, broad and flat, becoming canaliculate above. **Spathes** herbaceous, apex becoming brownish dry. **Inflorescence** with yellow flowers; nectar guides dark yellow; tepals ± lanceolate, outer up to 88 mm long, inner up to 70 mm long, erect. **Stamens**: filaments up to 20 mm long, united in lower half; anthers ± 15 mm long. **Ovary** 20–30 mm long; style branches up to 20 mm long; crests ± 15 mm long. **Flowering time** Nov.–Feb. **Capsule** cylindric. In montane grassveld and along streams; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East S to Maclear District).

[E]graminicola Oberm. subsp. **notata** Goldblatt

Perennial herb, geophyte 0.45–1.00 m high, solitary; corm with brown reticulate tunics; stem erect, usually simple. **Leaf** 1, basal, linear, erect, canaliculate. **Spathes** herbaceous, apex usually brown. **Inflorescence** with pale yellow to grey flowers veined with mauve; tepals lanceolate to ovate, outer 60–75 mm long, claw suberect, inner 40–50 mm long. **Stamens**: filaments 8–12 mm long, united in lower half; anthers ± 13 mm long. **Ovary** ± 20 mm long; style branches up to 20 mm long; crests 10–15 mm long, flushed

with mauve. **Flowering time** Oct.–Jan. **Capsule** cylindric. In open grassland along coast; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Lusikisiki S to Port St Johns, Kei River Mouth and East London).

huttonii (Baker) Oberm.

Perennial herb, geophyte, 0.45–1.00 m high, in clumps; corm tunics membranous, covered by cataphylls; stem erect, usually simple. **Leaf** 1, linear, ± flat or canaliculate. **Spathes** herbaceous, apex dry. **Inflorescence** with yellow flowers; nectar guides deep yellow; style crests with brown to purple blotch; tepals (ob)lanceolate, outer up to 55 mm long, spreading, inner 45 mm long, erect. **Stamens**: filaments up to 13 mm long, united in lower half; anthers 7–9 mm long; pollen yellow. **Ovary** up to 15 mm long, cylindric; style branches ± 15 mm long; crests 10–13 mm long. **Flowering time** Sept.–Dec. On edges of mountain streams and rivers; Sub-Escarpment Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt (Kokstad SW to Maclear, Amatole Mts and Kentani).

moggii N.E.Br.

Perennial herb, geophyte, 0.6–1.0 m high, solitary; corm tunics unbroken, coriaceous; stem erect, simple. **Leaf** 1, linear, canaliculate below, often flat above. **Spathes** herbaceous, inner longer. **Inflorescence** with yellow, cream-coloured or white flowers; nectar guides bright yellow, edged with purple veins; tepals lanceolate, outer 40–75 mm long, obtuse, reflexed, inner up to 60 mm long, with tapering base, obtuse to retuse. **Stamens**: filaments ± 10 mm long, united for ± half their length; anthers ± 10 mm long. **Ovary** 20–30 mm long, linear; style branches up to 20 mm long; crests 10–20 mm long. **Flowering time** Dec.–May. **Capsule** cylindric. In open grassland; Drakensberg Grassland (Lady Frere).

muddii N.E.Br.

Perennial herb, geophyte, 0.30–0.55 m high, solitary; corm tunics of pale, straw-coloured fibres; stem erect, simple. **Leaf** 1, linear, canaliculate. **Spathes** herbaceous, apex dry or brown. **Inflorescence** with cream-coloured to yellow flowers; nectar guides deep yellow; tepals lanceolate, outer 35–50 mm long, slightly reflexed, inner up to 35 mm long, erect. **Stamens**: filaments up to 10 mm long, united in lower $^{2}/_{3}$; anthers up to 9 mm long. **Ovary** oblong, ± 15 mm long; style branches up to 13 mm long. **Flowering time** Sept.–Dec. **Capsule** cylindric. In open grassland; Drakensberg Grassland (Amatole Mts).

polystachya (Thunb.) Ker Gawl. (see 3b above)

[E]reticulata Goldblatt

Perennial herb, geophyte, 0.7–0.9 m high, solitary or rarely in small clumps; corm with unbroken, pale, coriaceous tunics; stem erect, simple. **Leaf** 1, canaliculate, conduplicate when dry. **Spathes** herbaceous. **Inflorescence** with bright yellow flowers; nectar guides orange; outer tepals up to 70 mm long, reflexed; inner tepals 50–60 mm long, erect. **Stamens**: filaments up to 13 mm long, united in lower half; anthers up to 15 mm long, linear; pollen white. **Ovary** linear, 20–30 mm long; style branches ± 20 mm long; crests short. **Flowering time** Oct.–May. On steep grassy slopes; Drakensberg Grassland (Amatole Mts E to Stutterheim).

robusta (Goldblatt) Goldblatt

Perennial herb, geophyte, 0.4–0.6 m high; corm tunics of densely-matted, blackish fibres; stem simple. **Leaf** 1, canaliculate to terete, margins tightly inrolled, apex usually

dry. **Spathes** herbaceous. **Inflorescence** with pale yellow to whitish flowers; tepals spreading ± horizontally, with weakly ascending claws, outer 55–65 mm long, inner 55–57 mm long. **Stamens**: filaments 10–11 mm long, united in lower half; anthers ± 10 mm long; pollen pale yellow. **Ovary** up to 15 mm long at anthesis; style branches up to 15 mm long; crests ± 15 mm long. **Flowering time** Oct., Nov. In montane grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad District).

spathulata (L.f.) Klatt. (see 3b above)

5b Flowers smaller, with outer tepals < 35 mm long and inner tepals either entire or tricuspidate, linear or lacking
6a Inner tepals entire with expanded lamina, usually 1.5 mm wide

algoensis Goldblatt. (see 3b above)

bipartita L.Bolus. (see 3b above)

crispa Thunb. (see 3b above)

elliotii Baker. (see 3b above)

inclinata Goldblatt

Perennial herb, geophyte, 0.4–0.9 m high; corm tunics of brown fibres; stem terete, glabrous or rarely woolly, flexed. **Leaf** 1, inserted just below inflorescence, canaliculate, or nearly terete with margins inrolled. **Spathes** green to light brown below, margins and apex dry and brown. **Inflorescence** with blue-violet flowers; nectar guides yellow; tepals spreading, reflexed, outer 25–30 mm long, inner 20–25 mm long. **Stamens**: filaments ± 5 mm long, united in lower $^1/_3$; anthers 7 mm long. **Ovary** narrowly obovoid, 4–5 mm long; style branches ± 6 mm long; crests ± 5 mm long. **Flowering time** Nov.–Mar. **Capsule** rotund. In moist grassy slopes and sedges; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Kokstad SW to Maclear, Engcobo Mtn and S to Port Edward).

natalensis Baker

Perennial herb, geophyte, 0.15–0.45 high; corm tunics of dark brown to black fibres; stem erect or inclined, flexuously branched. **Leaf** 1, sometimes inconspicuous, inserted just below inflorescence. **Spathes** herbaceous, lacerated, apex and margins dry. **Inflorescence** with lilac to blue-violet flowers; nectar guides yellow, ringed with dark mauve; tepals reflexed, outer 14–20 mm long, claw ascending, inner up to 15 mm long, linear-lanceolate. **Stamens**: filaments 4–5 mm long, united in lower 2–3 mm; anthers 4–5 mm long; pollen yellow. **Ovary** ± 4 mm long; style branches up to 11 mm long, including crests. **Flowering time** Oct.–Feb. **Capsule** ± obovoid. In wet habitats along rocky streambanks, in seeps and vleis; Drakensberg Grassland (Maclear District).

stricta Baker

Perennial herb, geophyte, 0.15–0.25 m high; corm with dark brown tunics of medium to coarse fibres; stem erect, usually with 3–6 branches held close to main stem. **Leaf** 1, usually absent at flowering time, terete. **Spathes** dry, papery, rarely green near base, lacerated. **Inflorescence** with pale lilac to blue-violet flowers; nectar guides spotted yellow-orange; tepals lanceolate, outer 19–24 mm long, reflexed, claw ascending, inner 15–18 mm long, erect or ascending. **Stamens**: filaments 3–4 mm long, united in lower $^1/_3$; anthers 5–6 mm long; pollen orange. **Ovary** nearly cylindric, 5–6 mm long; style branches 7–8 mm long, diverging; crests narrow. **Flowering time** Sept.–Nov. **Capsule** obovoid. In open stony grassland; Sub-Escarpment Grassland, Drakensberg Grassland (Kokstad SW to Maclear, Pondoland and Stutterheim).

6b Inner tepals tricuspidate or linear to ciliate, with no expanded limb

albicuspa Goldblatt

Perennial herb, geophyte, 0.3–0.5 m high; corm tunics of brown fibres; stem erect, simple or with 1 or 2 branches. **Leaf** 1, linear, canaliculate, usually dry and broken distally. **Spathes** herbaceous, apex dry, brown. **Inflorescence** with white to cream-coloured flowers; nectar guides yellow, with dark spots at edges; tepals unequal, outer 30–35 mm long, spreading horizontally, claw strongly ascending, inner 5–7 mm long, cusp-like, sometimes 3-lobed apically, acute. **Stamens**: filaments 7–8 mm long, united in cylindric column, free apically for ± 0.5 mm; anthers 5–6 mm long; pollen white. **Ovary** ± cylindric, ± 10 mm long; style branches up to 7 mm long; crests slender, up to 8 mm long. **Flowering time** Dec.–Mar. In moist montane grassland; Sub-Escarpment Grassland, Drakensberg Grassland (Matatiele S to Maclear and Mthatha).

brevistyla (Goldblatt) Goldblatt

Perennial herb, geophyte, 0.45–0.80 m high; corm tunics of dark brown, fine, reticulate fibres; stem usually with several secund branches. **Leaf** 1, linear, canaliculate. **Spathes** herbaceous, apex dry, brown. **Inflorescence** with white flowers; outer tepals flushed pale blue-lilac, grey to purple on reverse; inner tepals, claws and nectar guides yellow, with brown spots; tepals unequal, outer ± 20 mm long, lanceolate, spreading to slightly reflexed, claw bearded on inner surface, ± pubescent on reverse, inner tepals 8–10 mm long, tricuspidate, erect, obtuse, central cusp linear, acute, curving inwards. **Stamens**: filaments 6–7 mm long, free 1 mm above; anthers 4–5 mm long. **Ovary** ± cylindric, 5–6 mm long; style branches ± 4 mm long; crests linear, 2–3 mm long. **Flowering time** Nov.–Feb. **Capsule** obovoid. In grassland, near streams and seeps; Sub-Escarpment Grassland (Kokstad District).

modesta Killick

Perennial herb, geophyte, 0.16–0.45 m high; corm tunics of fine, brownish, reticulate fibres; stem slender, erect, usually simple. **Leaf** 1, dry or lacking at flowering time, terete. **Spathes** green, apex brown, attenuate. **Inflorescence** with white to pale blue-mauve flowers; outer tepals flushed purple on reverse; inner tepals and crests usually dark purple; nectar guides yellow, edged with bluish spots; tepals unequal, outer 20–27 mm long, claw erect, inner 2–6 mm long, linear or trifid with central cusp larger. **Stamens**: filaments 4–6 mm long, united to half length; anthers 4.0–5.5 mm long; pollen pale yellow. **Ovary** 7–10 mm long, cylindric; style branches 7–10 mm long; crests 4–6 mm long, linear. **Flowering time** Sept.–Nov. **Capsule** obovoid. Montane grassland; Sub-Escarpment Grassland (Kokstad SW to Maclear).

tricuspidata (L.f.) G.J.Lewis subsp. **cormifera** (Goldblatt) Goldblatt & J.C.Manning

Perennial herb, geophyte, 0.25–0.35 m high; stem 1- or 2-branched at the 2 or 3 aerial nodes with 1–3 branches at each node, bearing a single large cormlet in axil of foliage leaf. **Spathes**: inner 30–60 mm long, outer ± half as long. **Inflorescence** with white to creamy white flowers, outer tepal limb bases and claws speckled brown to gold-coloured; outer tepals 23–30 mm long, limbs orbicular, 13–15 × 13–15 mm; inner tepals 11–15 mm long, 3-lobed, central lobe subulate, incurved or spirally coiled. **Stamens**: filaments 4–6mm long, united to base of anthers; anthers ± 5 mm long. **Ovary** 8–12 mm long; style branches 4–6 mm long, crests 5–6 mm long. **Flowering time** late Sept. and Oct. **Capsules** 12–13 mm long. Mainly along coast, sandy loam in grassland; Eastern

Fynbos-Renosterveld, Albany Thicket (from Willowmore District E to Kareedouw, Humansdorp, Cape St Francis, Jeffreys Bay, Port Elizabeth and Grahamstown).
Populations of subsp. *cormifera* are tetraploid, 2n=24, whereas subsp. *tricuspidata* on the Cape Peninsula is diploid, 2n = 12.

trifida R.C.Foster
Perennial herb, geophyte, 0.35–0.75 m high; corm tunics of straw-coloured fibres; stem erect, usually simple. **Leaf** 1, erect, canaliculate. **Spathes** herbaceous, apex brown. **Inflorescence** with creamy yellow flowers marked brown to green; tepals unequal, outer 15–20 mm long, spreading, inner ± 15 mm long, erect, trifid with short outer lobes and long inner. **Stamens**: filaments 8–9 mm long, free in upper 1.5 mm; anthers ± 4 mm long, extending beyond stigma in old flowers. **Ovary** 7–10 mm long, ± cylindric; style branches ± 4 mm long; crests slender, up to 4 mm long. **Flowering time** Nov.–Mar. **Capsule** barrel-shaped. In montane grassland; Drakensberg Grassland (between Lady Grey and Maclear).

Group 5: *Homeria*

[E]britteniae (L.Bolus) Goldblatt
Perennial herb, geophyte, 0.20–0.45 m high; corm tunics of wiry, black fibres; stem erect, straight, branched. **Leaf** 1, erect or trailing. **Spathes** 60–80 mm long, green, attenuate. **Inflorescence** with pale yellow to cream-coloured flowers; nectar guides deep yellow with green spots in centre; tepals subequal, outspread, slightly twisted, outer 26–35 mm long, narrowly obovate or pandurate, wider in upper $^1/_3$, with erect claw, inner 21–35 mm long. **Stamens**: filaments 7–8 mm long, united in smooth cylindric column; anthers 6–7 mm long. **Ovary** 18–24 mm long; style branching at apex of filament column, branches curved upwards; stigma bilobed. **Flowering time** Sept., Oct. On sandy slopes; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket, Sub-Escarpment Savanna (Willowmore E to Uitenhage, Port Elizabeth, Grahamstown and Port Alfred).

bulbillifera (G.J.Lewis) Goldblatt
Perennial herb, geophyte, 0.3–0.5 m high; corm with tunics of wiry black fibres; stem erect or ± trailing, usually branched. **Leaf** 1, linear, canaliculate, trailing. **Spathes** 40–80 mm long, attenuate. **Inflorescence** with yellow to salmon flowers; nectar guides dark yellow with green spots; tepals subequal, 23–28 mm long, spreading, obovate. **Stamens**: filaments 6–8 mm long, united in slender, cylindric, papillate or smooth column; anthers diverging, 4–6 mm long. **Ovary** 7–12 mm long; style dividing at apex of filament column, branches diverging; stigma upright. **Flowering time** Aug.–Oct. In clay soils or sand; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Langkloof to Willowmore and Alexandria, and to Humansdorp and Jeffreys Bay).

cookii (L.Bolus) Goldblatt
Perennial herb, geophyte, 0.3–0.6 m high; corm tunics of wiry black fibres; stem erect, branched. **Leaf** 1, sheathing, falcate to trailing above, canaliculate. **Spathes** 50–90 mm long, glaucous, attenuate. **Inflorescence** with yellow flowers marked with dark yellow to green spots in centre; tepals subequal, erect at base, outspread above, often twisted, outer 30–43 mm long, triangular, oblong to slightly obovate, inner 30–35 mm long. **Stamens**: filaments 6–10 mm long, united in thick, cylindric, smooth or papillate-pubescent column; anthers 6–10 mm long. **Ovary** 10–15 mm long; style branching at apex

of filament column, branches curving upwards; stigma bilobed. **Flowering time** Aug., Sept. On rocky sandstone slopes; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket, Indigenous Forests (Queenstown SW to Willowmore and Longmore Forest).

miniata Andrews

Perennial herb, geophyte, 0.15–0.60 m; corm tunics black, reticulate; stem straight or slightly flexed above bracts, with short upright branches. **Leaves** 2 or 3, linear, canaliculate. **Spathes** (30–)40–60 mm, glaucous, attenuate, with brown apex. **Inflorescence** with pink, yellow or white flowers; nectar guides triangular, yellow with green dots; tepals 2 mm long, appressed to filament column; outer 13–22 mm long, ovoid-ellipsoid, with narrow, 2 mm long claw; inner ellipsoid-ovoid. **Stamens**: filaments united in bulbous, pubescent column; anthers 2 mm long, contiguous. **Ovary** 5–10 mm long; style dividing above anther base, branches forked; stigma lobed. **Flowering time** July–Oct. In clay soils of west coast; Rainshadow Valley Karoo/Eastern Fynbos-Renosterveld (Willowmore).

pallida (Baker) Goldblatt

Perennial herb, geophyte, 0.10–0.25 m high; corm tunics black, reticulate; stem erect, sometimes weakly flexed above node. **Leaf** 1, basal, sheathing, falcate or erect, trailing, canaliculate. **Spathes** 35–60 mm long. **Inflorescence** with yellow or pink flowers marked dark yellow in centre; nectar guides speckled green; tepals erect below, spreading above; outer tepals 18–24 mm long, ± oblong, with 3 mm long claw; inner tepals smaller, narrowly obovate. **Stamens**: filaments partly united, diverging; anthers straight, 4–6 mm long, exceeding stigma. **Ovary** 10 mm long; style branching at apex of filament column; style branches diverging; stigma bilobed. **Flowering time** Aug.–Nov. In arid habitats; Upper Karoo (Aliwal North SE to Middelburg).

ROMULEA Maratti

Subfamily Crocoideae

Romulea; *knikkertjie*, *froetang* (A)

Species 95, Africa, Mediterranean, Canary Islands and Socotra; 76 in sthn Afr., M, FS, KZN, L, NC, WC, EC.

Key to subgenera and sections adapted from Manning and Goldblatt (2001).

1a Corms either obliquely or vertically flattened towards base with crescent- or fan-shaped basal ridge or bell-shaped with circular basal ridge, ridge fringed or split into fibrils or slender teeth; stems short or well-developed (subgenus Romulea)
2a Basal fibres aggregated into distinct rounded clusters, fibrils in each cluster converging and pointed; roots emerging from clusters (section Romulea*)*

[E]**autumnalis** L.Bolus

Perennial herb, geophyte, 0.15–0.35 m high; corm obliquely flattened, with brown tunics; stem subterranean. **Leaves** 3–6, basal, filiform, narrowly 4-grooved, 1–2 mm in diam. **Bracts** greenish, ± triangular, acuminate, margins membranous. **Flowers** pink to white; cup yellow to orange; perianth tube 5–7 mm long, funnel-shaped; tepals obovate to elliptic, 18–30 mm long, acute to obtuse. **Stamens** inserted, erect; filaments 4–10 mm long, pilose in lower half, orange-yellow; anthers 6–8 mm long, golden-yellow. **Flowering time** Apr.–Oct. **Capsule** on erect peduncles. On moist grassy slopes and flats; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Victoria East S, from Port Elizabeth to Grahamstown).

camerooniana Baker
Perennial herb, geophyte, 0.10–0.25 m high; corm obliquely pointed with narrow basal ridge; stem subterranean. **Leaves** 1–6, basal, filiform, narrowly 4-grooved. **Bracts** greenish, margins colourless, membranous. **Flowers** magenta or pink to white; cups yellow; tepals 12–25 mm long, elliptic. **Stamens** inserted; filaments 4–7 mm long; anthers 3–7 mm long. **Flowering time** Jan.–May. **Capsule** on erect peduncles. In rocky or grassy highlands; Drakensberg Grassland, Sub-Escarpment Grassland (Matatiele to Barkly East).

gigantea Bég.
Perennial herb, geophyte, 0.1–0.2 m high; corm obliquely flattened, tunics brown; stem above ground, usually ribbed. **Leaves** 4–6, lower 2 basal, narrowly 4-grooved, 1–3 mm in diam. **Bracts** green, ± triangular, acute, margins membranous. **Flowers** white, lilac or blue; cups greenish yellow; perianth tube 2–3 mm long, funnel-shaped; tepals 10–15 mm long, elliptic. **Stamens** erect; filaments 3–7 mm long; anthers 3–4 mm long, pale yellow. **Style** 8–9 mm long; stigma ligulate, canaliculate above. **Flowering time** Sept., Oct. **Capsule** shortly cylindrical. In moist habitats; Albany Thicket (Port Alfred to Kowie).

minutiflora Klatt.
Perennial herb, geophyte, 0.06–0.20 m; corm obliquely flattened with spathulate basal ridge; stem hidden by leaf bases. **Leaves** several, basal, narrowly 4-grooved, filiform. **Bracts** submembranous, or greenish above, ± ovate, margins often brown-speckled, membranous. **Flowers** 1–4, pale mauve with yellowish cup; perianth tube 1.5–3.5 mm long; tepals 4–9 mm long, elliptical, obtuse. **Stamens** erect; filaments 2–4 mm long, glabrescent; anthers 1.5–2.0 mm long, pale yellow. **Style** 4–6 mm long; stigma 1 mm long. **Flowering time** July–Sept. **Capsule** ellipsoid. On variety of soil types; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore to Uitenhage and Grahamstown).

pratensis M.P.de Vos
Perennial herb, geophyte, 0.01–0.25 m high; corm with sharply bent fibrils; stem subterranean. **Leaves** 5–8, basal, narrowly 4-grooved, 1–2 mm in diam. **Bracts** usually submembranous in lower half, margins membranous. **Flowers** white, lilac or rose, with greenish yellow cup; perianth tube 2.0–3.5 mm long; tepals elliptic, 8–15 mm long. **Stamens**: filaments 3–4 mm long; anthers 3–4 mm long. **Style** 6–8 mm long; stigma reaching to anther apex. **Flowering time** Aug., Sept. **Capsule** on erect peduncles which straighten later. In grassland; Albany Thicket (Port Elizabeth to Grahamstown).

setifolia N.E.Br.
Perennial herb, geophyte, 0.05–0.25 mm high; corm with crescent-shaped basal ridge of fibril clusters, tunics minutely pitted, brown; stem hidden by leaf bases. **Leaves** 3–6, mostly basal, narrowly 4-grooved, filiform. **Bracts** green, ovate; outer with membranous margins; inner with white or rarely brown-edged margins. **Flowers** 1–4, yellow or apricot-yellow, sometimes throat with dark blotches; perianth tube 3–7 mm long, funnel-shaped; tepals 8–35 × 2.5–10.0 mm, elliptic. **Stamens** erect, yellow or orange; filaments 4–8 mm long, pilose at base; anthers 2–7 mm long. **Style** 8–14 mm long; stigma 1–3 mm long. **Flowering time** July–Sept. **Capsule** ellipsoid, on (sub)erect peduncles. In sandy flats; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp).

2b Basal fibres not aggregated into clusters of converging fibrils, sometimes basal ridge more deeply incised between groups of parallel fibres but roots emerging along basal ridge, fibrils ± blunt
3a Corms with moderate-sized to small oblique basal ridge up to half as wide as corm, tunics split into fine fibrils (section Aggregata*)*

dichotoma (Thunb.) Baker

Perennial herb, geophyte, 0.10–0.35 m high; stem erect, usually dichotomously branched above. **Leaves** 2 or 3, basal 1, narrowly 4-grooved, sometimes minutely hairy. **Bracts** green, narrowly triangular, margins membranous. **Flowers** 1–4, pink; cup yellowish; perianth tube 3–5 mm long, funnel-shaped, minutely pilose at base; tepals 16–32 mm long, elliptic or obovate, subobtuse to acute. **Stamens** erect; filaments 4–8 mm long, golden-yellow, ± pilose in lower half; anthers 4–7 mm long, yellow with dark longitudinal lines. **Style** 10–15 mm long; stigma ± 1 mm long. **Flowering time** Sept.–Dec. **Capsule** cylindrical. In sandy flats and slopes; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore to Humansdorp).

fibrosa M.P.de Vos

Perennial herb, geophyte, 0.10–0.35 m high; stem erect, terete. **Leaves** 2–6, basal 2, filiform, narrowly 4-grooved, sometimes ciliate. **Bracts** submembranous or greenish in centre, margins rusty red or membranous. **Flowers** usually 1–3, magenta to pink, marked purple around yellow cup; perianth tube 4–7 mm long, funnel-shaped; tepals 16–25 mm long, oblanceolate. **Stamens** erect or slightly incurved on apex; filaments 5–8 mm long, orange- or green-yellow, slightly pilose or glabrous in lower half; anthers 4–6 mm long, pale yellow or violet. **Style** 10–12 mm long; stigma ± 1 mm long. **Flowering time** Oct.–Dec. **Capsule** ellipsoid. In high elevations on sandstone-derived soils; Eastern Fynbos-Renosterveld, Albany Thicket (Baviaanskloof to Uitenhage).

[E]longipes Schltr.

Perennial herb, geophyte, 0.02–0.50 m high; stem erect, rigid. **Leaves** 3–5, basal 2, narrowly 4-grooved, filiform, suberect or bent, glabrous or ciliate. **Bracts** green or reddish, submembranous in lower half. **Flowers** usually 2–4, cream-coloured to apricot; cup yellow; perianth tube 3–5 mm long, funnel-shaped; tepals 15–30 × 6–8 mm, narrowly elliptic. **Stamens** erect; filaments 3–8 mm long, pilose near base, orange-yellow; anthers 5–7 mm long, yellow or violet. **Style** 8–14 mm long; stigma 1 mm long, reaching anther apex. **Flowering time** Aug.–Nov. **Capsule** ellipsoid, on straight or slightly patent peduncles. In sandy flats; Eastern Fynbos-Renosterveld, Albany Thicket, Indigenous Forests (Longmore Forest Reserve to Grahamstown and East London).

3b Corms with prominent basal ridge, more than half as wide as corm, tunics split into fine fibrils (section Ciliatae*)*

macowanii Baker

Perennial herb, geophyte, 0.05–0.40 m high; corm with crescent-shaped basal ridge; stem hidden by leaf bases. **Leaves** 3–6, basal, filiform, 4-grooved, curved or suberect. **Bracts** green, submembranous below, narrowly triangular, acute to acuminate. **Flowers** 1–3, golden-yellow; cups and lower half of tepals orange; perianth tube cylindric below, funnel-shaped; tepals 15–45 mm long, elliptic, acute to obtuse. **Stamens** erect, yellow; filaments 5–10 mm long; anthers 5–12 mm long. **Style** 25–70 mm long. **Flowering time** Jan.–Sept. **Capsule** ellipsoid. On montane grassland and stony plateaus; Sub-Escarpment Grassland, Drakensberg Grassland, Albany Thicket (Matatiele SW to Queenstown, Amatole Mts and Grahamstown).

1b Corms rounded or pointed at base, tunics splitting into coarse, bent or straight teeth without fibrous apex; stems short and subterranean (subgenus Spalanthus, *section* Spalanthus*)*

atrandra G.J.Lewis

Perennial herb, geophyte, 0.1–0.4 m high; corm obovoid, with curved acuminate teeth; stem subterranean. **Leaves** 4–10, basal, narrow or swollen, widely 4-grooved, occasionally minutely hairy. **Bracts** green, ovate, concave, margins membranous. **Flowers** 1–5, magenta to pale pink or white; perianth tube 4–8 mm long, funnel-shaped; tepals 18–35 mm long, obovate. **Stamens** erect; filaments 4–8 mm long, pilose below; anthers 5–10 mm long, black, violet or yellow; pollen golden-yellow. **Style** 6–10 mm long; stigma 2–3 m long. **Flowering time** Apr.–Oct. **Capsule** cylindrical or ellipsoid. On montane clay soils; Upper Karoo, Drakensberg Grassland, Albany Thicket (Cradock to Amatole Mts and S to Port Elizabeth).

rosea (L.) Eckl.

Perennial herb, geophyte, 0.1–0.4 m high; corm subglobose, with curved acuminate teeth; stem subterranean. **Leaves** 3–6, usually basal, narrowly 4-grooved. **Bracts** greenish or purplish, margins hardly visible, membranous. **Flowers** several, pink to magenta or white, often with a purplish zone around yellow cup; perianth tube 2–8 mm long, funnel-shaped; tepals oblanceolate, 10–38 mm long, (sub)acute. **Stamens** erect; filaments 4–6 mm long, slightly pilose below; anthers 3–10 mm long, pale to golden-yellow. **Style** 7–18 mm long. **Flowering time** Apr.–Aug. In moist habitats; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp).

SYRINGODEA Hook.f.

Subfamily Crocoideae

Species 7, sthn Afr., mostly southern and western Karoo, mainly in clay soils in karroid scrub, M, FS, NC, WC, EC.

bifucata M.P.de Vos

Perennial herb, geophyte, 0.08–0.15 m high; corm asymmetric, with very small ridge on pointed base. **Leaves** several, filiform with adaxial groove, 60–200 × 0.5–1.5 mm, finely ciliate. **Bracts** 20–45 mm long, membranous, reaching ± middle of perianth tube. **Flowers** 1–4, 65–100 mm long, pale to bright violet, sometimes white; throats orange; perianth tube 45–70 mm long, widened at top for 3 mm; tepals 18–28 × 7–10 mm, obovate to oblanceolate, often concave, obtuse. **Filaments** 5–8 mm long, yellow; anthers 5–8 mm long. **Style** 50–75 mm long, pale yellow; stigma 4–5 mm long, linear. **Flowering time** Sept.–June. **Capsule** clavate. **Seeds** brown with coarse reticulate-foveate testa. Vleis, grassland on hill summits, shallow soil on dolerite; Upper Karoo, Sub-Escarpment Grassland, Albany Thicket (Middelburg SE to King William's Town and to Grahamstown).

concolor (Baker) M.P.de Vos

Perennial herb, geophyte, 0.10–0.25 m high; corm slightly asymmetric, almost turbinate or obovoid, with ± pointed base, tunics smooth, brown, with fine parallel fibrils on basal ridge; stem short. **Leaves** 4 or more, filiform, 100–250 × 0.5–1.5 mm. **Bracts** 25–35 mm long, membranous, acuminate, upper half or medial green. **Flowers** 1–4, pale violet, bluish violet, lilac, or rarely white; perianth tube 40–80 mm long; tepals oblanceolate to elliptical, often slightly concave, subacute to obtuse. **Filaments** 5–8 mm long, equalling anthers. **Style** 50–85 mm long; stigma slightly spathulate or lacerate at apex. **Flowering time** Jan.–May. **Seeds** black with fine reticulate-foveate testa. In hill-

sides and open rocky places; Upper Karoo, Sub-Escarpment Savanna, Albany Thicket (Middelburg SE to Cradock and Victoria East).

[E]**flanaganii** Baker

Perennial herb, geophyte, 0.03–0.08 m; corm slightly asymmetric, obovate, tunics smooth, brown; stem very short. **Leaves** 6–9, conduplicate, 30–100 × 0.5–1.0 mm. **Bracts** 12–25 mm long, usually membranous with brown stripes. **Flower** 1, violet with yellow throat, 30–50 mm long; perianth tube 25–45 mm long; tepals oblanceolate, 5–8 × 2 mm long. **Style** as long as perianth tube; stigma 1 mm long, spathulate. **Flowering time** Apr.–June. **Capsule** 7–8 mm long, brown-speckled. In stony ground at sea level; Albany Thicket, Eastern Fynbos-Renosterveld (Komga SW to Port Elizabeth).

[E]**pulchella** Hook.f.

Perennial herb, geophyte, 0.80–0.12 m high; corm with small pointed basal ridge. **Leaves** 3–6, filiform, with adaxial groove, 100–125 × 0.5–1.5 mm, with wide membranous sheath. **Bracts** reaching ± half of perianth tube. **Flowers** 1–4, 70–120 mm long, lilac, sometimes with diffuse bluish blotch at base of each tepal; perianth tube 60–100 × 3 mm long, gradually widening above; tepals narrowly oblanceolate or elliptic-cuneate, 12–22 × 5–7 mm, emarginate or bilobed at top. **Filaments** 3–4 mm long, white; anthers 5–9 mm long. **Style** 65–120 mm long, white; stigma 4 mm long, with spathulate apex. **Flowering time** Mar., Apr. **Capsule** clavate. In flat stony soil; Upper Karoo, Dry Highveld Grassland, Albany Thicket (Middelburg, Graaff-Reinet and Somerset East).

TRITONIA Ker Gawl.

Subfamily Crocoideae

Species ± 30, mostly in the winter rainfall region but extending from the WC and Namaqualand to Tanzania; 27 in sthn Afr., B, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Flowers almost regular (rarely completely regular: T. dubia*) with spreading perianth segments; stamens randomly curved (rarely erect), with anthers not contiguous and not all facing anterior side of flower (section* Tritonia*)*

crocata (L.) Ker Gawl

Perennial herb, geophyte, 0.25–0.50 m high; corm depressed-globose, tunics of fine fibres. **Leaves** ensiform, ± falcate, 4–10 mm wide. **Bracts** usually dry and brownish, acute; inner usually bidentate. **Inflorescence** an inclined secund spike; flowers orange to pinkish red, ± actinomorphic, rotate; perianth tube 10–15 mm long, funnel-shaped, with no prominent veins; tepals 20–25 mm long, subspathulate, with ± transparent margins. **Stamens** and style randomly twisted, spreading. **Flowering time** Sept.–Nov. On stony clay slopes in renosterveld; Eastern Fynbos-Renosterveld (Humansdorp District).

[E]**dubia** Eckl. ex Klatt

Perennial herb, geophyte, 0.12–0.25 m high; corm globose, tunics of fine, netted fibres; stem simple or 1- or 2-branched. **Leaves** lanceolate-ensiform, falcate, 3–8 mm wide. **Bracts** dry, papery, attenuate. **Inflorescence** a dense spiral spike; flowers actinomorphic, pink to orange with dark veins, ± salver-shaped; perianth tube 6–10 mm long; tepals 12–20 mm long, spreading, oblong. **Stamens** erect, regularly placed; filaments 3–5 mm long; anthers pale yellow, curved with age. **Style** erect, 7–8 mm long, central. **Flowering time** Sept.–Nov. **Capsule** elongate, ellipsoid. On clay or granite soils in renosterveld; Eastern Fynbos-Renosterveld, Albany Thicket (Uitenhage to Port Elizabeth).

1b Flowers zygomorphic with posticous perianth segment usually widest; stamens curved towards posticous segment with anthers contiguous, facing anterior side of flower (section Montbretia*)*
2a Perianth tube ± equal to segments
3a Median anticous perianth segment sometimes with low ridge-like callus in throat

disticha (Klatt) Baker

Perennial herb, geophyte, 0.25–0.80 m high; corm depressed-globose to ovoid, tunics of elongated reticulate fibres; stem simple or 1–3-branched, sometimes slightly flexuose. **Leaves** linear to linear-lanceolate, (sub)erect, acute to acuminate, with strong midline vein, turning darker when dry. **Bracts** membranous, golden-brown, margins papery; outer tridentate; inner bidentate. **Inflorescence** with red, pink or orange-red, zygomorphic flowers; perianth tube funnel-shaped; tepals elliptical, obtuse, spreading, subequal in length, lower with yellow blotch in throat. **Stamens** curved; filaments 7–12 mm long; anthers curved, pink or yellow. **Flowering time** Aug.–Apr. **Capsule** subglobose or obovoid. In montane and forest grasslands; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket, Drakensberg Grassland (Insizwa to Port St Johns and Mkambati Waterfall S, from Graaff-Reinet to Amatole Mts, King William's Town and Kentani, and to Bathurst District, Southwell).

lineata(Salisb.) Ker Gawl.

Perennial herb, geophyte, 0.15–0.60 m high; corm globose, tunics of finely netted fibres; stem simple or 1-branched. **Leaves** ensiform to lanceolate, erect to spreading, with prominent vein near each margin, 5–10 mm wide. **Bracts** membranous, brown above. **Inflorescence** a secund, lax spike; cream-coloured or yellow, with dark veins, slightly zygomorphic; perianth tube 10–15 mm long, funnel-shaped; tepals 15–20 mm long, subequal, obovate-lanceolate, dorsal erect, lower with thickened median ridge. **Stamens** curved; filaments 7–12 mm long; anthers unilateral, pale or dark striped; pollen cream-coloured. **Style** curved. **Flowering time** Aug.–Nov. In grassland; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Kokstad S to Queenstown, Ntsubane Forest and Komga, from Jeffreys Bay to Grahamstown and East London).

Two varieties are known in the EC:

lineata(Salisb.) Ker Gawl. var. **lineata**

[E]**lineata** (Salisb.) Ker Gawl. var. **parvifolia** M.P.de Vos

3b Median and lateral, anticous perianth segments with high axe- or tooth-like callus
4a Plants distributed from southern to southeastern Cape and Langkloof

laxifolia Benth. ex Baker

Perennial herb, geophyte, 0.2–0.4 m high; corm subglobose, tunics of fine reticulate fibres, ± parallel towards base; stem (sub)erect, simple or rarely 1- or 2-branched. **Leaves** ensiform, acute, usually, suberect, 5–10 mm wide. **Bracts** membranous, reddish brown, margins papery. **Inflorescence** a spike; flowers reddish to orange, bilabiate; throat with slender dark lines inside; perianth tube 12–16 mm long, tubular in lower half; tepals unequal in width, 12–15 mm long, dorsal erect and largest, lower with yellow, median, tooth-like callus. **Stamens** curved; filaments 12–15 mm long; anthers 4–6 mm long, contiguous, mauve or purple; pollen yellow. **Style** 18–22 mm long. **Flowering time** Mar.–July. **Capsule** ellipsoid, ± trigonous. On grassy slopes; Sub-Escarpment Grassland, Upper Karoo, Drakensberg Grassland, Albany Thicket (Queenstown S, from Graaff-Reinet to Stutterheim and Steytlerville to Alexandria).

parvula N.E.Br

Perennial herb, geophyte, 0.15–0.25 m high; corm ovoid, tunics of coarse, reticulate fibres; stem flexuose, usually simple. **Leaves** linear, 1–4 mm wide, acuminate, suberect. **Bracts** membranous, straw-coloured with brown veins, outer minutely tridentate, inner bidentate. **Inflorescence** a spike; flowers bilabiate, reddish to orange; throat yellow; perianth tube 6–12 mm long, tubular in lower half; tepals 9–12 mm long, oblanceolate, obtuse, dorsal concave, hooded; lower with yellow, tooth-like callus. **Stamens** curved; filaments 6–10 mm long; anthers 4–5 mm long, curved, often violet. **Style** 10–20 mm long. **Flowering time** Sept., Oct. **Capsule** ellipsoid. On stony sandstone soil; Eastern Fynbos-Renosterveld (Langkloof to Willowmore).

securigera (Aiton) Ker Gawl

Perennial herb, geophyte, 0.15–0.30 m high; corm globose, tunics of fine fibres; stem simple or 1-branched. **Leaves** suberect or spreading, ensiform, 4–10 mm wide. **Bracts** papery, brownish towards apex. **Inflorescence** a ± secund spike; flowers reddish to orange, zygomorphic; perianth tube 12–20 mm long, funnel-shaped, with yellow throat; tepals unequal, 12–20 mm long, lower with large median, tooth-like, yellow callus. **Stamens** curved towards posticous tepals; anthers purple to mauve; pollen mauve. **Style** 17–25 mm long. **Flowering time** Aug., Sept. **Capsule** 7–10 mm long. In semi-karroid vegetation; Dry Highveld Grassland, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Bruintjieshoogte to Adelaide S, from Willowmore to Kommadagga and Port Elizabeth).

[E]**strictifolia** (Klatt) Benth. ex Klatt

Perennial herb, geophyte, 0.15–0.25 m high; corm tunics of fine fibres; stem slightly flexuose towards top, simple or 1-branched. **Leaves** linear-lanceolate, usually erect, drying to light brown, acute, 2–5 mm wide. **Bracts** membranous, outer striate, tridentate, inner bidentate. **Inflorescence** a lax spike, somewhat distichous; flowers rusty orange or pink, zygomorphic; perianth tube 10–15 mm long, funnel-shaped; tepals obtuse, lower with narrow, yellow callus. **Stamens** curved; filaments 7–10 mm long; anthers ± 5 mm long, contiguous. **Style** 17–20 mm long. **Flowering time** Sept.–Nov. On grassy flats; Albany Thicket (Uitenhage to Alexandria and Grahamstown).

4b Plants distributed in southern Drakensberg and northeastern Cape Region

[E?]**drakensbergensis** M.P.de Vos

Perennial herb, geophyte, 0.25–0.50 m high; stem simple, erect or slightly curved. **Leaves** linear, acuminate, erect, 1.5–4.0 mm wide. **Bracts** ± papery, golden-brown, outer tridentate, inner bidentate, pale towards base. **Inflorescence** a subsecund, lax spike; flowers red or pinkish scarlet, zygomorphic; perianth tube funnel-shaped; tepals subequal in length, dorsal widest, calli almost triangular. **Stamens** curved; anthers contiguous, curved. **Style** 14–18 mm long, at or above anther apex. **Flowering time** Jan.–Mar. In well-drained grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Naude's Neck Pass S, from Elliot to Maclear and to Fort Beaufort).

2b Perianth tube (1.5–)2.0–4.0× longer than lobes

[E]**atrorubens** (N.E.Br.) L.Bolus

Perennial herb, geophyte, 0.3–0.6 m high; corm globose, tunic fibres reticulate in upper half, parallel towards base; stem simple, erect, slender. **Leaves** erect, linear, acuminate, 1–5 mm wide, striate with 3 or more veins. **Inflorescence** a ± secund, lax spike; flow-

ers zygomorphic, dark red, drying to blackish purple-red; perianth tube funnel-shaped; tepals subequal, oblong, obtuse; median callus one yellow, larger than lateral ones. **Stamens** with reddish filaments. **Style** reddish. **Flowering time** Dec., Jan. On grassy hills; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Komga and Kentani).

bakeri Klatt

Perennial herb, geophyte, 0.4–0.7 m high; corm depressed-globose, tunics of fine, netted fibres, irregularly reticulate; stem simple, 1–3-branched, suberect or slightly flexuose. **Leaves** linear, subterete, striate when dry, acuminate, 1–3 mm wide. **Bracts** membranous, dry, speckled brown above, outer 2- or 3-toothed, inner bidentate. **Inflorescence** a distichous, lax spike; flowers pale yellow or cream-coloured to pale mauve, ± salver-shaped; perianth tube cylindrical; tepals spreading, subequal in length, dorsal widest. **Stamens** erect; anthers facing outwards, violet. **Style** 27–60 mm long, erect. **Flowering time** Oct.–Dec. **Capsule** obovoid. On rocky sandstone slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Baviaanskloof Mts).

chrysantha Fourc

Perennial herb, geophyte, 0.2–0.3 m high; corm subglobose to ovoid, tunic of medium-textured, reticulate fibres; stem erect or slightly bent, simple or 1- or 2-branched. **Bracts** membranous, outer 2- or 3-toothed, with reddish or brownish veins. **Leaves** ensiform, suberect, 4–10 mm wide. **Inflorescence** a distichous, lax spike; flowers bright yellow; perianth tube cylindrical; tepals ovate-spathulate, obtuse; dorsal erect, largest; lower with large median tooth. **Stamens** with violet or yellow anthers. **Flowering time** Aug.–Oct. On dry karroid slopes; Rainshadow Valley Karoo (Willowmore to Steytlerville).

TRITONIOPSIS L.Bolus

Subfamily Crocoideae

Species 24 (incl. *Anapalina*), mainly WC, extending from the Bokkeveld Escarpment to the Transkei, NC, WC, EC.

antholyza (Poir.) Goldblatt

Manning & Goldblatt (2012)

[= *Anapalina longituba* Fourc., *Gladiolus antholyza* Poir., *Tritoniopsis longituba* (Fourc.) Goldblatt]

Perennial herb, geophyte, 0.35–0.90 m high; corm depressed-globose, tunics of coarse fibres usually up to neck; stem simple. **Bracts** green, becoming dark reddish brown when dry. **Leaves** lanceolate to linear, 3–6-veined. **Inflorescence** a ± distichous, dense spike; flowers salmon-pink to red, lower tepals dark-streaked; perianth tube 25–30 mm long; tepals unequal, dorsal largest. **Stamens** arcuate; filaments 32–40 mm long. **Flowering time** Nov.–Apr. On rocky sandstone slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore SE to Port Elizabeth and Humansdorp).

caffra (N.E.Br.) Goldblatt & J.C.Manning

Manning & Goldblatt (2012)

[= *Anapalina caffra* (N.E.Br.) G.J.Lewis, *Antholyza caffra* Ker Gawl. ex Baker, *Chasmanthe caffra* N.E.Br., *Tritoniopsis caffra* Goldblatt *nom. inval. sine descr.*]

Perennial herb, geophyte, 0.2–0.8 m high; corm globose, tunics of soft to coarse fibres; stem usually simple. **Leaves** ensiform to linear, 2–4-veined, often attenuate. **Bracts**

reddish brown, lanceolate, acuminate. **Inflorescence** a distichous, lax spike; flowers scarlet or dark red; perianth tube 20–30 mm long; tepals unequal, dorsal largest, elongate-spathulate. **Stamens** arcuate; filaments 33–38 mm long; anthers 6–8 mm long, obtuse. **Ovary** oblong; style branches usually cuneate at upper half, sometimes emarginate or weakly bilobed. **Flowering time** Aug.–Dec. **Capsule** oblong or ellipsoid. In mesic fynbos and rocky slopes; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Prospect Siding near East London S, from Willowmore to Uitenhage, Port Elizabeth, Grahamstown and Port Alfred, and Tsitsikamma to Humansdorp).

intermedia (Baker) Goldblatt

Perennial herb, geophyte, 0.2–0.4 m high; corm depressed-globose, tunics of coarse fibres; stem simple, straight or slightly flexuose. **Leaves** ensiform to linear, prominently 4-veined. **Bracts** pale reddish brown, lanceolate, acute. **Inflorescence** a distichous dense spike; flowers bright red, with bases of 3 lower tepals black or purple-black; perianth tube 25–30 mm long; tepals unequal, dorsal largest. **Stamens** arcuate; filaments 4–5 mm long; anthers 7–9 mm long, obtuse. **Ovary** oblong; style branches spathulate or oblanceolate, conduplicate. **Flowering time** Sept.–Dec. Rocky sandstone slopes; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage to Port Elizabeth and Humansdorp).

WATSONIA Mill.

Subfamily Crocoideae

Species ± 51, sthn Afr., concentrated in WC, but extending into Namaqualand (NC) in the north and well represented in the summer rainfall parts of sthn Afr., N, LIM, M, S, FS, KZN, L, NC, WC, EC.
Following Goldblatt (1989).

Upper part of perianth tube flared evenly from base to apex (usually ± twice as wide at mouth as just below midline of upper part); tepals usually ± 1.5–2.0× the length of upper part of tube; flowers shades of pink to purple or red to yellow

[E]**amatolae** Goldblatt

Perennial herb, geophyte, 0.4–0.6 m high; corm tunics of grey-brown, reticulate fibres extending to neck; stem simple. **Leaves** lanceolate to linear, reaching base of spike, 5–10 mm wide, margins and midribs hyaline, thickened. **Bracts** reddish brown when dry, laxly arranged, inner shorter, forked. **Inflorescence** a spike; flowers purple-pink, zygomorphic; perianth tube funnel-shaped, 6–8 mm long; tepals narrowly ovate, 16–20 mm long. **Stamens** unilateral, arcuate to horizontal below upper tepal; filaments 9–14 mm long; anthers 6–8 mm long. **Ovary** with style arched over stamens; style branches recurved. **Flowering time** Nov.–Apr. **Capsule** obovoid. In wet, rocky, montane grasslands; Drakensberg Grassland (Katberg E to Amatole Mts).

bachmannii L.Bolus

Perennial herb, geophyte, 0.25–0.50 m high; corm ± globose, tunics finely reticulate; stem simple. **Leaves** linear, half length of stem, 2.5–6.0 mm wide, margins and midribs hyaline and lightly thickened. **Bracts** green below, brownish apically, inner bifid. **Inflorescence** a spike; flowers orange, zygomorphic; perianth tube cylindric, 8–12 mm long; tepals obovate, often acuminate, spreading. **Stamens** unilateral, arched below upper tepal; filaments 10 mm long; anthers 7–9 mm long, white. **Ovary** 2.5 mm long; style arched over stamens. **Flowering time** July–Nov. **Capsule** obovoid. In open and marshy grasslands; Indian Ocean Coastal Belt (Lusikisiki to Mkambati Nature Reserve and Port Edward).

confusa Goldblatt

Perennial herb, geophyte, 0.5–1.5 m high; corm tunics brown, coarsely reticulate; stem simple. **Leaves** lanceolate, usually reaching base of spike, margins thickened, glaucous, midrib slightly thickened. **Bracts** loosely imbricate, herbaceous or flushed green below, apex membranously dry, inner forked. **Inflorescence** a spike; flowers pink-purple, with dark pink line in lower midline of 3 lower tepals, zygomorphic; perianth tube funnel-shaped; tepals lanceolate, distinctly apiculate. **Stamens** unilateral, arcuate to horizontal below upper tepal; filaments 10–12 mm long; anthers 9–11 mm long, usually contiguous, pale violet to whitish. **Ovary** oblong, 3–4 mm long; style arching over filaments. **Flowering time** Dec.–Apr. **Capsule** narrowly ovoid. Along streams or seeps and S-facing grassland slopes; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad SW to Maclear, Weza State Forest and Mthatha).

densiflora Baker

Perennial herb, geophyte, 0.6–1.5 m high; corm tunics brown, coarsely reticulate; stem inclined below, simple. **Leaves** lanceolate to linear, 10–18 mm wide, margins and midrib thickened. **Bracts** strongly imbricate, dry and brownish, apiculate to attenuate, inner apically forked. **Inflorescence** a dense spike; flowers pink, rarely white, with dark pink streak in lower midline of each tepal, nearly bilabiate; tepals broadly lanceolate, apiculate; upper 3 ascending; lower horizontal. **Stamens** unilateral, included, arcuate to horizontal below upper tepal; filaments 10–12 mm long; anthers 9–11 mm long, unilateral, pale to whitish. **Ovary** oblong; style arching over filaments. **Flowering time** Jan.–Dec. **Capsule** narrowly ovoid. In well-watered, open grassy slopes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad S to Mthatha and Port Edward).

galpinii L.Bolus

Perennial herb, geophyte, 0.8–1.5 m high; corm depressed-globose, tunics grey-brown, coarsely reticulate. **Leaves** lanceolate, 10–20 mm wide, midvein and margins hyaline, thickened. **Bracts** green below, dry and brown at anthesis. **Inflorescence** a spike; flowers red-orange or rarely mauve-pink, zygomorphic; perianth tube cylindric to flared above; tepals obovate-lanceolate, 15–20 mm long. **Stamens** unilateral, arcuate below upper tepals; filaments 12–15 mm long; anthers 7–9 mm long, ± contiguous, yellow. **Ovary** oblong; style arching over stamens. **Flowering time** Feb.–May. **Capsule** obovoid. In wet sites along streams; Eastern Fynbos-Renosterveld (Tsitsikamma to Humansdorp).

inclinata Goldblatt

Perennial herb, geophyte, 0.3–0.6 m high; corm globose, tunics grey-brown, coarsely reticulate; stem flexed at ground level, inclined. **Leaves** lanceolate, 4–14 mm wide, margins and midveins moderately thickened and hyaline. **Bracts** herbaceous, apex dry and brown, acute-attenuate. **Inflorescence** a spike; flowers pink, whitish in throat and tube; perianth tube cylindric, flared above; tepals obovate, 24–28 mm long, directed forward and curving outward in upper half. **Stamens** unilateral, arched below upper tepal; filaments included, 6–10 mm long; anthers ± 9 mm long, pale blue-mauve. **Ovary** oblong; style branches recurving and tangled in anthers, white. **Flowering time** Sept., Oct. **Capsule** obovate-truncate. In open, often stony, low grassland; Indian Ocean Coastal Belt (Umtamvuna Nature Reserve).

laccata (Jacq.) Ker Gawl.
Perennial herb, geophyte, 0.2–0.5 m high; corm ± globose, tunics grey-brown, coarsely reticulate; stem usually simple. **Leaves** ensiform, margins and midvein lightly thickened. **Bracts** green below, dry and brownish in upper half, lacerate after flowering. **Inflorescence** a spike; flowers pale pink to purple, orange or white; perianth tube 18–22 mm long, flared above; tepals obovate to oblanceolate, acuminate. **Stamens** unilateral, declinate; filaments up to 18 mm long; anthers 4 mm long, facing upper tepal, sometimes contiguous, yellow. **Ovary** oblong. **Flowering time** Sept.–Nov. **Capsule** fusiform. Sandstone slopes in fynbos; Eastern Fynbos-Renosterveld (Humansdorp).

Umtamvunae Goldblatt
Perennial herb, geophyte, 0.30–0.45 m high; corm globose, tunics grey-brown, finely reticulate; stem simple. **Leaves** ensiform, margins and midveins thickened, hyaline. **Bracts** flushed purple below, upper half becoming dry and brown, inner apically forked. **Inflorescence** a spike; flowers pale pink, zygomorphic; perianth tube flared above, 7–9 mm long; tepals obovate, 14–16 mm long, curving outwards. **Stamens** unilateral, arcuate; filaments 7–10 mm long, included; anthers 7 mm long, pale yellow. **Ovary** oblong; style arching over filaments. **Flowering time** Aug.–Oct. **Capsule** narrowly obovoid. In well-drained grassy or stony slopes; Indian Ocean Coastal Belt (Umtamvuna Nature Reserve).

[E]pondoensis Goldblatt
Perennial herb, geophyte, 0.3–0.6 m high; corm globose, tunics grey-brown, coarsely reticulate; stem simple, erect. **Leaves** lanceolate, glaucous with bluish tinge, margins and midveins thickened and hyaline. **Bracts** herbaceous, becoming dry and brown at anthesis. **Inflorescence** a spike; flowers purple, pale in throat, with darker median streak in lower midline of tepals; perianth tube funnel-shaped; tepals obovate, 20–22 mm long, directed forward and curving outwards in distal half. **Stamens** unilateral, arcuate; filaments 6–10 mm long, usually included; anthers 9 mm long, purple. **Ovary** oblong; style arching over filaments, branches slender, ascending. **Flowering time** Sept., Oct. **Capsule** narrowly ovate-truncate. In permanently wet, marshy grassland; Indian Ocean Coastal Belt (Umtamvuna Nature Reserve).

Upper part of perianth tube ± cylindric, barely wider at mouth than at midline; tepals usually shorter than to ± as long as upper part of tube, occasionally somewhat longer; flowers usually red to orange or pink to purple

angusta Ker Gawl.
Perennial herb, geophyte, 0.8–1.2 m high; corm depressed-globose, tunics grey-brown, coarsely reticulate; stem with ± erect branches. **Leaves** ensiform, 12–20 mm wide, margins and midribs thickened and hyaline. **Bracts** herbaceous or flushed dull red-purple, apex brownish. **Inflorescence** a lax spike; flowers scarlet; perianth tube 36–44 mm long, tubular above; tepals 19–25 mm long, narrowly lanceolate. **Stamens** unilateral, arcuate; filaments 30–38 mm long; anthers 7–10 mm long, contiguous, purple-black. **Ovary** oblong; style arching over filaments. **Flowering time** Nov.–Jan. **Capsule** fusiform. On montane marshes and streambanks; Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Mkambati Nature Reserve SW, from Hogsback to Stutterheim and Kentani and from Willowmore to Grahamstown).

elsiae Goldblatt
Perennial herb, geophyte, 0.40–0.65 m high; corm tunics grey-brown, coarsely fibrous; stem simple. **Leaves** ensiform, 7–10 mm wide, margins and midvein thickened, hyaline. **Inflorescence** a dense spike; flowers scarlet; perianth tube cylindric above, 22–35 mm long, slightly pendent; tepals obovate-lanceolate, 13–16 mm long. **Stamens** included in tube; filaments 8–10 mm long; anthers 4.5–6.0 mm long, yellow. **Ovary** oblong, 2–3 mm long; style very short; branches directed forward, forked for ± half their length. **Flowering time** Nov.–Mar. **Capsule** obovoid. On dry stony slopes; Eastern Fynbos-Renosterveld (Willowmore to Tsitsikamma Mts).

fourcadei J.W.Mathews & L.Bolus
Perennial herb, geophyte, 0.9–1.8 m high; corm depressed-globose, tunics grey-brown, coarsely reticulate; stem branched. **Bracts** usually reddish, inner forked. **Leaves** ensiform, margins and midveins thickened and hyaline. **Inflorescence** an elongate spike; flowers mostly orange to red, rarely pink or purple; perianth tube elongate, tubular above, 42–55 mm long; tepals lanceolate, 24–33 mm long. **Stamens** unilateral, arcuate; filaments 38–45 mm long; anthers 9–12 mm long, violet. **Ovary** oblong; style arching over filaments. **Flowering time** Sept.–Jan. **Capsule** ± obconic, tapering above. In flat open, rocky areas; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore E to Steytlerville, southwards to Humansdorp).

gladioloides Schltr.
Perennial herb, geophyte, 0.35–0.70 m high; corm globose, tunics grey-brown, fine to coarsely reticulate; stem simple. **Leaves** ensiform, 3–15 mm wide, margins and midribs thickened. **Inflorescence** a dense spike; flowers deep red with darker streak in lower half of lower tepal; perianth tube cylindric above, 20 mm long; tepals lanceolate, 20–22 mm long. **Stamens** unilateral, arcuate below upper tepal; anthers 9 mm long. **Ovary** globose; style arching over filaments. **Flowering time** Nov.–Feb. In open grassy slopes and rocky habitats; Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey E to Kokstad, southwards from Queenstown to Tembuland).

knysnana L.Bolus
Perennial herb, geophyte, 1.2–1.6 m high; corm depressed-globose, tunics grey-brown, coarsely reticulate; stem usually simple. **Leaves** ensiform, 8–24 mm wide, margins and midveins lightly thickened. **Bracts** becoming reddish brown above; inner usually entire. **Inflorescence** a spike; flowers mostly pink to purple, rarely scarlet, zygomorphic; perianth tube elongate, tubular above, 30–40 mm long; tepals obovate, 19–22 mm long, acute. **Stamens** unilateral, arcuate below upper tepal; filaments 16–28 mm long; anthers 7–11 mm long, contiguous, violet. **Ovary** oblong; style arching over filaments. **Flowering time** Aug.–May. **Capsule** narrowly obovoid. On well-drained, rocky mountain slopes and mesic grassy habitats; Dry Highveld Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Somerset East S, from Willowmore to Baviaanskloof Mts, Uitenhage, Port Elizabeth, Grahamstown and Port Alfred, and to Humansdorp).

pillansii L.Bolus
Perennial herb, geophyte, 0.45–1.20 m high; corm depressed-globose, tunics grey-brown, coarsely reticulate; stem simple or rarely 1–3-branched. **Leaves** ensiform, 10–18 mm wide, margins and midribs usually thickened and hyaline. **Bracts** green, becoming reddish, inner obtuse or barely bilobed. **Inflorescence** an elongate spike; flowers scarlet to orange; perianth tube cylindric above, 35–50 mm long; tepals lanceolate, 20–26 mm

long. **Stamens** unilateral, arcuate below upper tepal; anthers 7–11 mm long, usually contiguous, violet to cream-coloured. **Ovary** oblong; style arching over filaments. **Flowering time** July–May. **Capsule** globose to narrowly obovoid. In sandy soil at low elevations; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Ntsikeni Nature Reserve to Kokstad S, from Queenstown to Port St Johns, Amatole Mts to Kentani, Krakeel to Uitenhage, Port Elizabeth, Grahamstown and East London, and to Humansdorp).

schlechteri L.Bolus

Perennial herb, geophyte, 0.4–1.0 m high; corm depressed-globose, tunics brown, coarsely reticulate; stem usually simple. **Leaves** ensiform, margins and midribs strongly thickened, hyaline. **Bracts** reddish, inner usually entire. **Inflorescence** an elongate spike; flowers scarlet, zygomorphic; perianth tube elongate, 40–50 mm long, tubular above; tepals obovate-oblong, 20–24 mm long. **Stamens** unilateral, arcuate below upper tepal; filaments 35–45 mm long, well exserted; anthers 7–10 mm long, contiguous, violet. **Ovary** 3 mm long, oblong; style arching over filaments. **Flowering time** Oct.–Dec. **Capsule** subglobose to obovoid. On rocky, sandstone slopes in fynbos; Eastern Fynbos-Renosterveld (Baviaanskloof Mts).

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JUNCACEAE

(= PRIONIACEAE S.L.Munro & H.P.Linder)

(Order Juncales)

Compiled by J.E. Victor, C.L. Bredenkamp & Z.L. Magwaza

1a Plants caulescent, fibrous, with apical leaf-rosette; leaves serrate; ovary 3-locular; ovules few; stigmas 3, sessile ..... **Prionium** (Dyer et al. 1976)

1b Plants rhizomatous, with basal, entire leaves; ovary 1–3-locular; style present:

2a Leaves glabrous, usually with an open leaf sheath; ovary 3-locular through protruding parietal placentas; seeds many, small, occasionally tailed..... **Juncus**

2b Leaves with inconspicuous, scattered, silky hairs, leaf sheath closed; ovary unilocular, with 3 basal ovules; seeds few, subglobose, minutely striate, often with appendages..... **Luzula**

JUNCUS L.

Species ± 250, cosmopolitan; widespread, mainly in mild to cold situations, in shallow water on the banks of streams, dams or lakes, in vleis, marshes or seepage areas; ± 26 in sthn Afr., widespread.

1a Each flower subtended by a bract and 2 bracteoles
2a Leaves flat or semi-terete

*bufonius L.

Toadrush

Annual herb, tufted, up to 300 mm high. **Leaves** few, radical and cauline, narrowly linear-acuminate. **Flowers** in much-branched, exserted panicles (anthelae), or lateral second spikes, sessile, solitary; bracts 3, hyaline. **Perianth segments** hard, green with a hyaline border, glumaceous. **Stamens**: anthers ± as long as filaments. **Ovary** with 3 ± separate locules; ovules biseriate, many; style terete with 3 stigmatic arms, ± as long as perianth. **Capsule** loculicidal, included, ellipsoid, obtuse. **Seeds** many, 0.4 mm long, apex truncate. **Flowering time** Jan.–Dec. An introduced weed mainly in the WC and NC, rare and scattered in disturbed places; Albany Thicket (Graaff-Reinet and Port Elizabeth).

*tenuis Willd.

Perennial, rhizomatous herb, tufted, up to 0.4 m high. **Leaves** rosulate, grass-like soft. **Flowers** exserted in compound, irregular dichasia; lowest bracts longer than few-flowered contracted spikelets born on branchlets; floral bracts small. **Perianth segments** green with hyaline margins, glumaceous. **Stamens** short; anthers shorter than filaments. **Ovary** with 3 ± separate locules; ovules biseriate, many; style terete with 3 stigmatic arms, shorter than perianth. **Capsule** loculicidal, globose. **Seeds** many, 0.4 mm long, with short white apiculus. **Flowering time** Nov.–Mar. Along streams and gulleys, recently burned, grasslands and forests, sandy soil; Sub-Escarpment Grassland, Indigenous Forests (Maclear District, Amatole Mts).

2b Leaves cylindric

effusus L.

Densely tufted, perennial, rhizomatous herb. **Leaves** on linear horizontal rhizomes, 1–few per shoot, hard, terete, rush-like. **Scape** terete, pith continuous. **Inflorescence** pseudolateral, ± one-fifth from top of scape, with one subtending bract forming a continuation of scape, and two bracteoles. **Flowers** abundant in much-branched panicles (anthelae), congested when young and lax when mature. **Perianth segments** lanceolate, finely point-

ed, 2–3 mm long, subequal. **Stamens** 3(6), filaments ± as long as anthers. **Ovary** with 3 ± separate locules; ovules biseriate, many; style short, with 3 short stigmatic arms. **Capsule** loculicidal, 3-valved, broadly ovoid. **Seeds** many, ± 3 mm long. Widespread, cosmopolitan, swamps and along streams; alt. 2 050 m; Dry Highveld Grassland, Albany Thicket, Drakensberg Grassland, Indigenous Forests, Eastern Fynbos-Renosterveld (Somerset East District, Bedford District, Amatole Mts and to Humansdorp District).

inflexus L.

Perennial, tufted herb, up to 1 m high. **Leaves** on linear, matted, horizontal rhizomes, cauliform, pungent, surrounded below by sheathing cataphylls. **Scape** leafless, glaucous, wiry, sheathed basally with brown cataphylls; pith interrupted. **Inflorescence** pseudolateral, with one subtending bract forming a continuation of scape, and two bracteoles; anthelae compact, many-flowered, mostly on short to very short branchlets. **Perianth segments** 4 mm long, linear, acute. **Stamens** 6, 2 mm long; filaments filiform, equaling anthers. **Ovary** cylindrical; style present with 3 long stigmatic arms. **Capsule** loculicidal, 3-valved, ellipsoid. **Seeds** 0.4 mm long, with dark, obtuse apex and base, apex transparent. Scattered in SA; Upper Karoo, Drakensberg Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna, Lower Karoo (Burgersdorp to Barkly East S, from Stormberg to Cradock District and Komga).

1b Each flower subtended by single bract
3a Leaves terete, rigid, cataphylls well-developed

acutus L. subsp. **leopoldii** (Parl.) Snogerup

Robust, perennial, rhizomatous herb, up to 2 m high, with horizontal, woody roots. **Leaves** 1 per shoot, forming cylindric blade with pungent apex, enveloped by 2 or 3 loose, sheathing cataphylls. **Scape** terete, 1–2 m high. **Inflorescence** paniculate, pseudolateral, with one subtending bract; heads with (1)2–4 flowers; floral bracts solitary (bracteoles absent). **Perianth segments** ± 3 mm long, canaliculate, outer shorter, apiculate, inner with membranous auricles extended above retuse mucronate apex. **Stamens** 6; anthers large; filaments filiform, short, flat. **Ovary** with parietal placentas; ovules biseriate; style terete with 3 stigmatic arms. **Capsule** globose, apiculate, shiny. **Seeds** allantoid, with white membranous appendage on either side. Sandy, loamy, salt marshes, alt. 1 300 m; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (King William's Town S, Port Elizabeth District to Hamburg and to Humansdorp).

exsertus Buchenau

Tufted, perennial, rhizomatous herb, up to 0.6 m high. **Leaves** 2–5, basal and on stem, terete, distinctly septate, apex pointed, base with open, auriculate sheaths; cataphylls 1–4, acute. **Scape** rigid, terete, with one central gas channel. **Inflorescence** paniculate, often appearing terminal because subtending leaf or bract shorter than inflorescence. **Flowers** in obconic heads, many-flowered; floral bract solitary (bracteoles absent). **Perianth segments** unequal, linear, 3–4 mm long, aristate. **Stamens** 3 or 6; anthers shorter than filaments. **Ovary** 1-celled; style short, with 3 longer, red, stigmatic arms. **Capsule** loculicidal, thin, slender, oblong-ovoid, gradually narrowed above with beak-like tip; well exserted from perianth, 0.5–2.0× as long as perianth segments. **Seeds** ovoid. Riverbanks, marshes; Drakensberg Grassland (Barkly East District).

kraussii Hochst. subsp. **kraussii**

Tufted, perennial, rhizomatous herb, up to 1 m high. **Leaves** on horizontal rhizomes, cauliform, terete, pungent, without septa, sheaths auriculate, 1 or 2 to each leaf; cat-

aphylls shiny. **Scape** terete, rigid, smooth. **Inflorescence** paniculate, pseudolateral, the subtending bract forming a continuation of stem, plumose, decompound with many branches and branchlets of different lengths. **Flowers** in compact clusters of 3–6; functionally unisexual and usually born on separate plants. **Perianth segments** linear-acuminate. **Stamens** 6; anthers yellow, ± 2 mm long with short filaments. **Ovary** ovoid; style short; stigmas exserted. **Capsule** narrowly ellipsoid, 3-angled, apiculate, woody, shiny brown, enclosed in perianth or slightly longer. **Seeds** ellipsoid. Coastal grassland, open woodland; Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Port St Johns SW, from King William's Town to Gonubie Nature Reserve, Uitenhage District to Port Elizabeth, Kasouga, Bathurst and East London, and to Humansdorp).

oxycarpus E.Mey. ex Kunth

Tufted, perennial, rhizomatous herb, up to 0.8 m high. **Leaves** 3–5, basal, cauline, terete, distinctly septate, apex pointed, base with open, auriculate sheaths; cataphylls 1–4, acute. **Scape** rigid, terete, with one central gas channel. **Inflorescence** paniculate, often appearing terminal because subtending leaf or bract shorter than inflorescence. **Flowers** in spherical heads or nearly so, 15–25 heads, many-flowered; floral bract solitary (bracteoles absent). **Perianth segments** unequal, linear-acuminate, 3–4 mm long, aristate. **Stamens** 3 or 6; anthers shorter than filaments. **Ovary** 1-celled; style short, with 3 longer, red, stigmatic arms. **Capsule** loculicidal, unilocular, trigonous, oblong-ovoid, obtuse, apiculate, as long as perianth. **Seeds** ovoid. Wet areas on streambanks and in swamps; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck to Kokstad S, from Elliot to Goss Point, Bedford across Amatole Mts to Kentani, Outeniqua Mts to Alexandria and to Humansdorp).

punctorius L.f.

Robust, tufted perennial, with creeping woody rhizomes, up to 1.5 m high; roots thin. **Leaves** borne on stems, terete, distinctly septate, apex pointed; sheaths 2 or 3. **Scapes** rigid, terete, septate with one central and several lateral gas channels, usually bearing a leaf near middle. **Inflorescence** paniculate; heads many, spherical or nearly so, many-flowered, borne on wiry branchlets of varying lengths; floral bract solitary (bracteoles absent). **Perianth segments** 2.5 mm long, narrowly ovate, subequal, outer acute. **Stamens** with anthers as long as filaments. **Ovary** ovoid; style and stigmas fairly long. **Capsule** loculicidal, 3-valved, ovoid, apiculate. **Seeds** ovoid-globose, obtuse, apiculate at each end. Grassland, grazed or disturbed, sandy, stony/rocky; Dry Highveld Grassland, Upper Karoo, Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Burgersdorp to Middelburg S, from Mountain Zebra National Park to Kentani District, and to Kareedouw).

rigidus Desf.

Tufted, perennial, rhizomatous herb, with coarse, hard, compact horizontal rhizomes and thick roots. **Leaves** basal, terete, without septa, apex pungent; sheaths 4 or 5 to each leaf, auriculate; cataphylls present. **Scape** pseudolateral, with subtending bract forming continuation of stem, decompound, interrupted, many-flowered. **Flowers** solitary or 2–few together on branchlets of varying lengths, paniculate. **Perianth segments** linear-acuminate to narrowly ovate with membranous margins, 4–5 mm long. **Stamens** 6; filaments short; anthers ± 1 mm long. **Ovary** ovoid; style short, stigmas ± as long as style, usually

exserted sideways. **Capsule** narrowly cylindrical, tricostate, acute. **Seeds** ovoid with long white appendages at each end. Forests, sandy soil; Upper Karoo, Dry Highveld Grassland, Indigenous Forests, Drakensberg Grassland (Venterstad and Aliwal North Districts S to Mkambati Nature Reserve, from Mountain Zebra National Park to Bolo District).

3b Leaves flat or channelled, basal, not septate; cataphylls absent

capensis Thunb.

Tufted, erect, perennial herb, up to 0.6 m high. **Leaves** many, grass-like, filiform, soft, setaceous to narrowly linear, flat or inrolled. **Inflorescence** an exserted, varied, decompound or reduced dichasium, subtended by short bract; floral bracts tepaloid with semi-globose to globose heads of 10–20 flowers each. **Perianth segments** with outer ones ovate-aristate; inner shorter and broader, acute with membranous margins. **Stamens** 6; anthers long and narrow, often diverging at base; filaments short, flat. **Ovary** ovoid, attenuate into red style, 1 mm long with 3 red, exserted stigmas ± 2 mm long. **Capsule** 2-locular, ovoid to narrowly oblong-ovoid, apiculate to rostrate. **Seeds** dark, oblong-globose, 0.5 mm long, obtuse, with membranous covering. Forests, grassland, fynbos, sandy/loamy soil, alt. 1 000 m; Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Keiskammahoek to Kei River Mouth S, Kareedouw to Uitenhage, Grahamstown, Trappe's Valley and Hopewell, and to Humansdorp).

dregeanus Kunth

Compact, tufted perennial with small rhizomes and thin roots. **Leaves** in loose basal rosettes, grass-like, soft, narrowly linear-acuminate with inrolled margins to filiform, margins erect, initially with closed basal sheath, not auriculate. **Scape** up to 1.5 m high, terete, pith continuous. **Inflorescence** of crowded (rarely solitary) capitula, sessile or sometimes on short lateral branchlets, usually exserted on long peduncles; lowest bract leaf-like but reduced; floral bracts small, membranous. **Perianth segments** 3–4 mm long, subequal, outer aristate, inner acute with broad membranous margins. **Stamens** (3, 4)6; anthers 0.8 mm long. **Ovary** trilocular, globose; style very short. **Capsule** loculicidal, tricostate, globose, obtuse at apex. **Seeds** minute, globose. Grassland, recently burned, sandy soil; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Ben Macdhui, Thornham Farm and Baziya Mtn S, from Mountain Zebra National Park to King William's Town, Port Elizabeth to Port Alfred and Fish River Mouth, and to Tsitsikamma).

lomatophyllus Spreng.

Perennial with spreading to decumbent, densely leafy stolons; roots thin. **Leaves** subrosulate to spirally arranged, broadly linear, flat, soft, apex pointed, tubular when young, soon splitting, margins narrowly membranous. **Scape** rigid, terete, with longitudinal grooves. **Inflorescence** a decompound dichasium, reduced in montane habitats, subtended by a short, leaf-like, basal bract. **Flowers** 6–10 in semi-globose capitula. **Perianth segments** unequal, outer aristate, inner shorter, acute, margins membranous. **Stamens** 6; anthers on very short filaments. **Ovary** ovoid, attenuate into a long, red style and 3 long, red, exserted stigmas 2 mm long. **Capsule** loculicidal, ovoid, rostrate, 2.5 mm long, shorter than perianth segments. **Seeds** oblong-globose. Marshes, seeps and streamsides; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Cala, Cutweni and Port St Johns S, from Hogsback to Haga-Haga, Storms River Forest Reserve to Port Elizabeth, Grahamstown and East London, and to Humansdorp).

LUZULA DC.

Species ± 80, mostly north temperate regions, rare in southern hemisphere; 1 in sthn Afr., N, KZN, L, EC.

africana Drège ex Steud.

Tufted, grass-like annual, or usually perennial herb, up to 0.45 m high. **Leaves** basal, flat, linear, with closed basal sheaths, inconspicuously silky hairy. **Inflorescence** of dense, terminal spikes, heads or panicles, subtended by 1–few leaf-like bracts. **Scapes** long, furnished with reduced leaves or bracts, the upper subtending inflorescence. **Flowers** each subtended by small, membranous, ciliate bract. **Perianth segments** glumaceous. **Stamens** 6, ± 2 mm long; filaments longer than anthers. **Ovary** unilocular, with 3, nearly basal ovules. **Capsule** loculicidal, globose, apiculate. **Seeds** few, ovoid to globose, minutely apiculate with thick, basal caruncle. Moist grassland and wetlands; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East and Maclear districts, Qumbu District).

PRIONIUM E.Mey.

Species 1, endemic to WC and EC, as well as southern KZN, extending inland as far as Tulbagh in the WC.

Prionium was originally included in the family Juncaceae. Research based on anatomy, morphology and *rbc*L sequence data indicates that *Prionium* should be placed in a family of its own (Cutler 1969; Plunket et al. 1995; Munro & Linder 1998). The new monotypic family Prioniaceae S.L.Munro & H.P.Linder was therefore erected (Munro & Linder 1998: 51). In 2003 APGII placed the Prioniaceae S.L.Munro & H.P.Linder in the Thurniaceae Engl. (1907) *nom. cons.* Following herbarium practice at SANBI, *Prionium* is once again placed in the Juncaceae.

serratum (L.f.) Drège ex E.Mey.

Perennial herb, hydrophyte, 0.33–2.13 m high; stem erect, stout, densely covered with black, fibrous, reticulate remains of leaves. **Bracts** funnel-shaped, caudate. **Leaves** linear-acuminate, up to 1 m × 80 mm, margins and keel sharply serrulate; sheath tubular. **Inflorescence** an erect, terminal panicle, with ascending branches; flowers bisexual, in lateral fascicles, pedicellate. **Perianth** 3 + 3; segments free, equal, 3 mm long, ovate, rigid, bright brown. **Stamens** ± equal to perianth in length or exserted; filaments filiform; anthers oblong, basifixed, with opposing thecae opening lengthwise**. Ovary** superior, ovoid, obtusely 3-angled; style short or absent; stigmatic branches papillate. **Flowering time** July–May. **Fruit** enclosed in perianth, an ovoid-acute, 3-valved capsule. **Seeds** 1 or 2 per locule, ovoid-oblong. Common in riverbeds around the coast; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (along coast, Lusikisiki to Mkambati Nature Reserve S, from Storms River to Humansdorp District and to Howison's Poort near Grahamstown).

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JUNCAGINACEAE

(Order Alismatales)

Compiled by Z.L Magwaza

TRIGLOCHIN L.

Species ± 15, cosmopolitan; 2 in sthn Afr., N, KZN, NC, WC, EC.

bulbosa L.

Perennial herb, helophyte, 0.1–0.6 m high; rhizome stoloniferous or cormous, usually with cormlets. **Leaves** basal, usually distichous, ± terete, glaucous, with semi-amplexicaul sheaths. **Scape** erect, firm. **Inflorescence** an erect raceme; pedicels patent; flowers green; perianth segments with purplish apex; outer boat-shaped, acute; inner obtuse. **Ovary**: 3 vestigial outer carpels and 3 inner carpels lengthening at anthesis and after fertilization; stigmas 3, purple, papillose. **Flowering time** Sept.–June. **Follicles** elongate, with 3 fertile carpels and no sterile ones. Along coast in saline marshes, at edges of lagoon and on mountain slopes; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Mkambati Nature Reserve SW to Port St Johns, Kentani and Cintsa River Mouth, from Nature's Valley to Swartkops River, Alexandria, Port Alfred, Great Fish River Mouth and East London, and to Humansdorp).

striata Ruíz & Pav.

Perennial herb, helophyte, 0.10–0.32 m high; rhizome woody, stoloniferous, sparsely covered with fibres. **Leaves** distichous, succulent, linear, almost terete, green. **Inflorescence** with flowers arranged in dense spiral whorls; pedicels arcuate, decurrent; perianth segments 1 mm long. **Flowering time** Sept.–May. **Follicles** globose, 3-ribbed, compressed, apiculate, with 3 inner fertile, dorsally keeled carpels alternating with 3 outer sterile ones. Along coast, in saline marshes and borders of lagoons; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Port St Johns SW to Kei River Mouth, from Uitenhage to Port Elizabeth, Kenton on Sea, Hopewell and East London, and to Humansdorp).

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LANARIACEAE

(Order Asparagales)

Compiled by Z.L Magwaza

LANARIA Aiton

Monotypic (Dahlgren & Van Wyk 1988: 71), endemic to sthn Afr., from the Hottentots Holland Mts in WC to EC.
Formerly placed in Haemodoraceae.

lanata (L.) T.Durand & Schinz

Cape edelweiss; *perdekapok* (A)

Tufted, perennial geophytes, 0.2–0.5 m high; rhizome woody, vertical, with a dense tuft of fibres. **Leaves** basal, distichous, linear, glabrous, rigid, closely ribbed. **Peduncle** villous. **Flowers** in a dense panicle, regular, with soft, dense, plumose hairs. **Perianth** externally villous, internally glabrous and mauve-pink; segments 6, spreading, linear. **Stamens** erect, short outer filaments arising from throat of perianth; anthers versatile, sagittate, opening by longitudinal slits. **Ovary** with 3 locules; ovules axile, anatropous, 2 in each locule; style subulate, exserted; stigma 3-lobed. **Flowering time** Oct.–Mar. **Capsule** subglobose, 1-seeded, crowned with persistent perianth. In grassland and sandy soil, mostly in fynbos; Eastern Fynbos-Renosterveld, Albany Thicket [Joubertina E to Steytlerville (Jagersbos), Uitenhage, Van Stadens Mts, Albany District (Cold Spring), Bathurst District, and to Humansdorp].

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LEMNACEAE see ARACEAE

*LILIACEAE

(Order Liliales)

Compiled by F.M. Nonyane

*LILIUM L.

Species ± 100, widespread but mostly northern temperate; 1 in sthn Afr., LIM, M, KZN, EC.

An occasional garden escape, commercially important ornamental with beautiful flowers.

formosanum (Baker) Wallace

St. Joseph's/formosa lily; *formosa lelie* (A)

Perennial geophyte, 1.0–2.5 m high; bulbs scaly, roots thick; stems erect, simple, purplish brown towards base. **Leaves** scattered, crowded basally, linear to narrowly oblong, glabrous, margins recurved. **Flowers** ascending, 1 or 2(–10), funnel-shaped, borne horizontally; pedicels 50–150 mm long. **Perianth**: segments 120–200 mm long, flushed reddish purple outside, white inside, apex recurved, outer 25–30 mm wide, inner up

to 50 mm wide; nectar guides green. **Stamens**: filaments glabrous, free, filiform above, papillose towards base; anthers 9 mm long, yellow to purplish; pollen yellow. **Ovary** superior, biseriate; style terete, 80–120 mm long; stigma deeply 3-lobed. **Flowering time** Jan.–Mar. **Fruit** 70–90 mm long capsules. **Seeds** disc-shaped, papery. Invades grassland, moist sites, roadsides, plantations; Drakensberg Grassland, Albany Thicket (Fort Beaufort District).

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NAJADACEAE see HYDROCHARITACEAE

ORCHIDACEAE

(Order Asparagales)

Compiled by C.L. Bredenkamp, G.J. Bredenkamp, C. Archer & N.L. Meyer

Adapted from Stewart et al. (1982), Linder and Kurzweil (1999) and Manning and Goldblatt (2012)

1a Terrestrial herbs, rarely lianas creeping in bushes but rooting in ground, if growing on trees or rocks, then with fleshy root tubers and thin, soft leaves:
2a Pollinia in pouch-like structures without removable cap; underground organs almost always root tubers, rarely clusters of thick roots with furry sheath or bundles of thick fleshy roots (in the latter case leaves arranged in basal rosette):
3a Gynostemium with significant basal column-part which is longer than wide; anther pendent.....**Satyrium**
3b Gynostemium without prominent column-part:
4a Lip or its side lobes with fringed or lacerated margins:
5a Median sepal spurred.....**Disa** section **Herschelianthe** (in part)
5b Median sepal not spurred:
6a Lip with large appendage..... **Pterygodium** (in part)
6b Lip not appendiculate:
7a Leaves cauline .....**Huttonaea**
7b Leaves 1 or 2, basal, appressed to ground:
8a Flowers large, almost always solitary ..... **Bartholina**
8b Flowers small, 3–many .....**Holothrix** (in part)
4b Lip not with fringed margins, if lobed, then with < 6 lobes:
9a Lateral sepals each with spur or sac..... **Disperis**
9b Lateral sepals without spurs or sacs:
10a Lip spurred:
11a Receptive surface of stigmas on 2 projecting, club-shaped organs:
12a Flowers pink or white, often with darker markings..... **Stenoglottis** (in part)
12b Flowers green, yellowish green, or green and white:
13a Lateral sepals and lower petal lobes fused to stigmatic arms..... **Bonatea**
13b Lateral sepals and lower petal lobes not fused to stigmatic arms.....**Habenaria**
11b Receptive surface of stigmas flat or concave, in cavity below rostellum:
14a Leaves scattered along stem ..... **Brachycorythis** (in part)
14b Leaves basal or clustered in lower stem portion:
15a Petals as long as or longer than sepals; inflorescences erect; leaves 1 or 2, appressed to ground .....
.....**Holothrix** (in part)

15b Petals shorter than sepals; inflorescences normally nodding; leaves many, basal and/or cauline..... ..... **Schizochilus** (in part)
10b Lip not spurred:
16a Lip without an appendage:
17a Lip basally erect and fused to the gynostemium..... **Ceratandra**
17b Lip basally not erect and not fused to the gynostemium:
18a Stigmas 2, club-shaped..... **Stenoglottis** (in part)
18b Stigma 1, not club-shaped:
19a Leaves basal, grass-like:
20a Inflorescence apex nodding; sepals 2–4 mm long ..... **Schizochilus** (in part)
20b Inflorescence erect; flowers mostly larger.....**Disa** section **Herschelianthe** (in part)
19b Leaves not basal and grass-like:
21a Lip linear or narrowly lorate, erect in front of gynostemium and shorter than it ..... **Brownleea**
21b Lip spreading or patent, as long as or longer than gynostemium:
22a Lip 3-lobed with prominent lobes:
23a Stem densely leafy..... **Brachycorythis** (in part)
23b Stem only with sheaths ..... **Schizochilus** (in part)
22b Lip entire or with minute side lobes:
24a Lip fiddle-shaped, with large tooth-like apex..... **Schizodium** (also see *Disa*)
24b Lip linear to elliptic, apex not tooth-like:
25a Leaf 1; petals ± half as long as sepals; inflorescence slightly nodding.....**Dracomonticola**
25b Leaves 2–several; petals ± as long as sepals; inflorescence erect:
26a Leaves 2 or 3, basal; median sepal unspurred; anther erect.....**Neobolusia**
26b Leaves several; median sepal usually spurred; anther mostly reflexed to a horizontal or pendent position .....**Disa** (in part)
16b Lip with a prominent appendage:
27a Lip anchor-shaped or broadly rhomboid; leaves cauline, linear or narrowly lanceolate and ± equally long.....**Evotella**
27b Lip not as above; leaves 1 to many, basal and/or cauline, elliptic to lanceolate, rarely linear:
28a Median sepal and petals forming shallow to flat hood, lip appendage elongate, solid or funnel-shaped ..... **Pterygodium** section **Pterygodium**
28b Median sepal and petals forming deeply globose hood; lip appendage a shield on top of gynostemium, often with lateral processes .....**Pterygodium** section **Corycium**
2b Pollinia at apex of gynostemium under removable anther cap; if anther cap insignificant or absent, underground organs not root tubers:
29a Stems reed-like, 0.3–1.0 m long; flowers white, with narrow sepals and petals > 45 mm long..... ..... **Corymborkis**
29b Stems not reed-like:
30a Gynostemium fused to lip..... **Calanthe**
30b Gynostemium not fused to lip:
31a Inflorescence terminal:
32a Lip spurless; plants pseudobulbous; leaves thin-tissued ..... **Liparis**
32b Lip with short spur; plants without pseudobulbs; leaves leathery .....**Acrolophia**
31b Inflorescence lateral..... **Eulophia**
1b Plants epiphytic on trees or shrubs, sometimes epilithic; always without root tubers:
33a Pseudobulbs present:
34a Inflorescence lateral.....**Bulbophyllum**
34b Inflorescence terminal .....**Polystachya** (in part)
33b Pseudobulbs absent:
35a Inflorescence terminal; growth sympodial; flowers not resupinate .....**Polystachya** (in part)
35b Inflorescences lateral; growth monopodial (tribe Vandeae):
36a Plants leafless:
37a Anther cap bright green; perianth campanulate with broadly rounded lobes..... **Diaphananthe** (in part)
37b Anther cap yellow, brown or dull green; perianth lobes narrow and pointed ..... **Mystacidium** (in part)
36b Plants with green leaves:
38a Lip wide at base and encircling gynostemium; rostellum very short and emarginated .....**Angraecum**

38b Lip arising below gynostemium, and normally not encircling it; rostellum various:
39a Flowers white; apical half of lip not or only shallowly 3-lobed:
40a Sepals and petals narrow and pointed, similar to lip ..... **Cyrtorchis**
40b Sepals and petals not as above:
41a Leaves conduplicate but flat in upper part; stipe 1, entire ..... **Aerangis**
41b Leaves V-shaped throughout; stipes 1 or 2:
42a Stipe 1, Y-shaped, divided for nearly half its length; spur usually 45 × 1 mm..... **Ypsilopus**
42b Stipes 2, free to near base; spur 8–90 mm long:
43a Flowers star-like with broadly ovate-lanceolate perianth lobes; lateral sepals 9–11 mm long; spur 50–90 mm long ..... **Rangaeris**
43b Flowers not as above:
44a Lip ecallose; anther cap not bright green; spur mouth wide; sepals and petals mostly acute and often reflexed..... **Mystacidium** (in part)
44b Lip mostly callose at base, if rarely without callus, then anther cap conspicuously green and perianth campanulate with broadly obtuse sepals and petals ..... **Diaphananthe** (in part)
39b Flowers green, cream-coloured, pale brown or yellow; apical half of lip various:
45a Lip apically deeply 3-lobed, side lobes often fringed; stipe and viscidium solitary ..... **Tridactyle**
45b Lip apically not deeply 3-lobed; stipes 2:
46a Lip without callus; anther cap not bright green; spur mouth wide; sepals and petals often reflexed, acute ..... **Mystacidium** (in part)
46b Lip mostly with callus in spur mouth, if rarely without callus, then anther cap conspicuously green, and sepals and petals broadly obtuse ..... **Diaphananthe** (in part)

ACROLOPHIA Pfitzer

(Epidendroideae—Cymbidieae)

Species 7, sthn Afr., KZN, WC, EC.

1a Sepals 4–7 mm long; anther cap without horns
2a Lip with definite side lobes; flowers resupinate

micrantha (Lindl.) Schltr. & Bolus

Terrestrial herb, robust, 0.25–0.70 m high, thick roots with velamen. **Leaves** distichous, imbricate, conduplicate, coriaceous, linear, 300 × 15 mm. **Inflorescences** terminal, lax panicles, branching with up to 5 branches, up to 300 mm long. **Flowers** many, sepals greenish brown, petals pale brown, lip white with red spots. **Sepals** subequal, free; median sepal 3–4 mm long. **Petals** 3–4 mm long, similar to sepals. **Lip** 3-lobed, 5–7 mm long, concave, 3 toothed keels, rounded side lobes; spur minute. **Anther cap** without horns. **Flowering time** Oct.–Dec. Scrub; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (King William's Town E to Kei River Mouth, Humansdorp E to Uitenhage).

2b Lip without definite side lobes; flowers not resupinate

cochlearis (Lindl.) Schltr. & Bolus

Impimpi (Z)

Terrestrial herb, robust, up to 1.0 m high, thick roots with velamen. **Leaves** distichous, imbricate, conduplicate, coriaceous, linear, 400 × 15 mm. **Inflorescences** terminal, lax panicles, branching with up to 5 branches, up to 400 mm long. **Flowers** many, sepals brown, petals yellowish brown, lip white to pale yellow, red to purple basal blotch. **Sepals** subequal, free; median sepal 4–5 mm long. **Petals** 4–6 mm long, similar to sepals. **Lip** 3-lobed, 5–7 mm long, concave, 3 or 4 ragged keels, without side lobes, 1–2 mm long; spur 1.5 mm long. **Anther cap** without horns. **Flowering time** Oct.–Dec. Coastal scrub; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Port Edward, Fort Beaufort and Seymour S, from Joubertina E to Port Elizabeth).

1b Sepals 9–20 mm long; anther cap with horns
3a Pedicel plus ovary 20 mm long; sepals white to pale rose, membranous

barbata (Thunb.) H.P.Linder

Terrestrial herb, robust, 0.5–1.0 m high, thick roots with velamen. **Leaves** distichous, imbricate, conduplicate, linear, 300 × 15 mm. **Inflorescences** terminal, simple, up to 300 mm long. **Flowers** many, white to pale rose, membranous. **Sepals** subequal, linear triangular to lorate, acute 10–13 × 2–3 mm. **Petals** narrowly oblanceolate, acute, apices reflexed, 12–13 × 3–4 mm. **Lip** narrowly oblanceolate, 3-lobed, 15–13 × 6–8 mm, disc with 5 rows papillae, midlobe rounded, side lobes rounded, 2 mm long; spur subclavate, 3 mm long. **Anther cap** with horns. **Flowering time** Nov., Dec. In coastal and foothill fynbos, Eastern Fynbos-Renosterveld (Storms River to Humansdorp).

3b Pedicel plus ovary 10–15 mm long; sepals green to purplish brown, thick

capensis (P.J.Bergius) Fourc.

Terrestrial herb, slender to robust, 0.15–0.80 m high, thick roots with velamen. **Leaves** distichous, imbricate, conduplicate, coriaceous, linear, 450 × 15 mm. **Inflorescences** terminal, from simple to 10 branches. **Flowers** many, sepals and petals green or purplish brown, lip white with purple callus and side lobes. **Sepals** equal, spreading, lorate, acute, 9–13 × 2–3 mm. **Petals** hooding gynostegium, reflexed apices, narrowly oblong, acute, 9–12 × 3–5 mm. **Lip** narrowly obovate, 3-lobed, 10–15 × 5–7 mm, disc with 5–7 rows of papillae, midlobe rounded, side lobes rounded, porrect, 1–2 mm long; spur rounded to obtuse, 2–3 mm long. **Anther cap** with 2 lateral horns. **Flowering time** Oct.–Jan. Fynbos, *Restio*-veld; Eastern Fynbos-Renosterveld (Joubertina E to Port Elizabeth and Grahamstown District).

AERANGIS Rchb.f.

(Epidendroideae—Vandeae)

Species ± 50, Africa and Mascarene Islands; 3 (possibly 5) in sthn Afr., M, S, KZN, EC.

mystacidii (Rchb.f.) Schltr.

Herb, epiphyte, up to 0.18 m high, 200 mm in diam. **Stem** short, leafy, without pseudobulbs. **Leaves** distichous, tough, leathery, dark green, narrowly oblong to oblanceolate, unequally bilobed at apex. **Inflorescences** long pendulous racemes; flowers 4–15, white. **Sepals** lanceolate-oblong, spreading, free, 7–13 mm long; median sepal arched over column; lateral sepals spreading. **Petals** similar to sepals, reflexed. **Lip** elliptic to lanceolate-oblong, deflexed, 7–12 mm long; spur 50–80 mm long, curved forward, smooth. **Flowering time** Feb.–Apr. Low epiphyte in deep shade of forests; Indigenous Forests (Lusikisiki S, King William's Town E to Komga).

ANGRAECUM Bory

(Epidendroideae—Vandeae)

Species ± 200, Africa, Madagascar and Mascarene Islands, 1 in Sri Lanka; 6 widespread in subtropical parts of sthn Afr., LIM, M, S, KZN, WC, EC.

1a Stems elongated with leaves widely spaced

conchiferum Lindl.

Herb, slender epiphyte, up to 0. 6 m high, 200 mm in diam. **Stem** long, branched in large clumps, leafy, without pseudobulbs, with many grey roots with rough, warty

velamen. **Leaves** sessile, widely spaced, alternate, 60 × 9 mm, tough, leathery, dark green, linear or narrowly strap-shaped; sheaths warty, unequally bilobed at apex. **Inflorescences** opposite leaves; flowers solitary, non-resupinate, up to 60 mm in diam., cream-coloured to yellowish green, lip white. **Sepals**: median sepal longer than petals; lateral sepals wider and longer than petals. **Lip** broadly ovate, concave, almost orbicular, 20 mm in diam., apex pointed; spur 40–50 mm long, smooth. **Flowering time** Oct., Nov. Epiphyte in moist, cool, shady forests; Indigenous Forests (King William's Town District).

1b Stems short with leaves close together
2a Flowers white

pusillum Lindl.

Herb, small, slender epiphyte, up to 0.20 m high. **Stem** short, slender. **Leaves** sessile, grass-like, 5–10, clumped in terminal cluster, 120 × 5–6 mm, dark green, linear or narrowly strap-shaped; sheaths warty, unequally bilobed at apex. **Inflorescences** of several erect spikes, longer than leaves; flowers 4–15, small, < 5 mm in diam., cream-coloured to white, lip white. **Sepals** subequal, narrowly lanceolate, apices reflexed. **Petals** lanceolate-acuminate, 1.0–1.2 mm long. **Lip** deeply concave; spur short, 1–2 mm long. **Flowering time** Sept.–Mar. Epiphyte in shady forests; Indigenous Forests (King William's Town E to Kentani S, from Alexandria and East London and Joubertina E to Humansdorp).

2b Flowers green

sacciferum Lindl.

Herb, small epiphyte, up to 0.1 m high. **Stem** short, narrow. **Leaves** sessile, linear, strap-shaped, 4–8, clumped in terminal cluster, 40 × 4–6 mm, green, unequally bilobed at apex. **Inflorescences** of several erect spikes, as long as or shorter than leaves; flowers up to 5, small, 5–8 mm in diam., lime-green. **Sepals** larger than petals. **Petals** flat, lanceolate-acuminate. **Lip** deeply concave, boat-shaped, margins incurved; spur short, 1–2 mm long, bulbous. **Flowering time** Sept.–Mar. Epiphyte in shady forests; Indigenous Forests (Kokstad SW to Stutterheim, Joubertina E to Humansdorp).

BARTHOLINA R.Br.

(Orchidoideae—Orchideae)

Species 2, sthn Afr., N, NC, WC, EC.

Lip segments filiform

burmanniana (L.) Ker Gawl.

Terrestrial herb, geophyte, up to 0.23 m high; with small, globose, root tubers. **Leaf** solitary, basal and appressed to ground, reniform-orbicular, up to 18 mm in diam. **Inflorescence** normally 1-flowered. **Sepals** subequal, free, erect, green; dorsal sepal 8–12 mm long. **Petals** white to mauve, up to 17 mm long. **Lip** spurred, up to 32 mm long, conspicuously fimbriate, many linear lobes, apices pointed, same colour as petals; spur 8–12 mm long. **Flowering time** Sept., Oct. In fynbos, *Restio*-veld, flowers after fire; Eastern Fynbos-Renosterveld (Humansdorp E to Port Elizabeth and Grahamstown District).

Lip segments abruptly clavate at apex

etheliae Bolus

Spider orchid

Terrestrial herb, geophyte, up to 0.30 m high; with small, globose, root tubers. **Leaf** solitary, basal and appressed to ground, reniform-orbicular, up to 35 mm in diam.

Inflorescence normally 1-flowered. **Sepals** subequal, free, erect, pale green; dorsal sepal 10–13 mm long. **Petals** white and purple, 8–16 mm long. **Lip** spurred, up to 32 mm long, conspicuously fimbriate, many linear lobes, apices with white, terminal knob, same colour as petals; spur 6–9 mm long. **Flowering time** Oct.–Dec. In dry fynbos; Eastern Fynbos-Renosterveld (Baviaanskloof E to Humansdorp).

BONATEA Willd.

(Orchidoideae—Orchideae)

Species 20, Arabian Peninsula, E Africa to WC; 10 in sthn Afr., LIM, G, M, S, KZN, EC.

1a Leaves in basal rosette

polypodantha (Rchb.f.) L.Bolus.

Terrestrial herb, slender, geophyte, up to 0.35 m high; with oblong tuberous roots. **Leaves** 2–4, basal, broadly elliptic, up to 120 × 25–35 mm. **Inflorescence** a lax, elongated raceme; flowers 2–15, white and pale green. **Sepals** unequal; median sepal erect, forming hood, 9–13 mm long; lateral sepals 9–10 mm long, spreading, white, apex green. **Petals** deeply 2-lobed, upper lobe linear, 8–11 mm long, lower (anterior) lobe narrowly linear, attenuate, 30–40 mm long, curved, white. **Lip** 3-lobed, midlobe narrowly linear, 14–25 mm long, shorter than side lobes, side lobes 25–38 mm long, narrowly linear, attenuate; spur 35–44 mm long, slightly swollen towards apex. **Flowering time** Feb., Mar. Riverine scrub forest, dense shade; Sub-Escarpment Grassland (Rode S to Queenstown District, Gwatyn near Swart Kei River).

1b Leaves cauline, not in basal rosette
2a Spur up to 25 mm long; leaves linear-lanceolate

cassidea Sond.

Terrestrial herb, slender, geophyte, up to 0.5 m high; with oblong, tuberous roots. **Leaves** cauline, linear-lanceolate, attenuate, up to 170 × 12 mm. **Inflorescence** a lax, elongated raceme; flowers 3–21, white and green. **Sepals** unequal; median sepal erect, forming hood, 7–12 mm long; lateral sepals oblique and reflexed. **Petals** deeply 2-lobed, upper lobe narrowly linear, 8–11 mm long, lower (anterior) lobe oblanceolate, acute, 11–18 mm long, fused at base with stigmatic arms and lip. **Lip** 3-lobed, midlobe linear, 7–11 mm long, side lobes oblanceolate, acute, slightly longer than midlobe; spur 11–14 mm long. **Flowering time** Aug.–Oct. Bushy areas; Drakensberg Grassland, Sub-Escarpment Savanna, Indigenous Forests, Albany Thicket (Seymour, Hogsback and Fort Beaufort District E to Kentani, from Uitenhage to Alexandria Forest and East London).

2b Spur > 25 mm long; leaves ovate or broadly lanceolate
3a Dorsal sepal 10–13 mm long; upper petal lobe 10–13 mm long

porrecta (Bolus) Summerh.

Terrestrial herb, fairly robust, geophyte, up to 0.7 m high; with oblong tuberous roots. **Leaves** cauline, narrowly oblong, up to 110 mm long, withered when flowering. **Inflorescence** a lax, elongated raceme; flowers many, white and green. **Sepals** unequal; median sepal erect, forming hood, 10–12 mm long; lateral sepals oblique and reflexed. **Petals** deeply 2-lobed, upper lobe linear, 10–12 mm long, lower (anterior) lobe narrowly linear, 15–20 mm long, curved towards apex. **Lip** 3-lobed, midlobe narrowly linear, shorter than side lobes, sharply bent in middle, side lobes 16–21 mm long, narrowly linear, attenuate, curved towards apex; spur 30–35 mm long, swollen towards apex. **Flowering time** June–Aug. Grassland and scrub; Sub-Escarpment Savanna (East London District, Prospect siding).

3b Dorsal sepal 14–24 mm long; upper petal lobe 15–25 mm long

speciosa (L.f.) Willd.

Green wood-orchid; *Oktoberlelie* (A)

Terrestrial herb, robust, geophyte, 0.42–1.00 m high; with oblong tuberous roots. **Leaves** cauline, oblong to broadly lanceolate, acute, up to 130 × 40 mm. **Inflorescence** a dense, elongated raceme; flowers many, white and green. **Sepals** unequal; median sepal erect, forming hood, 14–24 mm long; lateral sepals oblique and reflexed. **Petals** deeply 2-lobed, upper lobe linear, 15–25 mm long, lower (anterior) lobe linear to oblanceolate, falcate, acuminate, 18–36 mm long, fused at base with stigmatic arms and lip. **Lip** 3-lobed, midlobe narrowly linear, falcate, 14–21 mm long, sharply bent in middle, side lobes slightly longer than midlobe; spur 25–47 mm long, swollen towards apex. **Flowering time** June–Feb. Bushy areas, forest margins; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Lesseyton to Lusikisiki S, Mzimvubu River to Port St Johns, Komga to Kentani, Redhouse to East London and to Humansdorp).

BRACHYCORYTHIS Lindl.

(Orchidoideae—Orchideae)

Species 33, Africa and tropical Asia; 7 in sthn Afr., summer rainfall area, LIM, NW, G, M, S, KZN WC, EC.

1a Lip with a spur

macowaniana Rchb.f.

Terrestrial herb, geophyte, erect, slender, up to 0.32 m high; roots tuberous. **Leaves** cauline, many, lanceolate, up to 38 × 10 mm, imbricate, gradually decreasing in density and size upwards. **Inflorescence** a lax to dense raceme. **Flowers** with brownish sepals, pale green petals and lip. **Sepals** free; dorsal sepal 3 mm long; lateral sepals ascending or spreading, recurved. **Petals** oblique, similar to dorsal sepal. **Lip** 3 mm long, recurved, with side lobes; spur 2 mm long. **Flowering time** Nov., Dec. Grassland or sandy *Restio*-veld; Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown District, Humansdorp District).

1b Lip without a spur
2a Lip 4–5 mm long; flowers yellowish green

[E]inhambanensis (Schltr.) Schltr.

Terrestrial herb, geophyte, erect, slender, up to 0.25 m high; roots tuberous. **Leaves** cauline, 4–7, lanceolate, up to 45 × 6 mm, imbricate, gradually decreasing in density and size upwards. **Inflorescence** a dense raceme. **Flowers** yellow-green, purple spots on lip; bracts leafy. **Sepals** free; dorsal sepal 4.5 mm long; lateral sepals ascending or spreading, recurved. **Petals** oblique, similar to dorsal sepal. **Lip** 5 mm long, broadest at apex; spur absent. **Flowering time** Dec.–Mar. Moist grassland; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Transkei Wild Coast).

2b Lip 6–16 mm long; flowers pink

ovata Lindl.

Imfeyamasele yentaba (Z)

Terrestrial herb, geophyte, erect, robust, 0.28–0.40 m high; roots tuberous. **Leaves** cauline, many, lanceolate, up to 70 × 22 mm, imbricate, gradually decreasing in density

and size upwards. **Inflorescence** a dense raceme. **Flowers** pale white with shades of pink to pale mauve, central white keel, purple spots on lip. **Sepals** free; dorsal sepal 5–7 mm long; lateral sepals ascending or spreading, recurved. **Petals** oblique, similar to dorsal sepal. **Lip** 10–13 mm long, 3-lobed at apex, margins deflexed; spur absent. **Flowering time** Oct.–Jan. Grassland or open savanna; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Matatiele District S to Mkambati Nature Reserve, Stutterheim to Kei River Mouth and to East London).

BROWNLEEA Harv. ex Lindl.

(Orchidoideae—Diseae)

Species 7, Africa and Madagascar; 5 in sthn Afr., LIM, M, FS, KZN, L, WC, EC.

1a Flowers in apical head

galpinii Bolus

Terrestrial herb, slender geophyte, 0.15–0.50 m high; with ovoid root tubers. **Leaves** 2–4, cauline, linear, conduplicate, acute, up to 200 mm long. **Inflorescence** capitate. **Flowers** 5–25, secund, white to cream-coloured with small purple spots on petals. **Sepals** unequal, median sepal galeate 5–10 mm long; lateral sepals spreading, 6–10 mm long; spur 3.5–6.0 mm long, straight. **Petals** erect, narrowly oblong-pandurate, apical lobe spreading, fan-like. **Lip** small, < 2 mm long. **Flowering time** Jan.–Mar. High altitude grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate E to Kokstad).

1b Flowers in a lax spike
2a Spur straight or slightly decurved, more than twice as long as median sepal
3a Leaves 1, < 10 mm wide; plants with 1–3 flowers

macroceras Sond.

Terrestrial herb, slender geophyte, 0.04–0.08 m high; with ovoid root tubers. **Leaves** 1, cauline, narrowly lanceolate, acute up to 70 × 8 mm. **Inflorescence** lax. **Flowers** 1–6, secund, white to mauve, central parts darker. **Sepals** unequal; median sepal 10–13 mm long; lateral sepals oblique, narrowly elliptical 13–18 mm long; spur slender 25–40 mm long, decurved. **Petals** oblanceolate to narrowly obovate, 10–14 mm long. **Lip** very small. **Flowering time** Jan.–Mar. On rock ledges in full sun in high altitude grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Ben Macdhui to Naude's Neck Pass, Matatiele and Kokstad S, from Barkly Pass to Maclear, Cathcart to Stutterheim and to Grahamstown).

3b Leaves 2 or 3, > 10 mm wide; plants with 6–15 flowers

coerulea Harv. ex Lindl.

Terrestrial herb, slender geophyte, lithophyte or epiphyte, 0.1–0.6 m high; with ovoid root tubers. **Leaves** 2 or 3, cauline, spreading, narrowly ovate, 80–190 × 35–40 mm. **Inflorescence** a lax spike. **Flowers** 3–25, secund, mauve with purple spots on hood. **Sepals** unequal, median sepal galeate 8–10 mm long; lateral sepals spreading, 8–12 mm long; spur 13–26 mm long, gradually decurved, apex subclavate. **Petals** narrowly oblong, from slender basal limb, toothed to the rear. **Lip** narrow, linear, with wide base fused to gynostemium, minute, entire. **Flowering time** Feb.–Apr. In shade of forest patches, in moss on rock ledges or tree trunks; Indigenous Forests (Engcobo E to Port Edward, S to Kentani and Grahamstown).

2b Spur sharply decurved, less than twice as long as median sepal
4a Median sepal up to 5 mm long

parviflora Harv. ex Lindl.

Terrestrial herb, slender geophyte, 0.2–0.6 m high; with ovoid root tubers. **Leaves** 2–5, cauline, narrowly lanceolate, up to 150 mm long. **Inflorescence** a dense, cylindrical spike. **Flowers** 20–60, small, secund, white, brown after pollination. **Sepals** unequal; median sepal 2–5 mm long; lateral sepals oblong, 2–5 mm long; spur 3–5 mm long, decurved. **Petals** oblong to square, small. **Lip** very small. **Flowering time** Feb.–Apr. Rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Ramatseliso's Gate E to Kokstad S, from Queenstown to Stutterheim and Kentani).

4b Median sepal > 5 mm long

recurvata Sond.

Terrestrial herb, slender geophyte, 0.2–0.5 m high; with ovoid root tubers. **Leaves** 2 or 3, cauline, linear-lanceolate, acute, up to 200 mm long. **Inflorescence** a lax spike. **Flowers** 12–17, secund, white to pink. **Sepals** unequal; median sepal 7–12 mm long; lateral sepals 8–11 mm long; spur 5–10 mm long, decurved. **Petals** narrowly oblong, with small anticous lobe. **Lip** very small. **Flowering time** Feb.–Apr. Rocky grassland and fynbos; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Matatiele E to Kokstad, SW to Summerset East and from Joubertina to Humansdorp).

BULBOPHYLLUM Thouars

(Epidendroideae—Dendrobieae)

Species ± 1 000, throughout tropics and subtropics of the world; 4 in sthn Afr., LIM, M, S, KZN, EC.

Inflorescence bears 6–16 flowers

sandersonii (Hook.f.) Rchb.f.

Epiphytic or lithophytic herb, succulent, 0.06–0.15 m high; rhizomes 50 mm long; pseudobulbs narrowly ovoid or pear-shaped, 3–5-angled, 30–50 mm long, 30–40 mm apart, green or yellow. **Leaves** 2 at apex of pseudobulbs, coriaceous, elliptic or strap-shaped, 40–120 × 15–20 mm, shortly bilobed at apex. **Inflorescences** lateral, from base of pseudobulbs, rounded at base, flattened at upper $^1/_2$, 100–150 mm high, margins wavy. **Flowers** small, 6–16, in 2 rows, fleshy, green with maroon marks or entirely maroon. **Sepals**: median one free, erect or reflexed at tip, concave; lateral sepals triangular with pointed tip, inner surface velvety. **Petals** linear, smaller and narrower than median sepal, longer than lateral sepals, curving forward and downwards. **Lip** small, fleshy, pointed. **Flowering time** Oct.–Dec. In shady forests; Indigenous Forests (Port St Johns).

Inflorescence bears 24–40 flowers

scaberulum (Rolfe) Bolus

Epiphytic or lithophytic herb, succulent, 0.18–0.25 m high; rhizomes stout, 50 mm long; pseudobulbs narrowly ovoid or pear-shaped, 3–5-angled, 20–40 mm long, 30–60 mm apart, yellow. **Leaves** 2 at apex of pseudobulbs, slightly succulent, elliptic, 60–100 × 15–20 mm, shortly bilobed at apex. **Inflorescences** lateral, from base of pseudobulbs, rounded at base, flattened at upper $^1/_2$, 180–250 mm high, margins smooth, mottled and striped dull purplish. **Flowers** small, 24–40, in 2 rows, fleshy, maroon. **Sepals**: median

sepal curving forward; lateral sepals ovate and acuminate. **Petals** narrow, shorter than lateral sepals. **Lip** small, fleshy, pointed. **Flowering time** Nov.–Feb. In shady forests; Indigenous Forests (Port St Johns to East London).

CALANTHE R.Br.

(Epidendroideae—Arethuseae)

Species ± 200, widespread in Asia, Australasia and Madagascar, 1 each in Africa and Central America; 1 in sthn Afr., LIM, M, S, KZN, WC, EC.

sylvatica (Thouars) Lindl.

Terrestrial or epiphytic herb, up to 0.70 m high; with long fibrous roots. **Stems** pseudobulbs, in rows from basal rhizome, leafy, small and obscured. **Leaves** 2–several, petiolate, plicate, very thin, limb elliptic to oblong-lanceolate, 200–400 × 70–115 mm. **Inflorescence** a lateral raceme; scape erect, longer than leaves, pubescent. **Flowers** 10–30, above leaves, large, white to pink, fading to apricot-orange. **Sepals** subequal, free, widely spreading. **Petals** similar to sepals. **Lip** fused to gynostemium, spurred, 3-lobed, middle lobe 2-lobed, with callus; spur slender, 20–40 mm long. **Flowering time** Jan.–Mar. On forest floor in deep shade, near water; Indigenous Forests (Lusikisiki and Port St Johns to Pirie Forest and King William's Town).

CERATANDRA Eckl. ex F.A.Bauer

(Orchidoideae—Diseae)

Species 6, sthn Afr., mainly WC, extending into EC.

1a Petals and lip white

globosa Lindl.

Terrestrial herb, slender, geophyte, up to 0.4 m high; with furry roots. **Leaves** cauline and forming basal cluster, many, narrowly linear, up to 65 mm long. **Inflorescence** a dense terminal raceme. **Flowers** 6–many, sepals pale purplish green to pink, petals and lip white, rostellum maroon. **Sepals** subequal; median sepal adnate to petals, reflexed, 5 mm long; lateral sepals spreading. **Petals** unlobed, lanceolate-ovate, 6 mm long. **Lip** 5 mm long, cordate; rostellum arms 4 mm long. **Flowering time** Nov.–Jan., after fire. In wetlands or along streambanks; Eastern Fynbos-Renosterveld (Tsitsikamma E to Humansdorp).

1b Petals and lip greenish yellow or orange-yellow
2a Lip with a central callus

atrata (L.) T.Durand & Schinz

Terrestrial herb, slender, geophyte, 0.15–0.35 m high; with furry roots. **Leaves** cauline and forming basal cluster, many, narrowly linear, up to 60 mm long. **Inflorescence** a terminal raceme, lax to dense. **Flowers** many, greenish yellow. **Sepals** subequal; median sepal adnate to petals, reflexed, 9–11 mm long; lateral sepals spreading. **Petals** unlobed, lanceolate-ovate, 8–10 mm long. **Lip** 6–9 × 5–7 mm, anchor-shaped; rostellum arms 7–8 mm long. **Flowering time** Nov.–Jan., after fire. In wetlands or rocky seeps; Eastern Fynbos-Renosterveld (Joubertina District, Port Elizabeth).

2b Lip without a central callus

grandiflora Lindl. × **C. atrata** (L.) T.Durand & Schinz

Terrestrial herb, fairly robust, geophyte, up to 0.43 m high; with furry roots. **Leaves** cauline and forming basal cluster, many, narrowly linear, up to 80 mm long. **Inflores-**

cence a terminal raceme, dense. **Flowers** many, sepals green, petals and lip orange-yellow flushed red. **Sepals** subequal; median sepal adnate to petals, reflexed, 13–14 mm long; lateral sepals spreading. **Petals** unlobed, lanceolate-ovate, 12 mm long. **Lip** 9 × 9 mm, with 2 broad, rounded, recurved lobes; rostellum arms 5–6 mm long. **Flowering time** Oct.–Dec., after fire. In wetlands; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore E to Humansdorp District, Uitenhage, Port Elizabeth and Grahamstown District).

CORYCIUM Sw. see **PTERYGODIUM** Sw.

CORYMBORKIS Thouars

(Spiranthoideae—Tropidieae)

Species 5, Old and New World tropics; 1 in sthn Afr., KZN, EC (Transkei).

corymbis Thouars

Terrestrial herb, reed-like stems 0.5–1.0 m high; roots fibrous, black. **Leaves** spirally arranged, elliptic, plicate, dark green, 110–340 × 30–100 mm, margins undulate. **Inflorescences** of terminal or axillary panicles. **Flowers** up to 16; flowers greenish white, star-shaped; sepals and petals 60–80 × 2 mm, linear, subequal. **Lip** similar but broadly ovate at apex, up to 9 mm wide. **Gynostemium** slightly shorter than lip, long and slender; stigma broad, 3-lobed. **Flowering time** Feb. **Capsule** subterete, with remains of perianth and gynostemium. Moist soil and deep shade in dense riverine forest; Indigenous Forests (Port Edward SW to Port St Johns).

CYRTORCHIS Schltr.

(Epidendroideae—Vandeae)

Species ± 16, Africa; 2 in sthn Afr., LIM, M, S, KZN, WC, EC.

arcuata (Lindl.) Schltr.

Herb, robust epiphyte or lithophyte, up to 0.6 m high; with thick white roots. **Stem** elongated, mostly unbranched, in clumps, leafy, without pseudobulbs. **Leaves** alternate, distichous, sheathing, strap-shaped, fleshy, light green, 110–160 × 25–30 mm, unequally bilobed at apex. **Inflorescences** of axillary racemes, horizontal or arching. **Flowers** 5–15, each 20–30 mm in diam., star-shaped, creamy white becoming orange; sepals, petals and lip free, similar, 20–30 mm long, recurved; spur 40–60 mm long. **Flowering time** Jan.–May. On trees and rock in moist, cool, shady forests; Indigenous Forests (Lusikisiki to Mkambati S, Alice to Kentani, Hankey to Grahamstown, Port Alfred and East London, and to Tsitsikamma).

DIAPHANANTHE Schltr.

(Epidendroideae—Vandeae)

Species ± 50, tropical and subtropical Africa; 4 in sthn Afr., LIM, KZN, EC.

1a Spur 4–10 mm long, curved

xanthopollinia (Rchb.f.) Summerh.

Iphamba (Z)

Herb, epiphyte, up to 0.23 m high; without pseudobulbs, with many, branched roots. **Stem** long, branched, forming untidy masses. **Leaves** in 2 alternate rows, yellowish green, straight, tough, coriaceous, 2 rounded lobes at apex, margins revolute, 40–100 mm long, < 10 mm wide. **Inflorescences** of several racemes, axillary or arising below the leaves,

horizontal or pendent. **Flowers** 10–25, crowded, each 6–12 mm in diam., yellowish green; sepals narrower than petals; lip broader than long; spur cylindrical, curved at base; anther bright yellow. **Flowering time** Feb.–May. In coastal and low altitude inland forests; Indigenous Forests (Port Edward SW to Komga and Kentani).

1b Spur 12–20 mm long, almost straight
2a Spur base inflated, tapering to an acute apex

millarii (Bolus) H.P.Linder

Iphamba (Z)

Herb, epiphyte, up to 0.04 m high; without pseudobulbs, with many, branched roots. **Stem** long, branched, forming untidy masses. **Leaves** linear-lorate, apically flat, basally conduplicate, unequally bilobed, 100–150 × 13–18 mm. **Inflorescences** of several racemes, pendent, 60 mm long. **Flowers** 13–18, each 12 mm in diam., white; anther cap bright green. **Sepals** subequal, spreading forward; median sepal narrowly oblanceolate to oblong, rounded; lateral sepals lorate to narrowly oblong, subacute. **Petals** ovate, obtuse, spreading; lip entire, emarginate, ecallose, 6 × 5 mm; spur 20 mm long, acute. **Flowering time** Dec.–Feb. Rare in coastal forests; Indigenous Forests (Kei River Mouth to East London).

2b Spur base narrow, rising abruptly from the lip, apical half swollen

caffra (Bolus) H.P.Linder

Herb, tiny epiphyte, up to 0.05 m high, 100 mm in diam.; without pseudobulbs, with many, white streaked, grey to green roots. **Stem** very short. **Leaves** 2–4, dark green, linear to narrowly strap-shaped, up to 60 mm long, unequally bilobed at apex. **Inflorescences** of several axillary racemes, arising below the leaves, pendent, 20–35 mm long. **Flowers** 8–15, crowded, each 10–12 mm in diam., white with bright green anther cap; sepals, petals and lip rounded; lip ovate oblong; spur 12–17 mm long, apex swollen. **Flowering time** Sept.–Jan. On trees at low level, in moist, cool, shady forests; Indigenous Forests (Kokstad to Flagstaff).

DISA P.J.Bergius

(Orchidoideae—Diseae)

Species ± 162, Africa, Arabian Peninsula, Madagascar and Mascarene Islands; 131 in sthn Afr., LIM, G, M, S, FS, KZN, L, NC, WC, EC.

1a Anther erect; spur pendent from base of median sepal (section Micranthae*)*
2a Spur much inflated, subacute, longer than median sepal

chrysostachya Sw.

Uklamkleshe (Z)

Terrestrial herb, robust, geophyte, 0.25–1.10 m high; with root tubers; sterile shoot usually absent. **Leaves** cauline, 10–20, densely imbricate, erect-spreading, up to 200 × 16 mm. **Inflorescence** a slender, dense, tapering spike, 100–550 mm long. **Flowers** 40–120, bright orange, orange-pink to yellow. **Sepals** subequal; median sepal erect, galeate, spurred; spur pendent, 5–11 mm long, apex thickened, apex of lateral sepals folded forward. **Petals** narrowly ovate, suboblique. **Lip** 5–7 mm long, strap-shaped, pendent. **Flowering time** Nov.–Jan. In vleis and moist grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Ramatseliso's Gate to Fort Donald S, Maclear to Port St Johns, Seymour to Hogsback and Stutterheim, Joubertina to Port Elizabeth and Grahamstown and to Humansdorp).

2b Spur slender, rarely subclavate, obtuse
3a Spur as long as median sepal; flowers white to mauve

fragrans Schltr.

Lekkerruik-disa (A)

Terrestrial herb, slender to robust, geophyte, 0.07–0.50 m high; with root tubers. **Leaves** of sterile shoot 2, narrowly elliptic, conduplicate; of fertile shoot 4–9 cauline, sheathing, with purple spots and bars, grading into floral bracts. **Inflorescence** a slender, very dense, cylindrical spike 30–100 mm long; flowers 30–80, white to pale lilac, often mottled reddish pink. **Sepals** subequal; median sepal erect, galeate, spurred; spur pendent, 5–10 mm long, slender to club-shaped; lateral sepals porrect. **Petals** oblanceolate, obtuse. **Lip** small, 3–6 mm long, pendent. **Flowering time** Feb.–May. High altitude, rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East E to Kokstad).

3b Spur shorter than median sepal; flowers off-white, bright red or yellow

polygonoides Lindl.

Uklamkleshe (Z)

Terrestrial herb, fairly robust, geophyte, 0.15–0.70 m high; with root tubers; sterile shoot rare. **Leaves** of fertile shoot 6–25, up to 80 mm long, cauline, grading into floral bracts. **Inflorescence** a very dense, cylindrical, tapering spike, 30–170 mm long; flowers 30–80, red. **Sepals** subequal; median sepal erect, galeate, spurred; spur pendent, 1.5–4.5 mm long, slender to club-shaped; lateral sepals 6–7 mm long, porrect. **Petals** narrowly obovate, acute. **Lip** 6 mm long, pendent. **Flowering time** Oct.–Feb. Vleis or marshy grassland; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Port Edward to Kei River Mouth SW, from Otterford to Grahamstown, Alexandria and East London).

sankeyi Rolfe

Terrestrial herb, robust, geophyte, 0.15–0.30 m high; with root tubers. **Leaves** of fertile shoot 6–12, cauline, basal sheaths 10–14 mm long, remainder imbricate, lanceolate, up to 150 × 20 mm, grading into floral bracts. **Inflorescence** very dense, cylindrical, 30–80-flowered; flowers greenish, white or yellow, often mottled purple. **Sepals** subequal; median sepal erect, galeate, spurred; spur pendent, 3.0–3.5 mm long, slender; lateral sepals 6.5–7.5 mm long, porrect. **Petals** obliquely obovate. **Lip** 7 × 1.6 mm, pendent. **Flowering time** Oct.–Feb. High altitude damp grassland; Drakensberg Grassland (Ramatseliso area).

woodii Schltr.

Terrestrial herb, fairly robust, geophyte, 0.15–0.70 m high; with root tubers; sterile shoot rare. **Leaves** of fertile shoot 5–8, up to 110 mm long, cauline, grading into floral bracts. **Inflorescence** a very dense, cylindrical, tapering spike, 30–160 mm long; flowers 40–150, bright yellow. **Sepals** subequal; median sepal bent forward, galeate, spurred; spur pendent, short, 0.8–2.5 mm long, slender; lateral sepals 6–7 mm long, porrect. **Petals** narrowly obovate, acute. **Lip** 6 mm long, pendent. **Flowering time** Sept.–Nov. Marshy grassland or seepage areas, often on road cuttings; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Port Edward SW to Port St Johns).

1b Anther reflexed, if suberect, then spur not pendent from base of median sepal
4a Leaves tough and usually hysteranthous; lip rather wide, reniform, ovate or spathulate, sometimes with a long stalk; lip margin often lacerate or crenulate; petals falcate; flowers often blue or blue with white veins (section Herschelianthe*)*

baurii Bolus

Bloumoederkappie (A)

Terrestrial herb, slender, grass-like, geophyte, 0.2–0.4 m high; root tubers present. **Leaves**: radical leaves 5–10, erect, hysteranthous, linear, thin and wiry, up to 300 mm long; cauline leaves lax, sheathing, 15–25 mm long. **Inflorescence** in lax racemes. **Flowers** 2–14, resupinate, pale blue to purple-blue, lip darker than sepals. **Sepals**: median sepal erect, galeate, ovate, 10–20 × 6–12 mm; spur cylindrical, rounded, 4–6 mm long; lateral sepals spreading, oblong, 10–18 mm long. **Petals** variable, with oblong to ovate basal anticous lobes, 1.0–2.5 mm in diam., rounded, limb strap-shaped, 8–13 mm long, apex deeply bifid to lacerate to acute. **Lip** horizontal, ovate, 10–25 mm long, deeply dissected. **Flowering time** Sept., Oct. Rocky grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad S to Mthatha and Port St Johns).

graminifolia Ker Gawl. ex Spreng.

Bloumoederkappie (A)

Terrestrial herb, slender, grass-like, geophyte, 0.5–1.0 m high; root tubers present. **Leaves**: radical leaves 5, semi-erect, linear, up to 500 × 5 mm; cauline leaves 6–9, lax, loosely sheathing, 20–40 mm long. **Inflorescence** in lax racemes. **Flowers** 2–6, resupinate, blue to purple, petal apices green, lip dark purple. **Sepals**: median sepal erect, galeate, obtuse, 15–20 mm long; spur straight, clavate, 2–4 mm long; lateral sepals spreading, oblong, obtuse, 13–18 × 6–10 mm. **Petals** erect in galea behind anther, orbicular basal anticous lobes 3–4 mm in diam., limb strap-shaped, 11–16 mm long, geniculately curved, apices extended into flabellate structures. **Lip** spreading, narrowly elliptic, obtuse, 11–16 mm long, margins crenulate, curved downwards. **Flowering time** Jan.–Mar. Sandstone slopes; Eastern Fynbos-Renosterveld (Joubertina E to Port Elizabeth).

hians (L.f.) Spreng.
[*Herschelia hians* (L.f.) A.V.Hall]

Bloumoederkappie (A)

Terrestrial herb, slender, grass-like, geophyte, 0.5–0.6 m high; root tubers present. **Leaves**: radical leaves 8–13, semi-rigid, erect, linear, hysteranthous; cauline leaves lax, sheathing, brown, 20–40 mm long. **Inflorescence** in lax racemes. **Flowers** 3–16, resupinate, pale to purplish blue, lip darker than sepals. **Sepals**: median sepal erect, galeate, ovate, 10–15 mm long; spur conical, tapering to apex, 4–6 mm long; lateral sepals spreading, oblong, rounded, 8–12 mm long. **Petals** with broadly oblong basal anticous lobes, 3–4 mm long, rounded or truncate, entire or shallowly serrulate, limb strap-shaped, 7–10 mm long, geniculately or falcately curved, apex acute. **Lip** spreading, oblong-elliptic, 7–12 mm long, margins crenulate-lacerate. **Flowering time** Dec., Jan., after fire. Sandstone slopes; Eastern Fynbos-Renosterveld (Joubertina E to Port Elizabeth).

lugens Bolus

Green bearded disa; *bloumoederkappie*, *groenkappie* (A)

Terrestrial herb, slender, grass-like, geophyte, 0.45–1.00 m high; root tubers present. **Leaves**: radical leaves 8–15, rigid, erect, linear, hysteranthous; cauline leaves lax, sheathing, brown, 20–60 mm long. **Inflorescence** in lax racemes. **Flowers** 5–25, resupinate, creamy green galea, mauve lateral sepals, white petals, rarely almost black. **Sepals**: median sepal erect, galeate, ovate, obtuse, 12–16 mm long; spur slender, cylindrical, tapering to apex, 1–5 mm long; lateral sepals spreading, narrowly oblong, 8–13 mm long. **Petals** with oblong, basal, anticous lobes, 4 mm long, limb linear, 10–15 mm long, geniculately bent, apex acute or deeply lacerate. **Lip** spreading, ovate, 13–19 mm long, deeply dissected and beard-like. **Flowering time** Dec., Jan., after fire. Sandstone slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Humansdorp E to Grahamstown).

[E]**D. lugens** Bolus var. **nigrescens** (H.P.Linder) H.P.Linder found only at Oyster Bay, may be elevated to species status.

spathulata (L.f.) Sw.

Begging hand orchid; *oupa-met-sy-pyp*, *moederharslaggie* (A)

Terrestrial herb, slender, grass-like, geophyte, 0.12–0.30 m high. **Leaves**: radical leaves 5–20, semi-erect, linear, falcately curved, 5–150 mm long; cauline leaves 3, dry, sheathing, 20–30 mm long. **Inflorescence** in lax racemes. **Flowers** 1 or 2, maroon to pale lime and blue. **Sepals**: median sepal erect, subspathulate, claw horizontal 1–3 mm long, blade galeate, 9–20 mm long; spur clavate, straight or curved downwards, 1.5–3.0 mm long; lateral sepals spreading, narrowly ovate, oblique, 6–16 mm long. **Petals** with oblong, basal, anticous lobes 3 mm long, margins entire or crenulate, limb, linear, 7–12 mm long, apex curved upwards behind anther, bilobed. **Lip** spathulate, claw linear, 5–35 mm long, trilobed to trifid. **Flowering time** Nov., Dec.

Two subspecies are recognised:

D. spathulata (L.f.) Sw. subsp. **spathulata**

On shale in Renosterveld; Eastern Fynbos-Renosterveld (Willowmore District).

[E]**D. spathulata** (L.f.) Sw. subsp. **tripartita** (Lindl.) H.P.Linder

Fynbos next to road; Eastern Fynbos-Renosterveld (Haarlem Drift, Langkloof, between Louterwater and Avontuur).

venusta Bolus

Terrestrial herb, slender, grass-like, geophyte, 0.3–0.6 m high; root tubers present. **Leaves**: radical leaves 6–12, rigid, erect, linear; cauline leaves lax, brown, 15–40 mm long. **Inflorescence** in lax racemes. **Flowers** 2–12, resupinate, blue. **Sepals**: median sepal erect, galeate, acuminate, 10–18 mm long; spur conical, horizontal, acute, 1.5–3.0 mm long; lateral sepals spreading, oblong, acute 12–16 mm long. **Petals** with small basal anticous lobes, 1.5 mm long, limb falcate, linear 6 mm long, apex bilobed or expanded to form a fan. **Lip** ovate, lacerate, decurved, 7–12 mm long. **Flowering time** Jan. Damp grassland; Drakensberg Grassland (Hogsback).

4b Leaves soft and synchronous; lip almost always narrow, filiform, linear or lorate, sometimes slightly wider in apical part; lip margin entire; petal shape, flower colour and venation various
5a Rostellum unlobed, viscidium mostly 1, very rarely 2; petals and lip fleshy (section Monadenia*)*

bracteata Sw.

Orgidekie (A)

Terrestrial herb, geophyte, 0.3–0.5 m high. **Leaves** many, cauline, largest near base, linear-lanceolate. **Inflorescence** cylindrical, dense 20–120 mm long; bracts overtopping

the flowers. **Flowers** many, green, sepals tinted maroon. **Sepals**: median sepal shallowly galeate, broadly oblong, obtuse to acute, 3–4 mm long; spur shallowly triangular, pendent, 3.0–4.5 mm long; lateral sepals patent, oblong, acute, 2.5–3.5 mm long. **Petals** erect, partially included in galea, obtriangulate, acute, 2.0–2.5 mm long. **Lip** pendent, narrowly oblong to oblanceolate, 2.0–2.5 mm long. **Anther** pendent, rostellum with large notch. **Flowering time** Sept.–Nov. Disturbed sites from sea level to 2 000 m; Eastern Fynbos-Renosterveld, Albany Thicket (Storms River E to Grahamstown).
Roadside weed in Australia, where it was accidentally introduced.

brevicornis (Lindl.) Bolus
Terrestrial herb, robust geophyte, 0.2–0.5 m high. **Leaves** basal, narrowly lanceolate, 150 mm long. **Inflorescence** lax, 40–300 mm long; bracts as tall as or overtopping the flowers, acuminate. **Flowers** many, lateral sepals petals and lip lime-green, lip base maroon, median sepal rust colour. **Sepals**: median sepal erect, shallowly galeate, obovate to oblong, obtuse, 7–10 mm long; spur pendent, cylindrical, apex curved towards ovary, 7–11 mm long; lateral sepals reflexed, oblong, obtuse, 5–9 mm long. **Petals** obliquely narrowly ovate-oblong, obliquely retuse, 5–9 mm long. **Lip** narrowly oblong, obtuse, 6–8 mm long. **Anther** semi-pendent, 1.5–2.0 mm long, rostellum 1–2 mm tall. **Flowering time** Nov.–Feb. Grassland from sea level to 2 700 m; Drakensberg Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Ramatseliso's Gate S, Lusikisiki District to Port St Johns, Stutterheim to Kei River Mouth, Tsitsikamma to Port Elizabeth, Grahamstown and Alexandria District).

cernua (Thunb.) Sw.
Terrestrial herb, robust geophyte, 0.2–0.6 m high. **Leaves** basal, linear-lanceolate, 140–200 × 15–20 mm. **Inflorescence** 100–250 mm long; bracts as tall as flowers. **Flowers** many, sepals creamy green, mottled maroon, lime-green petals and lip. **Sepals**: median sepal shallowly galeate, oblong, obtuse, 10–14 mm long; spur clavate, rounded, 11–17 mm long, appressed to the ovary; lateral sepals reflexed, narrowly acute to obtuse, 9–13 mm long. **Petals** subobliquely ovate-oblong, bluntly acuminate, 7–10 mm long. **Lip** lorate, rounded, subfleshy, 8–12 mm long. **Anther** subhorizontal, 3 mm long, rostellum 2–3 mm tall. **Flowering time** Sept.–Nov. Damp plains habitats between sea and mountain range; Eastern Fynbos-Renosterveld (Storms River E to Humansdorp).

comosa (Rchb.f.) Schltr.
Terrestrial herb, erect to subflexuose geophyte, 0.08–0.30 m high. **Leaves** 2 or 3 basal, semi-erect, elliptic, obtuse, 30–130 mm long, remaining leaves closely sheathing the stem. **Inflorescence** slender, lax, 40–150 mm long; bracts shorter than ovaries, venation reticulate. **Flowers** 1–20, lime green, occasionally tinted red. **Sepals**: median sepal erect, shallowly galeate, oblong, obtuse, 9–11 mm long; spur slender, cylindrical, acute, appressed to ovary, 17–24 mm long; lateral sepals obliquely oblong-ovate, obtuse, 6–7 mm long. **Petals** obliquely ovate, retuse, 6–8 mm long. **Lip** elliptic, obtuse to acute, subfleshy, 6–8 mm long. **Anther** semi-pendent, 2 mm long; stigma as tall as rostellum, 2 mm tall. **Flowering time** Sept.–Nov. Damp, semi-shade rock crevices and ledges on Kouga Mts; Eastern Fynbos-Renosterveld (Storms River E to Kouga Mts).

cylindrica (Thunb.) Sw.
Terrestrial herb, slender, geophyte, 0.08–0.40 m high; root tubers present. **Leaves** cauline, strap-shaped, grading into floral bracts. **Inflorescence** a dense, cylindrical raceme. **Flowers** many, resupinate, imbricate, green, sweet scented. **Sepals** 4–6 mm

long, median sepal galeate, concave, horizontal; spur short, saccate, 0.3–0.5 mm long; lateral sepals reflexed. **Lip** horizontal basally, soon deflexed, narrowly elliptic, fleshy, 3.5–4.5 mm long. **Petals** erect next to rostellum, narrowly ovate. **Flowering time** Oct.–Dec., after fire. Moist seeps on sandstone; Eastern Fynbos-Renosterveld (Tsitsikamma E to Humansdorp).

densiflora (Lindl.) Bolus

Terrestrial herb, geophyte, 0.08–0.35 m high. **Leaves** many, imbricate, linear-lanceolate, 50–140 mm long. **Inflorescence** slender, cylindrical, 29–180 mm long; bracts as tall as or overtopping the flowers. **Flowers** many, dull green petals, sepals rusty red. **Sepals**: median sepal shallowly galeate, oblong, obtuse, 3–5 mm long; spur triangular, constricted at base, 2–3 mm long; lateral sepals patent, oblong-ovate, subobtuse, 3–5 mm long. **Petals** narrowly oblong, rounded, 2.5–5.0 mm long. **Lip** pendent, narrowly oblong to oblanceolate, 2.5–5.0 mm long, apex fleshy. **Anther** pendent; stigma horizontal; rostellum with deep notch. **Flowering time** Sept.–Dec., mostly Oct. Sandy soils at Storms River; Eastern Fynbos-Renosterveld (Storms River Mouth).

ophrydea (Lindl.) Bolus

Terrestrial herb, slender geophyte, up to 0.4 m high, suffused with beetroot-red. **Leaves** basal, narrowly lanceolate, 100 mm long. **Inflorescence** lax, 300 mm long; bracts purplish green. **Flowers** 5–15, horizontal, purple-red, lateral sepals paler, yellow or white. **Sepals**: median sepal shallowly galeate, oblong-ovate, rounded, 9–11 mm long; spur slender, tapering, acute, 20–24 mm long; lateral sepals spreading, narrowly ovate, acute, 8–10 mm long. **Petals** obliquely ovate, acute, emarginate apex. **Lip** elliptic, acute, fleshy, 8–10 mm long. **Anther** semi-pendent, 4 mm long, $^1/_2$ as tall as rostellum. **Flowering time** Oct., Nov., after fire. Sandy to gravelly S-facing mountain slopes; Eastern Fynbos-Renosterveld (Storms River E to Van Stadens River).

5b Rostellum 3-lobed, viscidia 2; petals and lip thin-tissued
6a Petals reflexed next to anther, ± oblong; spur mostly obsolete or shorter than lateral sepals; flowers not blue (section Disa*)*

bivalvata (L.f.) T.Durand & Schinz

Terrestrial herb, slender, geophyte, 0.10–0.45 m high; root tubers present. **Leaves** cauline, clustered at base of stem. **Inflorescence** corymbose. **Flowers** many, resupinate, white with pale to dark red petals and lip. **Sepals**: median sepal boat-shaped; lateral sepals 10–17 mm long; spur obsolete. **Petals** strap-shaped, reflexed parallel to anther, obliquely narrowly oblong, apex acute curved over anther. **Lip** patent, apex often curved upwards, lorate, often narrowly diamond-shaped, 5–8(10) mm long. **Flowering time** Sept.–Jan., after fire. Sandstone slopes and seeps; Eastern Fynbos-Renosterveld (Tsitsikamma E to Humansdorp).

filicornis (L.f.) Thunb.

Terrestrial herb, slender to robust, geophyte, 0.05–0.25 m high; root tubers present. **Leaves** radical, many, linear. **Inflorescence** a lax spike. **Flowers** 1–15, resupinate, white to deep pink. **Sepals**: median sepal spathulate with a 4–6 mm long claw and broadly ovate blade; lateral sepals 10–20 mm long; spur obsolete. **Petals** reflexed parallel to anther, obliquely narrowly oblong, apex acute curved over anther. **Lip** pendent, linear, acute, 6–12 mm long. **Flowering time** Oct.–Dec. Dry mountain slopes; Eastern Fynbos-Renosterveld (Kouga Mts E to Humansdorp).

racemosa L.f.

Terrestrial herb, robust, geophyte, 0.3–1.0 m high; root tubers present. **Leaves** radical, narrowly lanceolate, grading into cauline leaves. **Inflorescence** a lax spike. **Flowers** 2–8, resupinate, pink with paler petals with horizontal purple bars. **Sepals**: median sepal dish-shaped; lateral sepals 15–25 mm long; spur obsolete. **Petals** reflexed parallel to anther, obliquely narrowly oblong, apex acute curved over anther. **Lip** patent, linear, ± 10 mm long. **Flowering time** Nov., Dec. Wet areas on the mountains slopes; Eastern Fynbos-Renosterveld (Joubertina E to Grahamstown and to Humansdorp).

tripetaloides (L.f.) N.E.Br.

Terrestrial herb, slender, geophyte, 0.1–0.6 m high; root tubers present. **Leaves** radical, narrowly lanceolate, grading into cauline leaves. **Inflorescence** a lax spike. **Flowers** many, resupinate, white to rose-pink or yellow. **Sepals**: median sepal galeate; lateral sepals 7–16 mm long; spur conical, laterally flattened. **Petals** strap-shaped, reflexed parallel to anther, obliquely narrowly oblong, apex acute curved over anther. **Lip** patent, apex curved upwards, linear, 3–4 mm long. **Flowering time** June–Sept. Damp mountain slopes or on streambanks; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Port Edward SW to Lusikisiki and Joubertina E to Port Elizabeth).

vasselotii Bolus ex Schltr.

Terrestrial herb, slender, geophyte, 0.08–0.25 m high; root tubers present. **Leaves** 4–10, radical with elliptic blades. **Inflorescence** in dense, corymbose raceme. **Flowers** 1–many resupinate, white to pale pink with yellow horizontal bars. **Sepals**: median sepal galeate; lateral sepals 9–15 mm long; spur slender, laterally flattened, 2–4 mm long. **Petals** strap-shaped, reflexed parallel to anther, obliquely narrowly oblong, apex acute curved over anther. **Lip** patent, strap-shaped, ± 5 mm long. **Flowering time** Sept.–Jan., after fire. Sandstone slopes and seeps; Eastern Fynbos-Renosterveld (Joubertina E to Humansdorp).

6b Petals erect or falcate; spur variable, very rarely obsolete
7a Petals falcate with a basal anticous lobe flanking the stigma; spur mostly shorter than sepals
8a Leaves linear to linear-lanceolate, not twisted; plants slender, mostly from WC or just reaching into EC (section Disella*)*

micropetala Schltr.

Terrestrial herb, slender, geophyte, 0.06–0.30 m high; with root tubers. **Leaves** cauline, erect, linear, imbricate. **Inflorescence** a dense spike, cylindrical; flowers minute, many, resupinate, dark purple, sepals white, mottled pale pink. **Sepals** 2–4 mm long, median sepal globose galeate; spur slender, cylindrical, pendent, decurved. **Lip** strap-shaped, fleshy. **Flowering time** Nov., Dec. Fynbos mountains in deep peaty soil; Eastern Fynbos-Renosterveld (Tsitsikamma Mts E to Kareedouw).

obtusa Lindl. subsp. **picta** (Sond.) H.P.Linder

Terrestrial herb, slender, flexuose, geophyte, 0.06–0.40 m high; with root tubers. **Leaves** cauline, erect, linear, imbricate. **Inflorescence** a slender, dense spike, cylindrical; flowers many, resupinate, white, brown or purple, spotted. **Sepals**: median sepal globose galeate, 3–5 mm long; spur slender, cylindrical, semi-pendent, decurved, 1–2 mm long; lateral sepals 3–6 mm long. **Lip** strap-shaped, fleshy. **Flowering time** Nov., Dec., after fire. Grassland or fynbos mountains in peaty soil; Dry Highveld Grassland, Eastern Fynbos-Renosterveld (Tsitsikamma Mts E to Kareedouw).

uncinata Bolus

Terrestrial herb, slender, geophyte, 0.1–0.5 m high; with root tubers. **Leaves** 3–6, cauline, erect, narrowly lanceolate, imbricate. **Inflorescence** a lax, dense spike; flowers few, resupinate, white or cream-coloured. **Sepals**: median sepal globose, galeate, 4–8 mm long; spur slender, cylindrical, horizontal, 2–4 mm long, lanceolate, constricted basally; lateral sepals oblong, 5–8 mm long. **Flowering time** Oct.–Jan. Half-shade below cliffs or along streams; Eastern Fynbos-Renosterveld (Louterwater).

8b Leaves lanceolate to ovate; plants robust
9a Leaves lanceolate; petals free from rostellum; spur ascending (section Intermediae*)*

galpinii Rolfe

Terrestrial herb, slender, geophyte, 0.3–0.6 m high; with root tubers. **Leaves** 3–8, cauline, erect, narrowly lanceolate, imbricate. **Inflorescence** a dense spike; flowers many, resupinate, white to pale lilac. **Sepals** 4–6 mm long, median sepal galeate; spur slender, cylindrical, ascending, 12–16 mm long, laterally flattened, erect. **Lip** ovate. **Flowering time** Feb., Mar. High altitude grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Drakensberg Mts to Maclear District).

sanguinea Sond.

Terrestrial herb, slender, geophyte, 0.2–0.8 m high; with root tubers. **Leaves** 3–8, cauline, erect, narrowly lanceolate, imbricate. **Inflorescence** a dense spike; flowers many, resupinate, deep red with pale green petals. **Sepals** 4–5 mm long, median sepal hemispherically galeate; spur slender, cylindrical, half-ascending, 2–3 mm long, laterally flattened, erect. **Lip** ovate to obscurely 3–lobed. **Flowering time** Jan., Feb. Rocky SE-facing slope in damp loamy soil; Drakensberg Grassland, Sub-Escarpment Grassland [Ramatseliso's Gate S, (Amatole and Winterberg Mts), Hogsback to Stutterheim].

9b Leaves narrowly ovate to ovate; petals fused to rostellum; spur not ascending (section Repandra*)*

cornuta (L.) Sw.

Golden orchid

Terrestrial herb, robust, geophyte, 0.4–1.0 m high; root tubers present. **Leaves** 3–6, cauline, sheathed, dashed with reddish stripes basally, lanceolate to narrowly ovate, imbricate. **Inflorescence** a dense spike, cylindrical. **Flowers** 15–35, resupinate, purple, lateral sepals and lip greenish yellow, texture like crystals. **Sepals** 12–18 mm long, median sepal galeate, horizontal; spur slender, cylindrical, horizontal, gradually decurved, 10–20 mm long. **Lip** 5–10 mm long, strap-shaped to obovate, decurved. **Flowering time** Sept.–Feb. Well-drained grassland or mountain fynbos; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (uMzimkhulu SW to East London, Tsitsikamma Mts E to Grahamstown District and to Humansdorp).

hallackii Rolfe

Terrestrial herb, robust, geophyte, up to 0.5 m high; root tubers present. **Leaves** 3–6, cauline, imbricate, sheathed, narrowly lanceolate to lanceolate,. **Inflorescence** a large, dense spike, floral bracts prominent; flowers many, resupinate, sepals green and petals purple. **Sepals** 10–18 mm long, median sepal galeate, horizontal; spur slender, sharply decurved, 5 mm long. **Lip** lanceolate to narrowly oblong. **Flowering time** Oct., Nov. On recent sand near the coast; Eastern Fynbos-Renosterveld (Critically Endangered: probably extinct at Port Elizabeth).

tysonii Bolus

Terrestrial herb, robust, geophyte, 0.2–0.6 m high; root tubers present. **Leaves** 3–6, cauline, imbricate, sheathed, narrowly ovate, acute. **Inflorescence** a dense, cylindrical spike; flowers many, resupinate, creamy yellow with green veins, lips dark yellow, often with purple spots. **Sepals** 6–9 mm long, median sepal deeply galeate, almost horizontal; spur cylindrical to subclavate, 4–6 mm long. **Lip** patent, narrowly oblong, rounded, 4–6 mm long. **Flowering time** Dec., Jan. Moist rocky grassland; Drakensberg Grassland, Eastern Fynbos-Renosterveld (uplands of EC, Hogsback E to Stutterheim, Tsitsikamma E to Hankey).

7b Petals erect, basal anticous lobe small or lost; spur usually as long as or longer than sepals
10a Petals fused to rostellum by keel (section Aconitoideae*)*

aconitoides Sond. subsp. **aconitoides**

Oumakappie (A); *umashushu* (Z)

Terrestrial herb, slender, geophyte, 0.25–0.60 m high; with root tubers. **Leaves** 5–10, cauline, rigid, erect, lanceolate, imbricate. **Inflorescence** a slender, lax raceme; flowers 15–70, white to pale mauve, with darker spots. **Sepals** 5–8 mm long, median sepal galeate; spur conical, 6–10 mm long, laterally flattened, erect. **Lip** narrowly elliptical, with central mauve line. **Flowering time** Nov., Dec. Grassland slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Maclear S to Katberg and Komga, Willowmore E to Grahamstown District and to Humansdorp).

similis Summerh.

Terrestrial herb, slender, geophyte, 0.25–0.50 m high; with root tubers. **Leaves** 3–8, cauline, erect, lanceolate, imbricate. **Inflorescence** a lax, raceme; flowers 10–30, pale violet to blue. **Sepals** 7–9 mm long, median sepal shallowly galeate; spur conical, 3 mm long, laterally flattened, erect. **Lip** oblong with yellow apex. **Flowering time** Sept.–Nov. Wetlands close to coast; Indian Ocean Coastal Belt (Port Edward SW to Port St Johns).

10b Petals free from rostellum
11a Lateral rostellum lobes horn-like, canaliculate; sterile shoots usually produced; spur usually subclavate (section Hircicornes*)*

caffra Bolus

Terrestrial herb, slender, geophyte, 0.25–0.50 m high; root tubers present; sterile shoots rarely present. **Fertile shoots**: leaves up to 7, cauline, lower 2 or 3 reduced to basal sheaths, apical leaves almost completely sheathing, grading into floral bracts. **Inflorescence** a lax cylindrical raceme; flowers 8–18, resupinate, pink tinged white. **Sepals** 8–12 mm long, median sepal galeate, lateral sepals patent, elliptic to rotund, weakly keeled; spur cylindrical, horizontal at base, gradually decurved at length, 8–15 mm long. **Petals** erect next to rostellum, ovate to oblanceolate. **Lip** narrowly lanceolate. **Flowering time** Jan.–Mar. Wetland areas on the coast; Indian Ocean Coastal Belt (disjunct species: Port Edward SW to Port St Johns).

cooperi Rchb.f.

Terrestrial herb, robust, geophyte, 0.4–0.7 m high; root tubers present. **Sterile shoot**: leaves 2–5, usually conduplicate. **Fertile shoots**: leaves 6–15, basal 1 or 2 cauline, 10–50 mm long, sheathing, lanceolate, grading into floral bracts. **Inflorescence** a dense cylindrical raceme; flowers 20–60, resupinate, pale pink to dark pink or white, lip lime-

green. **Sepals** 10–14 mm long, median sepal galeate, lateral sepals spreading, reflexed at anthesis, apex with a 2 mm long apiculum; spur cylindrical, ascending, straight or gently curved, 34–45 mm long, apex swollen. **Petals** broadly oblong. **Lip** broadly spathulate, pending, 8 mm long. **Flowering time** Dec.–Feb. Rocky grassland at high altitude; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate E to Kokstad).

crassicornis Lindl.

Terrestrial herb, robust, geophyte, 0.40–1.15 m high; root tubers present. **Sterile shoots**: rarely produced, basal sheaths at least 1, leaves 3 or 4, erect, narrowly lanceolate, petiolate. **Fertile shoots**: cauline leaves imbricate, all largely reduced to sheathing leaves, basal sheaths not clearly differentiated, grading into floral bracts. **Inflorescence** a dense, cylindrical raceme; flowers 5–25, resupinate, white to cream-coloured with purple or pink mottling; sweet scented. **Sepals** 20–40 mm long, rounded to acuminate, median sepal broadly galeate, lateral sepals spreading horizontally, lanceolate to ovate-oblong, reflexed at anthesis, apex with a 2 mm long apiculum; spur cylindrical, ascending, curved, 30–40 mm long, apex somewhat inflated. **Petals** obliquely narrowly ovate. **Lip** horizontal basally, soon decurved, narrowly to broadly elliptic, 20–25 × 4–15 mm. **Flowering time** Nov.–Mar. Moist grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Dry Highveld Grassland (Ramatseliso's Post to Clydesdale S, from Mthatha to Lusikisiki and Somerset East to Katberg and Kentani).

rhodantha Schltr.

Terrestrial herb, moderately robust, geophyte, 0.3–0.6 m high; root tubers present. **Sterile shoots**: basal sheaths 1 or 2, hyaline; leaves 3 or 4, often petiolate, erect, conduplicate. **Fertile shoots**: cauline leaves 8–16, subimbricate, basal sheaths hyaline, grading into reddish floral bracts. **Inflorescence** a dense, cylindrical raceme; flowers 20–50, imbricate, resupinate, pink to red, edge of dorsal sepal lighter or white, petals cream-coloured, pink at base, brownish at apex. **Sepals** 10–12 mm long, median sepal galeate, lateral sepals spreading; spur cylindrical, ascending, straight, curved downwards, 7–17 mm long, apex swollen. **Petals** obliquely narrowly oblong. **Lip** linear, oblanceolate, pendent, 7 mm long. **Flowering time** Dec.–Mar. Wetlands, seeps or wet grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Matatiele E to Kokstad).

scullyi Bolus

Terrestrial herb, slender, geophyte, up to 0.5 m high; root tubers present. **Sterile shoots**: basal sheaths 2, outer hyaline, inner green apically; leaves 2–4, erect, conduplicate. **Fertile shoots** cauline leaves 6–15, imbricate; basal sheaths hyaline; apical leaves grading into floral bracts. **Inflorescence** a lax, cylindrical raceme; flowers 10–20, resupinate, pink or white with green lips. **Sepals** 11–13 mm long, rounded to acuminate, median sepal galeate, lateral sepals patent, concave, oblong, lower margin somewhat serrate, reflexed at anthesis; spur slender, horizontal, 30–40 mm long, apex somewhat inflated. **Petals** narrowly lanceolate. **Lip** strap-shaped to narrowly elliptic, pendent, 10 × 2–5 mm. **Flowering time** Dec., Jan. Wetlands, seeps or wet grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey S to Mount Arthur, Stockenström and Hogsback).

thodei Schltr. ex Kraenzl.

Terrestrial herb, slender, geophyte, 0.15–0.60 m high; root tubers present. **Sterile shoot**: usually under-developed, basal sheaths 2, outer hyaline, inner green apically; leaves 2 or 3, petiolate, flat or shallowly conduplicate; cauline leaves imbricate; basal sheaths rarely petiolate, lower 2 hyaline. **Inflorescence** a lax, cylindrical raceme; flowers 3–8,

resupinate, white to mauve mottled pink to purple; strongly scented. **Sepals** 10–17 mm long, rounded to acuminate, median sepal galeate, lateral sepals patent, apex with a 1 mm long apiculum; spur slender, horizontal, 20–40 mm long, apex somewhat inflated. **Petals** obliquely narrowly obovate. **Lip** narrowly elliptic, acute, apically decurrent, 10–15 mm long. **Flowering time** Dec., Jan. High altitude moist grassland; Drakensberg Grassland (Naude's Neck Pass to Matatiele, Elliot and Maclear).

versicolor Rchb.f.

Variable disa; *ihlamvu elimbomvu* (Z)

Terrestrial herb, moderately robust, geophyte, 0.2–0.7 m high; root tubers present. **Leaves** of sterile shoot basal, up to 335 × 30 mm; of fertile shoot cauline, grading into floral bracts. **Inflorescence** a dense, cylindrical raceme; flowers 50–105, imbricate, resupinate, buds pale pink mottled darker pink to maroon, open flower yellow-brown mottled plum-red. **Sepals** 4.5–6.5 mm long, median sepal deeply galeate, lateral sepals spreading; spur cylindrical, ascending, sharply deflexed, 5–7 mm long, apex swollen. **Petals** obliquely narrowly oblong. **Lip** strap-shaped, pendent, 4 mm long, widest at apex. **Flowering time** Dec.–Mar. Seeps or wet grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Dry Highveld Grassland (Qacha's Neck, Maclear E to uMzimkhulu S, from Cala to Mkambati Nature Reserve and Somerset East to Kentani).

11b Lateral rostellum lobes square; sterile shoots absent; spur mostly tapering
12a Leaves in a basal or radical cluster
13a Leaves green at flowering; from the Drakensberg (section Austroalpinae*)*

basutorum Schltr.

Terrestrial herb, slender, geophyte, 0.10–0.24 m high; root tubers present. **Leaves** 2–6, basal with slender petioles, elliptical, spreading, 30 mm long. **Inflorescence** a dense raceme; flowers many, resupinate, green or brown. **Sepals** 5 mm long, median sepal galeate, lateral sepals oblong; spur ascending, slender, cylindrical, 5–8 mm long. **Lip** oblanceolate, pendent. **Flowering time** Jan.–Mar. Moist rocky alpine grassland, alt. > 2 800 m; Drakensberg Grassland (Drakensberg Summit).

13b Leaves usually hysteranthous, if green at flowering, then from the Cape Floristic Region
14a Leaves lorate to lanceolate (section Coryphaea*)*

glandulosa Burch. ex Lindl.

Terrestrial herb, slender, glandular-hairy geophyte, 0.06–0.20 m high; root tubers present. **Leaves** strap-shaped; basal 3–6, spreading, much larger than upper cauline, sheathing leaves. **Inflorescence** a corymbose raceme; flowers 1–5, resupinate, pink with red spots. **Sepals** 5–6 mm long, median sepal galeate; spur short, subconical, saccate, 2–3 mm long; lateral sepals oblong. **Flowering time** Dec., Jan. Wet moss or turf on rocks or in rock crevices; Eastern Fynbos-Renosterveld (Willowmore E to Humansdorp).

marlothii Bolus

Terrestrial herb, slender, geophyte, 0.15–0.35 m high; root tubers present. **Leaves** narrowly elliptic; basal 3–10 spreading, larger than the upper, lax, cauline, sheathing leaves. **Inflorescence** a corymbose raceme. **Flowers** 1–6, resupinate, purplish red. **Sepals** 10–15 mm long; median sepal shallowly galeate; spur horizontal, slender, 15–20 mm long; lateral sepals patent, oblong. **Petals** curved over anther. **Flowering time** Dec., Jan. Rock crevices on streambanks; Eastern Fynbos-Renosterveld (Tsitsikamma Mts).

sagittalis (L.f.) Sw.
Terrestrial herb, slender, geophyte, 0.07–0.60 m high; root tubers present. **Leaves** strap-shaped to narrowly elliptic; basal 5–10 spreading, larger than the upper cauline, dry, sheathing leaves. **Inflorescence** a lax to dense raceme; flowers 1–6, resupinate, white to mauve, petals somewhat darker. **Sepals** 6–10 mm long; median sepal shallowly galeate with reflexed lateral extensions; spur horizontal, slender, 2–3 mm long; lateral sepals oblong, shorter than median. **Petals** strap-shaped, curved over anther. **Flowering time** Sept.–Nov. Rock ledges or crevices along streambanks; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Lusikisiki NE to Port Edward S, from Cathcart to Stutterheim, Joubertina to Port Elizabeth and Grahamstown, and to Humansdorp).

vaginata Harv. ex Lindl.
Terrestrial herb, slender, geophyte, 0.05–0.20 m high; root tubers present. **Leaves** cauline, strap-shaped to lanceolate, the largest clustered near base. **Inflorescence** a dense, subcorymbose raceme; flowers 3–10, resupinate, pink with red spots on lateral sepals. **Sepals** 5–6 mm long, median sepal galeate, lateral sepals oblong; spur horizontal, slender, 5–6 mm long. **Petals** canoe-shaped. **Flowering time** Nov., Dec. Rock outcrops, damp rock crevices; Eastern Fynbos-Renosterveld (Tsitsikamma and Kouga Mts).

14b Leaves linear
15a Galea often narrowed in middle; lip margins entire, lip sessile (section Stenocarpa*)*

cephalotes Rchb.f. subsp. **cephalotes**
Terrestrial herb, slender, geophyte, 0.2–0.5 m high; with root tubers. **Leaves** cauline, narrowly lanceolate to linear, up to 200 mm long, hard. **Inflorescence** subcapitate; flowers many, white, darker spots on sepal apices. **Sepals** 5–8 mm long; median sepal galeate; spur slender, horizontal, 3–6 mm long. **Lip** strap-shaped, 6 mm long, pendent. **Flowering time** Jan., Feb. Grassland or seepage areas, often on road cuttings; Sub-Escarpment Grassland, Dry Highveld Grassland, Drakensberg Grassland (Kokstad S, from Molteno to Queenstown and Engcobo Mtn, and to Stutterheim).

ferruginea (Thunb.) Sw.
Red duster disa; *monnikskappie* (A)

Terrestrial herb, grass-like, geophyte, 0.20–0.45 m high; with root tubers. **Leaves** radical, hysteranthous, linear. **Inflorescence** a dense, conical to cylindrical raceme; flowers many, red to orange. **Sepals** 8–10 mm long; median sepal deeply galeate; spur slender, acute, horizontal, 7–20 mm long. **Lip** narrowly ovate to linear-lanceolate. **Flowering time** Feb., Mar. S-facing slopes; Eastern Fynbos-Renosterveld (Kouga Mts?).

gladioliflora Burch. ex Lindl. subsp. **gladioliflora**
Terrestrial herb, slender, geophyte, 0.25–0.50 m high; with root tubers. **Leaves** radical, hysteranthous, linear, up to 300 mm long. **Inflorescence** a lax, few-flowered raceme; flowers white to pale pink with darker markings. **Sepals** 10–20 mm long; median sepal galeate, laterally flattened; spur slender, acute, horizontal, 8–14 mm long. **Lip** narrowly obovate to oblanceolate. **Flowering time** Mar.–May. S-facing slopes on damp peaty soil; Eastern Fynbos-Renosterveld (Joubertina E to Kareedouw).

[E]montana Sond.
Terrestrial herb, slender, geophyte, 0.3–0.6 m high; with root tubers. **Leaves** cauline, erect, linear-lanceolate, the largest at base of stem. **Inflorescence** a lax, several-flowered

raceme; flowers pale blue, spotted maroon. **Sepals** 10–18 mm long; median sepal shallowly galeate; spur slender, acute, horizontal, 8–15 mm long. **Lip** narrowly oblong. **Flowering time** Jan., Feb. Rocky grassland slopes; Drakensberg Grassland (Ramatseliso area).

nivea H.P.Linder

Terrestrial herb, subrobust, geophyte, 0.2–0.4 m high; with root tubers. **Leaves** cauline, rigid, erect, linear. **Inflorescence** a lax, several-flowered raceme; flowers white or cream-coloured, large red spots at apices. **Sepals** 9–13 mm long; median sepal galeate; spur slender, acute, horizontal, decurved at tip, 25–40 mm long. **Lip** oblanceolate. **Flowering time** Jan., Feb. Steep rocky slopes and rock ledges on sandstone; Drakensberg Grassland (southern Drakensberg, Ramatseliso area).

oreophila Bolus

Terrestrial herb, slender, erect to decumbent, geophyte, 0.10–0.35 m high; with root tubers. **Leaves** cauline, rigid, erect, linear, up to 200 mm long, leaf basis spotted maroon. **Inflorescence** a lax raceme; flowers 15–25, white or pink, purple spots on sepals. **Sepals** 5–7 mm long; median sepal galeate; spur slender, acute, horizontal, 5–10 mm long. **Lip** oblanceolate. **Flowering time** Dec.–Feb. Steep rocky slopes and rock ledges on sandstone or basalt; Drakensberg Grassland, Sub-Escarpment Grassland (southern Drakensberg, Ongeluksnek, Matatiele E to Kokstad, S to Barkly East, Engcobo and Maclear).

porrecta Sw.

Terrestrial herb, grass-like, geophyte, 0.2–0.6 m high; with root tubers. **Leaves** radical, hysteranthous, linear, up to 300 mm long. **Inflorescence** a dense, cylindrical raceme; flowers many, red with yellow petals and lip. **Sepals** 5–8 mm long; median sepal deeply galeate; spur cylindrical, acute, horizontal to ascending, 20–40 mm long. **Lip** narrowly oblong to lanceolate. **Flowering time** Feb.–Apr. Grassland or Fynbos; Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Dry Highveld Grassland, Eastern Fynbos-Renosterveld [Stormberg (Patriotsklip) to Queenstown S, from Graaff-Reinet to Boschberg and Joubertina E to Kareedouw, Cockscomb, Uitenhage, Port Elizabeth and Grahamstown).

pulchra Sond.

Terrestrial herb, slender, geophyte, 0.25–0.60 m high; with root tubers. **Leaves** cauline, rigid, erect, linear-lanceolate, up to 200 mm long. **Inflorescence** a lax, several-flowered raceme; flowers rose-pink. **Sepals** 20–30 mm long, angled forwards; median sepal shallowly galeate; spur slender, acute, horizontal, 15–20 mm long, decurved at tip. **Lip** lanceolate. **Flowering time** Dec. Rocky grassland slopes; Drakensberg Grassland, Sub-Escarpment Grassland (Matatiele to Fort Donald S, from Katberg to Cathcart and Stutterheim).

stricta Sond.

Terrestrial herb, slender, geophyte, 0.15–0.45 m high; with root tubers. **Leaves** cauline, rigid, erect, linear, up to 200 mm long. **Inflorescence** a dense, several-flowered raceme; flowers lilac to bluish with red lip and white petals. **Sepals** 4–5 mm long; median sepal galeate; spur slender, acute, horizontal, 2.5–5.0 mm long. **Lip** oblong to elliptical, 3.5–5.0 mm long. **Flowering time** Nov., Dec. Moist grassland slopes or damp floodplains; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate to Kokstad S, from Maclear to Winterberg and Katberg to Hogsback and Stutterheim).

15b Galea entrance not narrowed in middle; lip often fimbriate, bearded or stalked (section Herschelianthe*, see 4a above)*
12b Leaves all cauline
16a Central rostellum lobe finger-like, taller than lateral lobes (section Emarginatae*)*

nervosa Lindl.

Terrestrial herb, robust, geophyte, 0.40–0.85 m high; root tubers present. **Leaves** 8–11 cauline, imbricate, narrowly lanceolate, up to 190 × 23 mm, grading into floral bracts. **Inflorescence** a dense, cylindrical raceme; flowers 55–85, imbricate, resupinate, pink with purple spots at petal apices. **Sepals** 15–25 mm long; median sepal galeate, angled forwards, acute; lateral sepals narrowly spreading, apiculate; spur filiform, horizontal, sharply deflexed, 12–21 mm long. **Petals** obliquely narrowly oblong. **Lip** linear, porrect, 17–28 mm long, widest at apex. **Flowering time** Dec.–Mar. High altitude rocky grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Matatiele E to Kokstad, S to Lusikisiki, Port St Johns and Willowvale).

patula Sond.

Terrestrial herb, slender to moderately robust, geophyte, 0.25–0.60 m high; root tubers present. **Leaves** 8–11, cauline, imbricate, linear to narrowly lanceolate, up to 160 mm long, sheathing, conduplicate, grading into floral bracts. **Inflorescence** a lax to dense cylindrical raceme; flowers 15–50, resupinate, pink, often with purple spots on petal apices. **Sepals** 6–10 mm long; median sepal shallowly galeate, 10–15 mm long; lateral sepals oblong, narrowly spreading; spur terete, horizontal, straight, 5–12 mm long. **Petals** obliquely narrowly oblong. **Lip** linear, spreading, 9 mm long, widest at apex. **Flowering time** Nov.–Jan. High altitude grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket Belt (Matatiele E to uMzimkhulu, Engcobo to Maclear, Stutterheim to Pirie and to Grahamstown).

stachyoides Rchb.f.

Ihlamvu elimpofu lasenkangala (Z)

Terrestrial herb, slender, geophyte, 0.1–0.4 m high; root tubers present. **Leaves** cauline, imbricate, linear to lanceolate, up to 190 mm long, grading into floral bracts. **Inflorescence** a dense, cylindrical raceme; flowers 15–40, imbricate, resupinate, purple, lip and petals with white blotch. **Sepals** 4–7 mm long; median sepal galeate, angled forwards; lateral sepals spreading forward; spur dorso-ventrally flattened, horizontal, emarginate, 2–6 mm long. **Petals** included in galea. **Lip** strap-shaped, 4–5 mm long, widest at apex. **Flowering time** Nov.–Mar. High altitude rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Ramatseliso's Gate E to Kokstad, S to Engcobo and Port St Johns).

16b Central rostellum lobe insignificant
17a Spur parallel to ovary (section Coryphaea*, see 14a above)*
17b Spur angled at 25–90° to the ovary (section Stenocarpa*, see 15a above)*

DISPERIS Sw.

(Orchidoideae—Diseae)

Witch orchid

Species ± 84, mainly Africa and Madagascar, extending into East Asia; 26 in sthn Afr., widespread.

1a Leaf 1
2a Leaf halfway up the stem; flowers 1–4

lindleyana Rchb.f.

Terrestrial herb, 0.14–0.30 m high. **Leaf** 1, cauline, ovate, acute, 20–55 × 13–40 mm, purple beneath. **Inflorescence** a lax raceme, 1–3-flowered; bracts ovate, 7–25 mm long. **Flowers** white, flushed pink, petals with pink spots. **Sepals**: median sepal oblanceolate, acuminate, 9 × 5 mm, decurved sac-like hood; lateral sepals ascending, then deflexed, ovate, acute, 10–12 × 4–6 mm; spurs 2 mm long. **Petals** adnate to median sepal, falcate, clawed, blade oblong 6–7 × 3–4 mm. **Lip** basally fused to gynostemium, claw 6 mm long, blade triangular, 3.5 mm long, appendage ascending, apex pubescent. **Flowering time** Dec., Jan. Forests, humus in damp rocky places; Indigenous Forests (Engcobo to Mthatha S, King William's Town to Komga, from Storms River to Grahamstown).

2b Leaf basal, suberect; flowers 6–20
3a Petals oblong, hooded, 4 mm long

cardiophora Harv.

Terrestrial herb, 0.11–0.26 m high. **Leaf** 1, basal, subrotund, margins pellucid, 10–17 × 8–19 mm. **Inflorescence** secund, 6–20-flowered; bracts rotund, 3–10 × 4–13 mm. **Flowers** greenish white to pink, apex of sepals and petals magenta, petals spotted with pink. **Sepals**: median sepal 3 × 3 mm, with decurved sac-like spur; lateral sepals ovate, acute, 4–5 × 2–3 mm, spurs 1.5 mm long. **Petals** adnate to median sepal, oblong 4 × 3 mm. **Lip** basally fused to gynostemium, claw 4 mm long, blade oblong, 1.75 mm long, appendage triangular, apex pubescent. **Flowering time** Dec.–Feb. Slopes of montane to subalpine grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Matatiele to Maclear S, from Lady Frere to Baziya and Hogsback to Stutterheim).

3b Petals triangular, 7 mm long

renibractea Schltr.

Terrestrial herb, 0.09–0.28 m high. **Leaf** 1, basal, ovate, margins pellucid, 19–40 × 14–26 mm. **Inflorescence** secund, 4–13-flowered; bracts rotund, 6–12 × 6–15 mm. **Flowers** cream- to cinnamon-coloured, base of lip maroon, petals with maroon spots. **Sepals**: median sepal ovate, acute, 4 × 3 mm, with decurved sac-like spur, 2 mm long; lateral sepals ovate, acute, 6.5–8.0 × 3.5–4.0 mm, spurs 1.5–2.0 mm long. **Petals** adnate to median sepal, flared in basal $^1/_2$, clawed, blade oblong 7 × 3.5 mm. **Lip** basally fused to gynostemium, claw auriculate, 4.5 mm long, blade ovate, 2 mm long, appendage triangular, apex pubescent. **Flowering time** Dec.–Feb. Moist montane grassland slopes; Sub-Escarpment Grassland, Drakensberg Grassland (Engcobo to Stutterheim).

1b Leaves 2–5
4a Lip blade descending, flat or convex
5a Stem hirsute; leaves lanceolate, suberect

capensis (L.f.) Sw.

Granny bonnet; *horing moederkappie*, *mombakkiesblommetjie* (A)

Terrestrial herb, 0.07–0.65 m high; stem hirsute. **Leaves** 2, cauline, alternate, lanceolate, 20–90 × 2.5–6.0 mm. **Inflorescence** 1-flowered; bracts ovate, 10–30 × 4–9 mm. **Flowers** with green sepals, magenta petals with darker margins. **Sepals**: median sepal ovate, caudate, pubescent, with ascending hood with 2 pouches at tip 9–11 × 3–5 mm, cauda 9–20 mm long; lateral sepals horizontally spreading, then recurved, twisted backwards, lanceolate, caudate, pubescent at base, 13–35 × 3–4 mm, cauda up to 20 mm

long; spurs obtuse, 1.5 mm long. **Petals** adnate to median sepal, oblong, acute, pubescent at base, verrucose at apex, 8–15 × 6–10 mm. **Lip** basally fused to gynostemium, clawed, blade verrucose, 8 mm long, appendage upcurved, triangular. **Flowering time** July–Sept. Damp seepages on sandstone; Eastern Fynbos-Renosterveld (Lottering plantation to Grahamstown).

5b Stem glabrous; leaves ovate, spreading
6a Petals flaring, spotted within

thorncroftii Schltr.

Terrestrial herb, 0.10–0.26 m high. **Leaves** 2, cauline, alternate, ovate, purple beneath, 15–45 × 6–33 mm. **Inflorescence** 1–3-flowered; bracts ovate, 6–12 × 4–7 mm. **Flowers** white or lilac petals with green spots. **Sepals**: median sepal lanceolate, acuminate, pubescent, 7–9 × 3 mm; lateral sepals slightly descending, then sharply deflexed, ovate, acuminate, pubescent at base, 6–8 × 3.0–4.5 mm; spurs incurved 2–3 mm long. **Petals** adnate to median sepal, falcate, clawed, pubescent, rotund, acuminate, 6–7 × 4–5 mm. **Lip** basally fused to gynostemium, clawed, blade decurved, ovate, acute, 1.5 mm long, appendage oblong, concave, 1 mm long. **Flowering time** Nov., Dec. In leaf litter in coastal to montane gallery forest; Indigenous Forests (Katberg to King William's Town and to Storms River).

6b Petals not flaring, not spotted within
7a Lip appendage erect, apex glabrous, median sepal produced in erect spur, 3–9 mm long

woodii Bolus

Terrestrial herb, 0.04–0.15 m high. **Leaves** 2, subbasal, subopposite, ovate, acute, 10–20 × 6–12 mm. **Inflorescence** 1-flowered; bracts ovate, acuminate, 5–8 × 2–4 mm. **Flowers** white or tinged pink, median sepal darker, lateral sepals marked with pink streak. **Sepals**: median sepal ovate with erect tubular spur, 4–6 mm long; lateral sepals elliptic, acuminate, 5 × 2 mm, spur obtuse, 1 mm long. **Petals** adnate to median sepal, falcate, curved, rotund, acuminate, 4.5 × 3 mm. **Lip** basally fused to gynostemium, claw erect, 3 mm long, blade inflexed, triangular, 1.5 mm long, appendage erect, oblong, apex bifid, 3.5 mm long. **Flowering time** May–Aug. Damp sandy grassland; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Port Edward S, King William's Town to Kentani and to East London).

7b Lip appendage inflexed, apex densely papillate, median sepal in suberect or deflexed spur up to 5 mm long
8a Medium sepal with blunt, suberect spur 1 mm long

micrantha Lindl.

Terrestrial herb, 0.06–0.18 m high. **Leaves** 2, cauline, alternate, ovate, acute, base cordate, 25–55 × 14–36 mm. **Inflorescence** 3–5-flowered; bracts ovate, acute, 5–28 × 3–15 mm. **Flowers** white or lilac. **Sepals**: median sepal falcate, obovate, galeate, 4 × 3 mm, with spur 1 mm long; lateral sepals ovate, acuminate, 3 × 2 mm, spur 0.5 mm long. **Petals** adnate to median sepal, falcate, clawed, ovate with basal auricle, 2.5 × 2 mm. **Lip** basally fused to gynostemium, claw recurved, 2 mm long, blade triangular, acute, 1 mm long, appendage ascending, incurved, oblong, apex with long papillae, 1 mm long. **Flowering time** Feb.–Apr. Humus on rocks and trees; Indian Ocean Coastal Belt, Indigenous Forests (Isidenge State Forest to Kentani and to Grahamstown).

8b Median sepal with deflexed, conical spur 2–5 mm long

disiformis Schltr.
(= *D. disaeformis* Schltr.)

Terrestrial herb, 0.07–0.15 m high. **Leaves** 2, cauline, alternate, ovate, acute, 10–26 × 4–16 mm. **Inflorescence** 1–4-flowered; bracts ovate, acute, 5–12 × 3–4 mm. **Flowers** white or tinged lilac. **Sepals**: median sepal obovate, galeate, 5 × 3 mm, with deflexed spur 2–5 mm long; lateral sepals obliquely ovate, acuminate, 5 × 2 mm, spur obtuse, 1 mm long. **Petals** adnate to median sepal, falcate, clawed, ovate with basal auricle, 3.5 × 2.5 mm. **Lip** basally fused to gynostemium, claw recurved, with 2 auricles, 3 mm long, blade triangular, 1.5 mm long, appendage incurved, oblong, apex with papillae, 3.5 mm long. **Flowering time** July–Oct. Shaded spots beneath trees in *Acacia* veld; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (King William's Town to Kentani and Kareedouw to Grahamstown and Fish River Mouth).

4b Lip blade recurved, ascending at tip, conduplicate, concave, cucullate
9a Lip free; stigma frontal; stem pubescent; flowers 1–4
10a Lip blade with apex upcurved, lip appendage narrowly oblong, flat, 2–4 lobed at apex

macowanii Bolus

Terrestrial herb, 0.07–0.12 m high, pubescent. **Leaves** 2, cauline, alternate, ovate, sheaths and margins pubescent, purple beneath, 15–20 × 10–16 mm. **Inflorescence** 1-flowered; bracts ovate. **Flowers** white or mauve, petals and lip with magenta spots. **Sepals**: median sepal ovate, galeate, acute, 3.5 × 2 mm, with blunt spur 2–3 mm long; lateral sepals ovate, acute, 4–5 × 2.5–3.0 mm, spur conical, 1.5 mm long. **Petals** adnate to median sepal, sinuate, oblong-acute, 4 × 1.5 mm. **Lip** free from gynostemium, claw linear, 2.5 mm long, blade triangular, acute, up to 1 mm long, appendage oblong, apex 3- or 4-lobed, pubescent, 5–6 mm long. **Flowering time** Dec.–Mar. Shaded damp spots on rocky slopes or cliffs; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket (Ramatseliso's Gate S, Queenstown, from Bruintjieshoogte Mts to Somerset East and from Port Elizabeth to Grahamstown).

10b Lip blade cup-shaped, distinctly concave, appendage tapering with apex entire
11a Petals fused to gynostemium at base, lip blade slipper-shaped, rostellum arms kinked

villosa (L.f.) Sw.

Terrestrial herb, 0.06–0.18 m high, pubescent. **Leaves** 2, cauline, alternate, elliptic, sheaths and margins pubescent, 6–25 × 13–17 mm. **Inflorescence** 1–3-flowered; bracts ovate, acute, 7–25 × 5–10. **Flowers** greenish yellow. **Sepals**: median sepal with a horizontal, 5–7 mm deep saccate hood, 6–7 × 4–5 mm; lateral sepals horizontally spreading then sharply inflexed, oblanceolate, acute, 6–7 × 3–4 mm; spur saccate, 2.5 mm long. **Petals** basally fused to median sepal, falcate, clawed, 3 × 1.5 mm. **Lip** free from gynostemium, claw 5 mm long, blade 1 mm long, appendage ascending, naviculate, apex pubescent, 2 mm long. **Flowering time** Aug., Sept. Granite soils; Albany Thicket (Port Elizabeth).

11b Petals free from gynostemium at base, lip blade cup-shaped, rostellum arms not kinked

purpurata Rchb. f.

Terrestrial herb, 0.09–0.14 m high, pubescent. **Leaves** 2, cauline, alternate, ovate, sheaths and margins pubescent, purple below, 19–30 × 9–25 mm. **Inflorescence** 1-flowered; bracts ovate, acute, 10–12 × 4–6. **Flowers** magenta or white or white

flushed with pink, petals with green spots. **Sepals**: median sepal ovate, acute, sac-like, 6–10 × 5–8 mm, 7–8 mm deep; lateral sepals obovate, acute, 10–15 × 3–5 mm; spur saccate 2–6 mm deep. **Petals** adnate to median sepal, curved, falcate, clawed, oblong, acute, 4–8 × 4–5 mm. **Lip** free from gynostemium, claw 5 mm long, blade deeply cup-shaped 2.5 mm long, appendage triangular, apex pubescent, 2.5 mm long. **Flowering time** Aug.–Oct. Shaded moist spots at base of rocks; Eastern Fynbos-Renosterveld (Humansdorp).

9b Lip fused with gynostemium at base; stigma dorsal; stem glabrous; flowers 2–20
12a Lip appendage horizontal or ascending
13a Median sepal boat-shaped, sepals attenuate, lip blade free from petals
14a Lateral sepals spreading, then sharply deflexed, lip claw glandular-pubescent

circumflexa (L.) T.Durand & Schinz.

Tuberous geophyte, up to 200 mm high; stem glabrous. **Leaves** 2, suberect, linear-lanceolate. **Flowers** 2–10, greenish and white. **Sepals**: median sepal ovate, with a hood ascending at 45°, 4–6 × 4–5 mm, 1.5–8.0 mm deep; lateral sepals horizontal, recurved at apex, obovate, 7–11 × 2–3 mm; spur 1.5–2.0 mm long. **Petals** adnate to median sepal, curved, falcate, clawed, ovate, apiculate, 4–6 × 2–3 mm. **Lip**: limb horizontal-canaliculate with tip inflexed, warty within; rostellum arms curled outwards. **Flowering time** Aug., Sept. Sand, clay or granite; Eastern Fynbos-Renosterveld (Bokkeveld Mts to Riversdale and Joubertina).

paludosa Harv. ex Lindl.

Moederkappie (A)

Terrestrial herb, 0.20–0.46 m high, pubescent. **Leaves** 3, cauline, alternate, ovate, acute, 15–55 × 1.5–7.0 mm. **Inflorescence** 2–4-flowered; bracts ovate, 7–30 × 4–8. **Flowers** magenta and green, petals purple. **Sepals**: median sepal elliptic, attenuate, pubescent within, 10–12 × 3.0–4.5 mm, 2–3 mm deep; lateral sepals spreading horizontally then sharply deflexed, ovate, attenuate, pubescent, 10–12 × 3–5 mm; spur 1.5–3.0 mm long. **Petals** adnate to median sepal, curved, falcate, clawed, pubescent, acuminate, 10–11 × 3 mm. **Lip**: claw 5–6 mm long, blade triangular, attenuate, conduplicate, 6–7 mm long, appendage carnose, 0.5 mm long. **Flowering time** Oct., Nov. Marshes on sandstone; Eastern Fynbos-Renosterveld (Storms River).

14b Lateral sepals slightly bent, lip claw glabrous

oxyglossa Bolus

Fern orchid

Terrestrial herb, 0.16–0.33 m high. **Leaves** 2–4, cauline, alternate, ovate, acute, 10–35 × 4–8 mm. **Inflorescence** 2–4-flowered; bracts ovate, 12–27 × 5–8. **Flowers** with sepals pink, petals cream-coloured with green spots. **Sepals**: median sepal lanceolate, acuminate, pubescent, 12–13 × 4–5 mm, 4–5 mm deep; lateral sepals first ascending then sharply bent, sigmoid-lanceolate, acuminate, slightly pubescent, 14–17 × 4.5–7.0 mm; spur 3 mm long. **Petals** adnate to median sepal, curved, falcate, clawed, glabrous, acuminate, 8–10 × 2.5–4.0 mm. **Lip**: claw linear, 5 mm long, blade patent, conduplicate, then flaring, shallowly funnel-shaped, apiculate, 8 mm long, appendage ovate with decurved lateral flanges, 4 mm long. **Flowering time** Jan., Feb. Seepages on mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Ongeluksnek Nature Reserve to Maclear S, Queenstown to Engcobo and King William's Town to Grahamstown).

13b Median sepal helmet-shaped or hooded, deeper than wide, sepals acuminate, lip blade inflexed and adhering to petals and median sepal
15a Rostellum arms porrect, lip blade horizontal, later sharply flexed upwards

stenoplectron Rchb.f.

Terrestrial herb, 0.14–0.23 m high. **Leaves** 3 or 4, cauline, alternate, lanceolate, acute, 20–35 × 8–12 mm. **Inflorescence** secund, 5–8-flowered; bracts ovate, 9–27 × 4–11. **Flowers** with sepals pink, cream-coloured at base, petals cream-coloured with green spots. **Sepals**: median sepal elliptic, 8 × 7 mm, hood 9 mm deep; lateral sepals spreading obliquely obovate, acuminate, 10–12 × 4–5 mm; spur 2 mm long. **Petals** adnate to median sepal, falcate, oblong-ovate, clawed, acute, 5–6 × 3–4 mm. **Lip**: claw erect, 3 mm long, blade horizontal, elliptic, verrucose, margins revolute, apex recurved and erect adhering to petals and median sepal, triangular, 5–7 × 2–3 mm, appendage horizontal, 10 mm long. **Flowering time** Jan.–Apr. Moist montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatselitso's Gate to Cala S, Toise River Station to Dohne).

15b Rostellum arms bent or curved, lip blade ascending
16a Lateral sepals 10–11 mm long

cooperi Harv.

Terrestrial herb, 0.14–0.38 m high, sparsely pubescent. **Leaves** 3 or 4, cauline, alternate, lanceolate, acute, 11–20 × 5–7 mm. **Inflorescence** secund, 7–11-flowered; bracts ovate, acute, 12–30 × 6.5–10.0. **Flowers** with sepals pink, cream-coloured at base, petals cream-coloured with green spots. **Sepals**: median sepal ovate, 8 × 6 mm, sac-like hood 6 mm deep; lateral sepals obovate, acuminate, obliquely pubescent at base, 4–11 mm long; spur 2 mm long. **Petals** adnate to median sepal, curved, flaring, clawed, oblong-obovate, acute, 5.5 × 3 mm. **Lip**: claw erect, 3 mm long, blade cordate with sides flared, verrucose, apex adhering to petals and median sepal, 6 × 3 mm, appendage horizontal, conduplicate, pubescent, 5 mm long. **Flowering time** Feb., Mar. Moist montane grassland; Sub-Escarpment Grassland (Kokstad District).

16b Lateral sepals 6–8 mm long

tysonii Bolus

Terrestrial herb, 0.2–0.4 m high. **Leaves** 4, cauline, alternate, lanceolate, acute, 15–30 × 5–8 mm. **Inflorescence** secund, 5–20-flowered; bracts ovate, acute, 6–22 × 3–10. **Flowers** with sepals pink, petals magenta with green spots, lip green. **Sepals**: median sepal ovate, 5–6 × 3–4 mm, sac-like hood 4–5 mm deep; lateral sepals obovate, acuminate, 6–8 × 3 mm, spur 0.5 mm deep. **Petals** adnate to median sepal, curved, falcate, clawed, acute, 4–6 × 2 mm. **Lip**: claw 3 mm long, blade erect, blocking mouth of median sepal, apex adhering to petals and median sepal, verrucose, 4 × 2 mm, appendage horizontal, linear, pubescent, 5 mm long. **Flowering time** Feb., Mar. Moist montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Mount Fletcher to Naude's Neck Pass S, Ntsikeni Nature Reserve to Stutterheim and Grahamstown).

12b Lip appendage with apex deflexed and descending
17a Median sepal 10–15 mm deep, rostellum arms included in hood

fanniniae Harv.

Grannys bonnet, bonnet orchid; *moederkappie* (A)

Terrestrial herb, 0.15–0.30 m high. **Leaves** 3, cauline, alternate, ovate, acute, 20–80 × 8–33 mm. **Inflorescence** 1–8-flowered; bracts ovate, 10–35 × 5–12. **Flowers** white

flushed pink or green, petals green along margins, spotted mauve. **Sepals**: median sepal incurved, ovate, 8–10 × 7–9 mm sac-like hood 10–16 deep; lateral sepals oblong-ovate with auricle, acuminate, 10–13 × 5 mm, spur 1 mm long. **Petals** adnate to median sepal, curved, falcate, clawed, rotund, 7–8 × 5–6 mm. **Lip**: claw recurved, 5 mm long, blade deeply pouched, verrucose, cohering with apex of petals, triangular with inrolled margins, appendage slender, pubescent, apex decurved with a pair of flanges, 6 mm long. **Flowering time** Feb., Mar. In humus on rocks or forest floor; Indigenous Forests (Maclear to Mount Frere S, from uMzimkhulu to Mount Ayliff and Engcobo to Mthatha).

17b Median sepal 3–5 mm deep, rostellum arms exserted from the hood
18a Rostellum arms porrect; flowers 1–3

concinna Schltr.

Terrestrial herb, 0.15–0.35 m high, pubescent. **Leaves** 3, cauline, alternate, ovate, 15–32 × 4–9 mm. **Inflorescence** 2–5-flowered; bracts ovate, acute, 10–17 × 6–6. **Flowers** magenta or white petals with green spots. **Sepals**: median sepal ovate, sac-like hood, 4–5 × 3 mm, 3–4 mm deep; lateral sepals ovate, acuminate with auricle, 6–7 × 3 mm; spur saccate, 2.0–2.5 mm long. **Petals** adnate to median sepal, curved, clawed, oblong, acute, 3–5 × 2 mm. **Lip**: claw 2 mm long, blade upcurved, boat-shaped, flanged along sides, tip reflexed, adhering to petals and median sepal, 4.5 mm long, appendage finger-like, obtuse, pubescent, 1 mm long. **Flowering time** Jan., Feb. Seepages in damp grassland; Sub-Escarpment Grassland (Lady Frere).

18b Rostellum arms deflexed and geniculate; flowers 1–6

wealei Rchb.f.

Terrestrial herb, 0.14–0.30 m high. **Leaves** 2–5, cauline, alternate, ovate, 11–20 × 5–7 mm. **Inflorescence** 1–4-flowered; bracts ovate, acute, 14–22 × 7–10. **Flowers** white, petals spotted green. **Sepals**: median sepal ovate, bell-shaped hood, 6–8 × 5–7 mm, 4–5 mm deep; lateral sepals elliptic, acuminate, 9–11 × 4–5 mm; spur 1.5–2.5 mm long. **Petals** adnate to median sepal, curved, falcate, clawed, rotund, 6–8 × 4–6 mm. **Lip**: claw 2 mm long, blade upcurved, boat-shaped, flanged along sides, tip reflexed, adhering to petals and median sepal, 9 mm long, appendage obtuse, conduplicate, pubescent, 2 mm long. **Flowering time** Jan., Feb. Seepages in damp grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Portershoek to Ngeli S, from Lady Frere to Engcobo and Hogsback to Bedford).

DRACOMONTICOLA H.P.Linder & Kurzweil

(Orchidoideae—Orchideae)

Species 1, sthn Afr., Drakensberg Mts, KZN, L, EC.

virginea (Bolus) H.P.Linder & Kurzweil

Small, terrestrial herb, growing horizontally on cliffs; with root tubers, up to 0.25 m high. **Leaves**: basal leaf solitary, elliptic, 40 × 22 mm in diam.; cauline leaf solitary, 20 × 2 mm, halfway up the stem. **Inflorescence** subcapitate, 50 mm long, 1–8 flowers, slightly drooping; flowers white with pale pink petals and lip, margins dark pink; bracts lanceolate, somewhat longer than ovary. **Sepals** subequal, narrowly elliptic. **Petals** ovate, obtuse, $< {}^{1}/_{2}$ as long as sepals. **Lip** spathulate to pandurate, unspurred, basal portion narrow and saccate, apical portion with 2 minute side lobes. **Flowering time** Oct. –Jan. Moist montane grassland in rock crevices and grassy ledges; Drakensberg Grassland, Sub-Escarpment Grassland (Maclear E to Kokstad).

EULOPHIA R.Br. ex Lindl.

(Epidendroideae—Cymbidieae)

Species ± 250, pantropical; 42 in sthn Afr., widespread.

1a Spur lacking

2a Lip crest a single ridge, median sepal 17–25 mm long

tabularis (L.f.) Bolus

Terrestrial herb, with subterranean moniliformous rhizomes, 0.1–0.4 m high. **Leaves** erect, plicate, absent or partly developed at anthesis, 150 × 7 mm. **Inflorescence** dense, 2–12-flowered. **Flowers** not fully resupinate, sepals, petals and lip lemon-yellow, crests bright orange-yellow. **Sepals**: median sepal 20–22 mm long, narrowly elliptic, subobtuse; lateral sepals similar. **Petals** little shorter and narrower than median sepal, oblanceolate, obtuse. **Lip** 3-lobed, crest a single minutely pubescent ridge for most of lip length, dividing into 2 ridges at base, 2- or 3-lobed; mentum 2–3 mm long, apex joined to lip, spur absent. **Gynostemium** 8–10 mm long, slender. **Flowering time** Nov.–Jan. Mostly in fynbos, on sandy soils or marshes; Eastern Fynbos-Renosterveld (Storms River to Humansdorp District).

2b Lip crest of 2 ridges passing into several rows of lamellae, median sepal 5–18 mm long

3a Papillae wart-like, sparse on distal half of lip midlobe; raceme dense and elongate

foliosa (Lindl.) Bolus

Terrestrial herb, with subterranean moniliformous rhizomes, 0.15–0.45 m high. **Leaves** stiffly erect, plicate, partly to fully developed at anthesis, 600 × 25 mm. **Inflorescence** dense, elongate, 6–40-flowered. **Flowers** with sepals and petals dull lime green, lip tinged pale or dark purple or white; flowers do not open widely and face downwards. **Sepals**: median sepal 10–13 mm long, lanceolate, acute; lateral sepals similar. **Petals** little broader, obtuse. **Lip** 3-lobed, crest 2 or 3 broad ridges passing into short, stout papillae at basal part of midlobe; mentum 2–3 mm long, apex joined to lip, spur absent. **Gynostemium** stout, 4–5 mm long. **Flowering time** Oct.–Jan. Drakensberg Grassland, Sub-Escarpment Grassland; Sub-Escarpment Savanna, Albany Thicket (Ramatseliso's Gate to Engcobo S, Katberg to Kentani, Grahamstown to Fish River Mouth).

3b Papillae or lamellae elongate, wart-like, many on distal half of lip midlobe; raceme seldom dense and elongate

4a Lip midlobe slightly more than half the length of the lip, with denticulate margins

odontoglossa Rchb.f.

Terrestrial herb, with subterranean moniliformous rhizomes, 0.5–0.9 m high. **Leaves** stiffly erect, plicate, partly to fully developed at anthesis, 1 000 × 9 mm. **Inflorescence** lax to dense, 10–30-flowered. **Flowers** with sepals and petals pale yellow, lip orange-yellow midlobe, papillae reddish brown. **Sepals**: median sepal 8–12 mm long, ovate, acute; lateral sepals similar. **Petals** little shorter and narrower than median sepal, elliptic-oblong. **Lip** 3-lobed, crest 2 lamellae in upper $^1/_2$, many slender papillae, margins of midlobe denticulate; mentum 2–4 mm long, apex joined to lip, spur vestigial. **Gynostemium** stout, 4.0–6.5 mm long. **Flowering time** Oct.–Feb. In coastal bush; Indian Ocean Coastal Belt (Port St Johns to Mkambati Nature Reserve).

4b Lip midlobe less than half of the length of the lip, with smooth to finely undulate margins

aculeata (L.f.) Spreng.

Terrestrial slender herb, with subterranean, moniliformous rhizomes, 0.06–0.65 m high. **Leaves** stiffly erect, plicate, partly to fully developed at anthesis, 600 × 11 mm.

Inflorescence short and dense, 6–18-flowered. **Flowers** with sepals, petals and lip pale ivory to greenish pink or purple, scarcely spreading, hardly opening, nodding. **Sepals**: median sepal 6–8 mm long, oblong, subobtuse; lateral sepals slightly longer and broader. **Petals** same size as median sepal, oblanceolate. **Lip** obtuse-lobed, 3-lobed, crests with 2 ridges in basal $^1/_2$, passing into slender lamellate papillae on midlobe; mentum 0.6–2.1 mm long, apex joined to lip, spurless. **Gynostemium** 3–5 mm long. **Flowering time** Nov.–Jan. In fynbos and sour mountain grassland; Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Engcobo S, Seymour to Stutterheim, Storms River to Port Elizabeth and Grahamstown and to Humansdorp).

huttonii Rolfe
[= *E. aculeata* (L.f.) Spreng. subsp. *huttonii* (Rolfe) A.V.Hall]

Terrestrial, semi-robust herb, with subterranean moniliformous rhizomes, 0.06–0.65 m high. **Leaves** stiffly erect, plicate, partly to fully developed at anthesis, 600 × 17 mm. **Inflorescence** short and dense, 6–18-flowered. **Flowers** nearly concolorous, sepals, petals and lip greenish white through pink tinged green to dark reddish purple, lip crests yellowish green to white, spreading. **Sepals**: median sepal 12–16 mm long, oblong, subobtuse; lateral sepals slightly longer and broader. **Petals** 9–15 mm long, oblanceolate. **Lip** obtuse-lobed, 3-lobed, crests with 2 ridges in basal $^1/_2$, passing into slender, lamellate papillae on midlobe; mentum 2.3–5.0 mm long, apex joined to lip, spurless. **Gynostemium** 3–5 mm long. **Flowering time** Nov.–Jan. In sour grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Thaba Chitja to Ramatseliso's Gate S, Maclear to Katberg and Pirie).

1b Spur present
5a Crests on distal part of the lip composed of broad smooth or verrucose ridges that gradually become lower to vestigial near the apex
6a Lip side lobe 5–9 mm long; visible abscission layer at base of leaves

streptopetala Lindl.
Amabelejongosi (Z)

Terrestrial, robust herb, with aerial pseudobulbs, 0.4–2.3 m high. **Leaves** erect, plicate, glabrous, 750 × 110 mm, partially to fully developed at anthesis. **Inflorescence** lax and elongate, 10–40-flowered. **Flowers** with sepals green, variously mottled with dark purplish brown, petals bright lemon-yellow, paler on inner surface, lip midlobe yellow, side lobes dark purple, crests deep yellow. **Sepals**: median sepal 11–18 mm long, narrowly obovate, mucronate; lateral sepals similar. **Petals** same size as median sepal, rotund. **Lip** 3-lobed, convex, crests with low, confluent ridges on central veins, side lobes fused to mentum rather than lip; mentum broad, 5–9 mm long, spur stout. **Gynostemium** 5–9 mm long. **Flowering time** Oct.–Jan. In shade under bushes or trees; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Lusikisiki S, Fort Beaufort to Kentani, Uitenhage to Grahamstown and East London).

6b Lip side lobes 3 mm long; no visible abscission layer at base of leaves
7a Gynostemium 2–4 mm long, margin of lip midlobe undulate, median sepal 4–9 mm long

clitellifera (Rchb.f.) Bolus

Terrestrial, slender herb, with subterranean moniliformous rhizomes, 0.20–0.35 m high. **Leaves** erect, conduplicate, somewhat succulent, 240 × 13 mm, absent to just emerging at anthesis. **Inflorescence** elongate, 5–25-flowered. **Flowers** with sepals dull green, tinged brown and purple, petals and lip dull white with reddish purple lines on inner sur-

faces, crests deep yellow. **Sepals**: median sepal 5–8 mm long, elliptic, subacute; lateral sepals similar. **Petals** slightly longer or shorter than median sepal, ovate, obtuse. **Lip** 3-lobed, crests with verrucose ridges on convex portion of midlobe, lateral margins irregularly crenulate, side lobes adnate to mentum; mentum shorter than gynostemium; spur cylindrical, 2–4 mm long. **Gynostemium** 2–4 mm long. **Flowering time** July–Nov., after fire. In sunny exposed conditions in coastal thornveld; Sub-Escarpment Grassland, Albany Thicket (Maclear District, Bathurst District, Southwell).

7b Gynostemium > 5 mm long, margin of lip midlobe entire, median sepal 7–30 mm long
8a Lip margin rounded at junction of side lobe and midlobe, lateral sepals reflexed

speciosa (R.Br. ex Lindl.) Bolus

Large yellow eulophia; *umabelejongosi ompufu* (Z)

Terrestrial, robust herb, with subterranean or partly aerial pseudobulbs, 0.4–0.9 m high. **Leaves** erect, somewhat succulent, 650 × 20 mm, mature at anthesis. **Inflorescence** elongate, lax, 10–30-flowered. **Flowers** with sepals pale green, petals yellow, lip yellow, side lobes with purple lines, crests deep yellow. **Sepals** reflexed; median sepal 11–13 mm long, elliptic, acute; lateral sepals similar. **Petals** rotund-obtuse, spreading, 10–23 mm long. **Lip** 3-lobed, crests with broad fleshy ridges on convex portion of midlobe, sides of midlobe deflexed, side lobes erect, adnate to mentum; mentum shorter than gynostemium; spur conical, 1–3 mm long. **Gynostemium** 5–8 mm long. **Flowering time** Oct.–Jan. In sheltered places in bushveld near the coast; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (coastal, Port St Johns to Kei River Mouth, Port Elizabeth to Peddie, Tsitsikamma and Humansdorp).

8b Lip margin with acute incision at junction of side lobe and midlobe, lateral sepals not reflexed

parviflora (Lindl.) A.V.Hall

Imfeyamasele (Z)

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.2–0.5 m high. **Leaves** plicate, 250 × 16 mm, emerging during anthesis. **Inflorescence** elongate, dense, 5–30-flowered. **Flowers** with sepals dull brownish green outside, orange-brown inside, petals yellow, veins marked brownish red inside, lip midlobe bright yellow, side lobes tinged purple. **Sepals**: median sepal 10–14 mm long, narrowly obovate, obtuse or mucronate; lateral sepals similar. **Petals** a little shorter than median sepal. **Lip** 3-lobed, crests with low, broad verrucose ridges on central veins, side lobes adnate to mentum; mentum shorter than gynostemium; spur conical, 2–5 mm long. **Gynostemium** 4–8 mm long. **Flowering time** Oct.–Jan. In grassland and coastal thornveld; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Lusikisiki District to Mkambati Nature Reserve S, Kei River Mouth, Kareedouw to Port Elizabeth and Grahamstown).

5b Crests on distal part of the lip composed of papillae or lamellae abruptly terminated or lip without crests in distal part of the lip
9a Lip crest composed of continuous lamellae, confined to base or extending onto midlobe, lip surface smooth to crenulate
10a Petals $^1/_2$ the length of the median sepal

meleagris Rchb.f.

Terrestrial, semi-robust herb, with subterranean moniliformous rhizomes, 0.2–0.8 m high. **Leaves** thin, plicate, coriaceous, 300–600 × 20–55 mm, mature at anthesis. **Inflorescence** elongate, lax, 3–30-flowered. **Flowers** with sepals dark lime-green

outside, dark brownish purple reticulated with dull green inside, petals and lip purple to white with dark purple along margins and veins, crests pale purple basally to white and dark purple distally. **Sepals** spreading; median sepal 14–17 mm long, elliptic to oblong, apiculate; lateral sepals similar. **Petals** $^1/_2$ length of median sepal, ovate-rotund, mucronate. **Lip**: midlobe with fleshy crenulate margins, crests with 3–5 undulate lamellae; mentum vestigial; spur cylindrical, longer than gynostemium. **Gynostemium** 4–5 mm long. **Flowering time** Dec., Jan. In dense vegetation on forest margins; Sub-Escarpment Grassland, Drakensberg Grassland, Indigenous Forests (Fort Donald S, and Stockenström).

10b Petals > $^2/_3$ of the length of the median sepal
11a Lip crest of 2 or 3 tooth-like lamellae at the rim of a sac near base of lip, sepals obtuse

coeloglossa Schltr.

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, up to 0.6 m high. **Leaves** stiff, plicate, 100 × 10 mm, mature at anthesis. **Inflorescence** lax, 5–10-flowered. **Flowers** with sepals dark pink or maroon, petals pale green tinged pink, lip yellow tinged purple near apex and on veins of the side lobes. **Sepals** oblong-obtuse, spreading; median sepal 14–16 mm long; lateral sepals similar. **Petals** broader, 12–16 mm long, close to gynostemium. **Lip** indistinctly 3-lobed, crests with 2 broad tooth-like calli in basal $^1/_2$ of lip, on either side of a low central lamella; mentum 4 mm long; spur indistinct, a rounded sac. **Gynostemium** 7–10 mm long. **Flowering time** Aug.–Dec. In marshes near the coast; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

11b Lip crest extending over greater length of the lip
12a Lip with a broadly rounded sac beneath the end of the gynostemium

calanthoides Schltr.

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.3–0.8 m high. **Leaves** thin, plicate, 700 × 60 mm, mature at anthesis. **Inflorescence** dense becoming lax, 7–25-flowered. **Flowers** with sepals purplish brown outside, brownish green inside, petals pale yellow tinged with purple near base, veins marked with minute blue speckles, lip pale yellow with blue speckles along veins, crests bright yellow. **Sepals** spreading; median sepal 26–30 mm long, narrowly lanceolate, acuminate; lateral sepals similar. **Petals** ± as long as sepals, lanceolate, acute. **Lip** 3-lobed, with concave sac, crests with low, pubescent ridge on central veins; mentum vestigial or absent; spur cylindrical, 4–5 mm long. **Gynostemium** 4–5 mm long. **Flowering time** Dec.–Feb. In dense vegetation on forest margins; Indigenous Forests, Sub-Escarpment Grassland, Albany Thicket (Kokstad District and Bushman's River Valley).

12b Lip without a broadly rounded sac beneath the end of the gynostemium
13a Flower scarcely resupinate at anthesis; crests confined to the basal part of lip

parvilabris Lindl.

Terrestrial, stout herb, with subterranean moniliformous rhizomes, 0.30–0.85 m high. **Leaves** thin, plicate, inner 600 × 55 mm, outer shorter, mature at anthesis. **Inflorescence** dense becoming lax, 6–18-flowered. **Flowers** with sepals pale purplish brown outside, petals pale straw-yellow with purple basis, lip pale yellow with maroon basis. **Sepals** spreading; median sepal 27–31 mm long, narrowly oblong, acute; lateral sepals similar. **Petals** ± as long as median sepal, elliptic, obtuse. **Lip** shorter than petals, crests with 2–7 laterally subconfluent ridges terminating in short tooth; mentum vestigial up to

1 mm long; spur cylindrical, 5–6 mm long. **Gynostemium** 5–6 mm long. **Flowering time** Dec.–Feb. Moist steep grassland slopes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad District and Kentani).

13b Flower fully resupinate at anthesis; crests beyond the basal part of lip
14a Mentum > 4 mm long
15a Spur lacking, median sepal < 9 mm long

tuberculata Bolus

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.15–0.40 m high. **Leaves** succulent, plicate, 240 × 18 mm, absent or partly developed at anthesis. **Inflorescence** lax, elongate 10–30-flowered. **Flowers** with sepals yellowish green and purple, petals white to yellow outside, pale yellow with maroon veins inside, lip white with maroon veins, crests yellow. **Sepals** reflexed; median sepal 6–7 mm long, broadly elliptic, mucronate; lateral sepals similar. **Petals** spreading, longer than sepals. **Lip** 3-lobed, crest on midlobe with low fleshy ridges centrally rising to crenulate fleshy lamellae, side lobes erect; mentum little shorter than gynostemium, with 2 yellow calli distally; spur vestigial. **Gynostemium** 3–4 mm long. **Flowering time** Sept.–Dec. Dry grassland or savanna; Dry Highveld Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Summerset East District to Fort Beaufort and Cathcart, from Willowmore to Albany District, Grahamstown and Alexandria District).

15b Spur present, median sepal > 12 mm long
16a Margins near base of lip midlobe crispate-undulate, operculum bilobed

angolensis (Rchb.f.) Summerh.

Vlei orchid; *vlei-orgidee* (A)

Terrestrial, robust herb, with subterranean, cylindrical rhizomes, 0.45–2.00 m high, sometimes with 1–3 branches. **Leaves** erect, stiff, glabrous, plicate, 900 × 50 mm, mature at anthesis. **Inflorescence** lax, 12–40-flowered. **Flowers** bright lemon-yellow, sepals and lip side lobes tinged with olive, purplish brown, grey to purple. **Sepals** spreading; median sepal 19–24 mm long, oblanceolate, obtuse; lateral sepals similar. **Petals** declinate over lip, slightly shorter than sepals, oblong, obtuse. **Lip** 3-lobed, saccate at base, crests with 3–5 lamellae, low in base rising on midlobe; mentum 4–10 mm long; spur vestigial or short cone. **Gynostemium** 9–14 mm long, slender. **Flowering time** Dec.–Mar. Near coast in open swampy soil; Indian Ocean Coastal Belt (Port St Johns to Mkambati Nature Reserve).

16b Margins near base of lip midlobe smooth, operculum not bilobed
17a Lip midlobe subdeltoid, crest lamellae present on main side lobe veins

hereroensis Schltr.

Terrestrial, robust herb, with subterranean or partly aerial, moniliformous rhizomes, 0.25–0.55 m high. **Leaves** soft, thin-tissued with abscission layer, up to 450 mm long, partly to fully developed at anthesis. **Inflorescence** lax, elongate, 7–25-flowered. **Flowers** yellow to greenish yellow, sepals tinged purple with purple-brown veins. **Sepals**: median sepal 13–16 mm long, oblong, obtuse; lateral sepals similar. **Petals** spreading, slightly shorter than sepals. **Lip** 3-lobed, crests with thin lamellae on main veins, low on side lobes, tall on midlobe, finely pubescent basally; mentum prominent, 4–9 mm long, finely pubescent; spur flattened, subconical, 3–4 mm long. **Gynostemium** 6–8 mm long. **Flowering time** Dec.–Mar. Dry grassland and savanna; Sub-Escarpment Savanna, Dry Highveld Grassland, Eastern Fynbos-Renosterveld (Mzimvubu River, Nieu-Bethesda, Somerset East, Uitenhage).

17b Lip midlobe broadly obovate, crest absent on side lobes

platypetala Lindl.

Terrestrial herb, with subterranean, moniliformous rhizomes, 0.25–0.45 m high. **Leaves** somewhat coriaceous, 230 × 16 mm, partly developed at anthesis. **Inflorescence** lax, 6–15-flowered. **Flowers** greenish purple to brown, inner surface paler, petals and lip pale lemon-yellow, veins bluish grey. **Sepals**: median sepal 15–17 mm long, narrowly oblong, obtuse; lateral sepals similar. **Petals** spreading, as long as median sepal, rotund to elliptic, obtuse. **Lip** 3-lobed, crests with 3–5 fleshy lamellae, side lobes adnate to mentum; mentum prominent, 4–9 mm long; spur elongate, conical, 2–3 mm long. **Gynostemium** 7–11 mm long. **Flowering time** Oct., Nov. Dry coastal vegetation; Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Port St Johns, Stutterheim and Port Elizabeth).

14b Mentum absent or < 2 mm long
18a Median sepal 7–13 mm long; lip crests stout to distinct with ridges (often fleshy), verrucose or covered by lamellae or papillae; spur slender or stoutly cylindrical, 2–7 mm long

hians Spreng.

(*E. clavicornis* Lindl. var. *clavicornis*)

Elihlaza (Z)

Terrestrial slender herb with subterranean moniliformous rhizomes, 0.15–0.40 m high. **Leaves**, up to 400 mm long, just emerging to partly developed at anthesis. **Inflorescence** lax, 5–18-flowered. **Flowers** sepals dark reddish purple, petals pale pink to purple pink outside, darker inside, veins bluish, lip pale pink-purple with darker veins and margins, papillosa crests white to cream-coloured tipped purple. **Median sepal** 9–13 mm long, oblong. **Lateral sepals** similar. **Petals** spreading, subequal, united with gynostemium, often distorted. **Lip** 3-lobed, base united with gynostemium, side lobes distorted, crests with dentate, crenulate, thin lamellae; mentum absent; spur slender, 4–7 mm long. **Gynostemium** 4–7 mm long. **Flowering time** Aug.–Nov. Grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck to Kokstad S, Queenstown to Mkambati Nature Reserve, Katberg to Kentani, Kareedouw to East London and to Humansdorp).

nutans Sond.

[= *E. clavicornis Lindl.* var. *nutans* (Sond.) A.V.Hall]

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.19–0.92 m high. **Leaves** up to 690 mm long, mature at anthesis. **Inflorescence** lax, 6–25-flowered. **Flowers** with sepals green mottled brownish purple, veins brownish purple, petals white, veins pink-purple, lip white flushed cerise, side lobe veins cerise-purple, cream-coloured to yellow. **Sepals**: median sepal 9–13 mm long, oblong, apiculate; lateral sepals similar. **Petals** spreading, subequal, shorter than median sepal. **Lip** 3-lobed, base united with gynostemium, crests distinct, cream-coloured to yellow with many papillae; mentum absent; spur slender, 2–4 mm long. **Gynostemium** 4–7 mm long. **Flowering time** Nov.–Feb. Marshes to damp grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket

(Queenstown to Port St Johns S, Katriviersberg to King William's Town and Kei River Mouth, and to Port Elizabeth).

tenella Rchb.f.

Intongazimbovana (Z)

Terrestrial, slender herb, with subterranean, moniliformous rhizomes, 0.15–0.60 m high. **Leaves** 100–420 × 2.6 mm, mature at anthesis. **Inflorescence** dense, 5–25-flowered. **Flowers** with sepals dark green to brownish purple, petals dull straw-yellow outside, pale brownish purple inside, lip greenish white, side lobes with rusty brown ridges, apical lobe rusty brown, median crest on lip bright cadmium-yellow. **Sepals**: median sepal 6–8 mm long, oblong, mucronate; lateral sepals similar. **Petals** spreading, subequal, rotund, as long as median sepal, obtuse to mucronate. **Lip** 3-lobed, crests with fleshy ridges and lamellae on the 3 central veins; mentum absent; spur stoutly cylindrical, 2–3 mm long. **Gynostemium** stout, 3–5 mm long. **Flowering time** Dec., Jan. Open, moist, sour grassland and grassy places at coast; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Mqanduli to Port St Johns S, Amatole Mts, Dohne Peak to Kentani, Grahamstown to Alexandria).

zeyheriana Sond.

Terrestrial, slender herb, with subterranean, moniliformous rhizomes, 0.15–0.45 m high. **Leaves** somewhat coriaceous 200–4 × 3–7 mm, longer than $^{1}/_{2}$ the scape at anthesis. **Inflorescence** lax, 4–17-flowered. **Flowers** with sepals green tinged purplish brown, petals pale blue with margins and apex tinged purple, lip pale blue, side lobes with darker veins, crests mostly white, lateral crests pale blue to purple. **Sepals**: median sepal 7–9 mm long, oblong, apiculate; lateral sepals similar. **Petals** spreading, subequal, longer than sepals, elliptic-oblong, obtuse to mucronate. **Lip** 3-lobed, crests with cream-coloured, fleshy, verrucose ridges; mentum absent; spur stoutly cylindrical, 2–3 mm long. **Gynostemium** stout, 3.5 mm long. **Flowering time** Dec., Jan. High altitude grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Qacha's Neck to Insizwa Mtn and Stutterheim).

18b Median sepal 9–16 mm long; lip crests with low, dentate, erose ridges; spur prominent, 4–7 mm long

inaequalis Schltr.

[= *E. clavicornis* Lindl. var. *inaequalis* (Schltr.) A.V.Hall]

Terrestrial, slender herb, with subterranean, moniliformous rhizomes, 0.14–0.35 m high. **Leaves** 350 × 7–8 mm, just emerging to partly developed at anthesis. **Inflorescence** lax, 5–15-flowered. **Flowers** with sepals yellow to greenish yellow tinged reddish brown to chocolate outside, paler inside, petals and lip bright yellow, side lobes veined bluish. **Sepals**: median sepal 9–16 mm long, oblong, apiculate; lateral sepals similar. **Petals** spreading, subequal, united with gynostemium, rarely distorted. **Lip** 3-lobed, base united with gynostemium, crests with 3–7 low, dentate, erose ridges; mentum 1–2 mm long, attached to lip apex; spur prominent, 4–7 mm long, reddish. **Gynostemium** 4–7 mm long. **Flowering time** Aug.–Nov. Rocky grassland; Drakensberg Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Ramatseliso's Gate to Kokstad S, Stutterheim to Kentani and East London).

9b Lip crest composed of basal lamellae, passing into slender papillae in distal part of the lip
19a Petals ovate to oblong, broader than lateral sepals
20a Flowers not or very slightly resupinate at anthesis; spurs 5–8 mm long

macowanii Rolfe

Cream flag orchid

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.23–0.40 m high. **Leaves** arcuate spreading, somewhat coriaceous, 100–400 × 10–30 mm, partly to fully developed at anthesis. **Inflorescence** lax, 4–20-flowered. **Flowers** not resupinate, sepals pale to dark chestnut-brown outside, pale green inside, petals white tinged yellow, lip white, veins purple, crests pale to bright yellow. **Sepals**: median sepal 20–30 mm long, oblong, mucronate; lateral sepals similar. **Petals** a little shorter or longer than median sepal, rotund to mucronate. **Lip** 3-lobed, crests with 2–5 lamellae basally with acuminate papillae distally; mentum 1.0–2.5 mm long; spur cylindrical, 5–8 mm long. **Gynostemium** 5–8 mm long. **Flowering time** Nov.–Feb. In open grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland, Albany Thicket (Kokstad to Mthatha S, Stutterheim to Kei River Mouth, Albany District to East London).

20b Flowers resupinate at anthesis; spurs < 3 mm long

ovalis Lindl.

Ihamba lesigodi (Z)

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.15–0.50 m high. **Leaves** somewhat coriaceous, 110–460 × 4–30 mm, mature at anthesis. **Inflorescence** lax, 3–18-flowered. **Flowers** with sepals reddish purple to green or dark purplish olive outside, paler inside, petals pale straw-yellow or white tinged brownish purple at base, lip similar with bluish veins on the side lobes, veins and crests yellow. **Sepals**: median sepal 14–36 mm long, oblong; lateral sepals similar. **Petals** declinate over lip, as long as median sepal. **Lip** 3-lobed, crests with 2–5 undulate ridges in base, passing into slender, acuminate papillae; mentum 1–5 mm long; spur cylindrical, 1.0–5.6 mm long. **Gynostemium** 6–9 mm long. **Flowering time** Nov.–Feb. In open grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Thaba Chitja to uMzimkhulu and Mqanduli S, from Nico Malan Pass to Komga, Uitenhage to Southwell).

19b Petals oblanceolate, narrower than lateral sepals
21a Crest papillae very few on distal half of lip midlobe, midlobe 9–20 mm long

welwitschii (Rchb.f.) Rolfe

Umlunge (Z)

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.25–0.90 m high. **Leaves** stiffly erect, 700 × 23 mm, partly to fully developed at anthesis. **Inflorescence** short and dense, 4–25-flowered. **Flowers** with sepals creamy yellow tinged pale green, petals straw-yellow, lip similar with dark reddish purple on side lobes, distal crest papillae and basal part of midlobe. **Sepals** scarcely spreading, subcampanulate; median sepal 22–35 mm long, elliptic to narrowly oblong, acute; lateral sepals similar. **Petals** scarcely spreading, subcampanulate, slightly shorter and narrower than sepals. **Lip** 3-lobed, shorter than median sepal, crests with 2 fleshy ridges in base, passing into many filiform papillae; mentum 1–2 mm long; spur subcylindrical, 3–7 mm long.

Gynostemium stout, 5–7 mm long. **Flowering time** Nov.–Feb. Marshy grassland; Sub-Escarpment Grassland, Albany Thicket (Kokstad to Maclear and Tsolo Districts, Bathurst).

21b Crest papillae many on distal half of lip midlobe, midlobe 2–4 mm long
22a Midlobe a third the length of the lip, apex of side lobes acute; scape 60–300 mm high

leontoglossa Rchb.f.

Leeutong (A); *iphamba* (Z)

Terrestrial, slender herb, with subterranean, moniliformous rhizomes, 0.06–0.28 m high. **Leaves** stiffly erect, 370 × 9 mm, partly to fully developed at anthesis. **Inflorescence** short and dense, axis curved to nodding, 7–35-flowered. **Flowers** with sepals white tinged yellow or pink to purple tinged dull green, petals and lip white to yellow or pink, crests yellow to yellowish brown distally. **Sepals** slightly spreading; median sepal 10–14 mm long, oblanceolate, obtuse; lateral sepals similar. **Petals** slightly spreading, oblanceolate, obtuse. **Lip** 3-lobed, crests with 2–4 low ridges in base, passing into several rows slender papillae, midlobe broadly oblong with denticulate margins, side lobes narrow, subacute apex; mentum vestigial; spur cylindrical, slender, 3–5 mm long. **Gynostemium** 4–6 mm long. **Flowering time** Oct.–Feb. Grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Thaba Chitja S, Maclear to Ntsubane Forest and Lusikisiki District).

22b Midlobe half the length of the lip, apex of side lobes obtuse; scape 300–1 000 mm high

ensata Lindl.

Iphamba lentaba (Z)

Terrestrial, semi-robust herb, with subterranean, moniliformous rhizomes, 0.25–1.00 m high. **Leaves** stiffly erect, 900 × 15 mm, partly to fully developed at anthesis. **Inflorescence** short and dense, 6–30-flowered. **Flowers** with sepals, petals and lip bright to pale yellow, crests deeper yellow. **Sepals** subcampanulate to slightly spreading; median sepal 16–23 mm long, narrowly oblong, acute; lateral sepals similar. **Petals** subcampanulate to slightly spreading, shorter and narrower than median sepal, oblong, acute to obtuse. **Lip** 3-lobed, crests with 2 broad ridges in base, passing into dense filiform papillae; mentum 2 mm long; spur cylindrical, slender, 4–7 mm long. **Gynostemium** 6–8 mm long. **Flowering time** Dec., Jan. Grassy places in coastal bushveld; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Lusikisiki District to Port St Johns, from Kei River to Kentani and Kasouga River to Kowie).

EVOTELLA Kurzweil & H.P.Linder

(Orchidoideae—Diseae)

Liver orchid

Species 2, sthn Afr., WC, EC.

carnosa (Lindl.) J.C.Manning & Goldblatt

Manning & Goldblatt (2012)

[= *Pterygodium carnosum* Lindl., *Corycium carnosum* (Lindl.) Rolfe]

Terrestrial herb, fairly robust, geophyte, up to 0.55 m high; with root tubers. **Leaves** cauline and forming basal cluster, many, narrowly lanceolate, imbricate, up to 200 mm long. **Inflorescence** a dense, terminal raceme. **Flowers** many, globose with narrow

entrance, resupinate, sepals green, petals purplish, lip white. **Sepals** subequal; median sepal adnate to petals, reflexed, 7 mm long; lateral sepals fused basally. **Petals** saccate, 7 mm long. **Lip** 4 mm long, with 2 broad apical lobes; lip appendage 4 mm tall, forming hood over column. **Flowering time** Oct.–Dec., after fire. Fynbos vegetation; Eastern Fynbos-Renosterveld (Willowmore District E to Humansdorp).

HABENARIA Willd.

(Orchidoideae—Orchideae)

Species ± 800, throughout tropics and subtropics of the world; 35 widespread in northern and eastern parts of sthn Afr.

1a Petals undivided

anguiceps Bolus

Terrestrial herb, geophyte, up to 0.4 m high; with globose root tubers. **Leaves** many, cauline, acuminate, up to 45 × 12 mm. **Inflorescence** dense, racemose; flowers 25–50, spreading, resupinate, green to yellowish green. **Sepals** unequal; median sepal horizontal, 4 mm long, forming hood; lateral sepals spreading, deflexed. **Petals** undivided, lanceolate, falcate, narrower than median sepal. **Lip** narrowly oblong, undivided, 5–7 mm long, fleshy, pendent, widest at base; spur 8 mm long, curved, apex inflated. **Flowering time** Nov.–Feb. Rocky grassland; Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Ramatseliso's Post S, Port Elizabeth to Grahamstown and Bathurst).

arenaria Lindl.

Terrestrial herb, geophyte, up to 0.41 m high; with globose root tubers. **Leaves** 2, radical, acuminate, up to 150 × 40 mm, mottles silver-grey. **Inflorescence** lax, racemose; flowers 8–25, resupinate, green. **Sepals** unequal; median sepal 4 mm long. **Petals** undivided, triangular, 4 mm long, acute. **Lip** 3-lobed, 6 mm long; spur 15–20 mm long with small tooth in mouth. **Flowering time** Apr.–July. In shade in montane thickets, woodland and forest; Sub-Escarpment Grassland, Lower Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket, Indigenous Forests, Eastern Fynbos-Renosterveld (Queenstown to Engcobo S, from Graaff-Reinet to Kentani and Port Elizabeth to Grahamstown, Alexandria and East London, and to Humansdorp).

ciliosa Lindl.

Terrestrial herb, geophyte, up to 0.50 m high; with globose root tubers. **Leaves** many, cauline, suberect, elliptic, basal leaf sheaths with horizontal black bars, acute, up to 73 × 14 mm. **Inflorescence** lax to dense, racemose; flowers many, resupinate, green sepals and dull yellow petals. **Sepals** unequal, hairy; median sepal 4.0–7.5 mm long. **Petals** undivided, lanceolate. **Lip** equally 3-lobed, 3.5–4.0 mm long; spur 8–20 mm long. **Flowering time** Jan.–Apr. Marshy grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad SW to Grahamstown).

epipactidea Rchb.f.

Uklamkleshe (Z)

Terrestrial herb, geophyte, robust, 0.12–0.61 m high; with globose root tubers. **Leaves** 8–12, cauline, overlapping, suberect, oblong, rounded, up to 150 × 14 mm. **Inflorescence** dense, racemose; flowers many, resupinate, light green or greenish yellow with white lip. **Sepals** unequal; median sepal ovate, 9–12 mm long. **Petals** undivided, ovate-oblong, spreading, longer than median sepal. **Lip** 3-lobed, midlobe 10–16 mm

long, pendent, 2 side lobes tiny, thread-like, at base of midlobe; spur 15–30 mm long, recurved, apex swollen. **Flowering time** Jan.–Mar. Marshy grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Matatiele E to Kokstad SW to Bedford and Alexandria).

filicornis Lindl.

Terrestrial herb, geophyte, slender, up to 0.6 m high; root tubers globose. **Leaves** cauline, linear to lanceolate, 90–140 × 14 mm. **Inflorescence** lax, racemose; flowers 12–25, resupinate, green with yellow pollinia. **Sepals** unequal; median sepal ovate, 3.0–4.5 mm long. **Petals** undivided, adhering to median sepal. **Lip** 3-lobed, midlobe 5–8 mm long, 2 side lobes shorter; spur 18–30 mm long, slender, incurved, apex swollen. **Flowering time** Feb., Mar. Marshy or floodplain grassland; Sub-Escarpment Grassland (Mount Curry District).

laevigata Lindl.

Terrestrial herb, geophyte, fairly robust, 0.20–0.45 m high; with globose root tubers. **Leaves** many, cauline, clasping the stem, elliptic, acute, up to 65 × 14 mm. **Inflorescence** lax, racemose; flowers 12–30, resupinate, green to yellow-green. **Sepals** unequal; median sepal ovate, 5–12 mm long. **Petals** undivided, lanceolate, spreading, longer than median sepal. **Lip** 3-lobed, midlobe 4–9 mm long, carnose, upright, 2 side lobes shorter, deflexed; spur 16–35 mm long, filiform, concealed. **Flowering time** Dec.–Feb. High altitude rocky grassland; Sub-Escarpment Grassland, Drakensberg Grassland, Albany Thicket (Matatiele E to Kokstad SW to Hogsback and East London).

pseudociliosa Schelpe ex J.C.Manning

Terrestrial herb, geophyte, fairly robust, 0.24–0.47 m high; with globose root tubers. **Leaves** 6–8, cauline, clasping stem, leaf sheaths barred and spotted maroon, 90–150 × 9–15 mm. **Inflorescence** dense, racemose; flowers 8–30, resupinate, green to yellow-green. **Sepals** unequal, green, coarsely hairy, 3–5 mm long. **Petals** undivided, as long as median sepal. **Lip** 3-lobed, midlobe 2.5–4.0 mm long, carnose, obtuse, 2 side lobes shorter; spur 16–23 mm long, apex inflated. **Flowering time** Jan.–Apr. Damp rocky grassland, from near sea level to 1 700 m; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Kokstad SW to Kei River Mouth).

1b Petals divided
2a Leaves several arranged along stem

caffra Schltr.

[= *H. falcicornis* (Lindl.) Bolus subsp. *caffra* (Schltr.) J.C.Manning]

Terrestrial herb, geophyte, robust, 0.35–0.83 m high; with globose root tubers. **Leaves** 6–10 cauline, up to 80–180 mm long. **Inflorescence** lax, racemose; flowers 20–60, resupinate, white and flushed dull green. **Sepals** unequal; median sepal 4–6 mm long; lateral sepals with apiculus. **Petals** divided, spreading; lower anterior lobes 5–8 mm long, ovate to lanceolate, longer than posterior lobe, narrowly elliptic to linear. **Lip** 3-lobed, midlobe 7–12 mm long, 2 side lobes shorter, elliptic lanceolate, falcate, spur 33–43 mm long, slightly curved. **Flowering time** Jan.–Mar. High altitude rocky grassland; Sub-Escarpment Grassland (Matatiele E to Kokstad).

clavata (Lindl.) Rchb.f.

'Mametsana (SS)

Terrestrial herb, geophyte, fairly robust, 0.2–0.7 m high; with globose root tubers. **Leaves** many, cauline, elliptic, 70–120 × 18–40 mm. **Inflorescence** lax, racemose;

flowers 2–18, resupinate, green to yellowish green, stigmas white. **Sepals** unequal; median sepal ovate, 9–17 mm long, forming hood. **Petals** divided, spreading; lower anterior lobes horn-like, curved upwards, not crossing each other, longer than posterior lobe. **Lip** 3-lobed, midlobe 20–27 mm long, 2 side lobes shorter; spur 30–50 mm long, inflated towards apex. **Flowering time** Dec.–Feb. High altitude rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Ramatseliso's Gate E to Kokstad S, from Stutterheim to King William's Town).

cornuta Lindl.

Terrestrial herb, geophyte, fairly robust, 0.25–0.60 m high; with globose root tubers. **Leaves** many, cauline, ovate-oblong, 20–100 × 10–40 mm. **Inflorescence** fairly dense, racemose; flowers 8–20, resupinate, pale green, lip lobes white at base. **Sepals** unequal, median sepal ovate, 5–8 mm long, forming small hood. **Petals** divided, spreading; lower anterior lobes horn-like, curved upwards, crossing each other; posterior lobe short, filiform. **Lip** 3-lobed, midlobe 5–12 mm long, 2 side lobes shorter; spur 15–25 mm long, twisted, inflated towards apex. **Flowering time** Feb.–Apr. Vlei areas, wet soil; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate E to Kokstad and SW to Maclear).

dives Rchb.f.

Inhluthi yotshani (Z)

Terrestrial herb, geophyte, fairly robust, 0.15–0.73 m high; with globose root tubers. **Leaves** suberect, many, cauline, up to 220 mm long. **Inflorescence** lax, racemose; flowers 20–70, resupinate, white, often green-veined. **Sepals** unequal; median sepal ovate, 4 mm long. **Petals** divided, spreading; lower anterior lobes broadly lanceolate; horn shorter than posterior lobe. **Lip** 3-lobed, midlobe 3–7 mm long, 2 side lobes shorter, broader; spur 8–15 mm long, slightly inflated at apex, concealed. **Flowering time** Dec.–Feb. High altitude rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Ramatseliso's Gate E to Kokstad S, from Maclear to Lusikisiki).

falcicornis (Burch. ex Lindl.) Bolus

Uklamkleshe (Z)

Terrestrial herb, geophyte, slender to robust, 0.35–0.83 m high; with globose root tubers. **Leaves** many, cauline, elliptic, up to 180 × 22 mm. **Inflorescence** lax, racemose; flowers up to 60, resupinate, sepals green, petals and lip white. **Sepals** unequal; median sepal, 4–6 mm long; lateral sepals with apiculus. **Petals** divided, spreading; lower anterior lobes broadly ovate-lanceolate, 2.5–5.0 mm long, shorter than posterior lobe. **Lip** 3-lobed, midlobe 7–15 mm long, 2 side lobes shorter, broader; spur 20–40 mm long, slightly curved. **Flowering time** Feb., Mar. Marshy grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Kokstad S, from Queenstown to Port Edward, Amatole Mts to Kentani, Greater Addo Elephant National Park to Port Elizabeth and Grahamstown, and to Tsitsikamma and Humansdorp).

malacophylla Rchb.f.

Terrestrial herb, geophyte, slender, 0.28–0.70 m high; with globose root tubers. **Leaves** several to many, cauline, elliptic, membranous, spreading, 70–120 × 20–40 mm. **Inflorescence** lax, racemose; flowers 12–30, resupinate, green, centre whitish. **Sepals** unequal. **Petals** divided, spreading; lower anterior lobes, 4–6 mm long, longer and

narrower than posterior lobe. **Lip** 3-lobed, midlobe 4–7 mm long, 2 side lobes shorter, spreading, reflexed; spur 8–15 mm long, thicker in middle. **Flowering time** Jan.–Apr. In shade of forests; Indigenous Forests (Ntsikeni Nature Reserve to Malowe S, from road between Tsolo and Maclear to Lusikisiki and Tsomo River, and to Manubi Forest and Mhlahlane Forest Station).

tridens Lindl.

Terrestrial herb, geophyte, slender, 0.075–0.440 m high, with globose root tubers. **Leaves** 6–12, cauline, suberect, narrowly elliptic to narrowly oblong, 80–150 × 10–20 mm. **Inflorescence** lax, racemose; flowers 10–30, resupinate, pale green to yellowish green. **Sepals** unequal; dorsal sepal 4 mm long. **Petals** divided, spreading; lower anterior lobes filiform, 4–6 mm long, smaller or as long as posterior lobe. **Lip** 3-lobed, midlobe 3.5 mm long, 2 side lobes shorter; spur 8–15 mm long, slightly curved, pendent, apex slightly inflated. **Flowering time** Jan.–Mar. Stream- and riverbanks, close to water; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna (Matatiele SW to Stutterheim and Kentani).

2b Leaves 2, flat on the soil surface

dregeana Lindl.

Small green hood; '*mametsana* (SS)

Terrestrial herb, geophyte, slender, 0.17–0.57 m high; with globose root tubers. **Leaves** 2, basal, radical, unequal in size, the larger 30–45 × 30–85 mm. **Inflorescence** dense, racemose; flowers 20–60, resupinate, green, lighter green in centre. **Sepals** unequal; dorsal sepal 6 mm long. **Petals** divided, spreading; lower anterior lobe 1.0–4.5 mm long, much shorter than posterior lobe. **Lip** 3-lobed, midlobe 9 mm long, 2 side lobes $^1/_2$ the length of midlobe; spur 7–13 mm long, mouth wide, apex inflated. **Flowering time** Jan.–Apr. Rocky grassland; Sub-Escarpment Savanna, Drakensberg Grassland, Albany Thicket (Mqanduli District to Lusikisiki S, from Post Retief to Kentani District, and Grahamstown to Shelly Beach).

lithophila Schltr.

Terrestrial herb, geophyte, slender, up to 0.35 m high; with globose root tubers. **Leaves** 2, basal, radical, unequal in size, the larger 25–50 × 25–70 mm. **Inflorescence** fairly dense, racemose; flowers 10–30, resupinate, yellowish green. **Sepals** unequal; dorsal sepal 6 mm long. **Petals** divided, glabrous to hairy; lower anterior lobe 4.5–8.0 mm long, curving upwards, slightly longer than posterior lobe. **Lip** 3-lobed, midlobe 6–9 mm long, 2 side lobes of similar length; spur 8–11 mm long, slender, straight, apex inflated. **Flowering time** Nov.–Mar. Rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Ramatseliso's Gate to uMzimkhulu District S, from Queenstown to Maclear, Stockenström to Kentani and Kareedouw to Grahamstown).

mossii (G.Will.) J.C.Manning

Terrestrial herb, geophyte, slender, 0.18–0.24 m high; with globose root tubers. **Leaves** 2, basal, radical, unequal in size, broadly ovate to orbicular, the larger 35–70 × 30–70 mm. **Inflorescence** fairly dense, racemose; flowers many, resupinate, green. **Sepals** unequal; dorsal sepal 5–7 mm long, reflexed. **Petals** divided; upper lobe adherent to dorsal sepal; lower anterior lobe 5–9 mm long, linear curving upwards. **Lip** 3-lobed, midlobe 6–11 mm long, narrowly oblong, 2 side lobes of similar length or slightly shorter; spur 18–26 mm

long, cylindrical, pendent to horizontal, spirally twisted, apex inflated. **Flowering time** Feb.–Apr. Rocky grassland; Sub-Escarpment Grassland (Queenstown District).

tysonii Bolus

Terrestrial herb, geophyte, slender, 0.15–0.38 m high; with globose root tubers. **Leaves** 2, basal, radical, unequal in size, broadly ovate to orbicular, somewhat succulent, the larger 23–45 × 22–65 mm. **Inflorescence** lax, racemose; flowers 20–50, resupinate, green. **Sepals** unequal; dorsal sepal 5 mm long, reflexed, showing yellow pollinia. **Petals** divided, hairy; upper lobe filiform, curved and twisted; lower anterior lobe 11–15 mm long, twice as long as posterior lobe. **Lip** 3-lobed, hairy, midlobe 9–13 mm long, 2 side lobes slightly longer; spur 12–20 mm long, twisted, apex inflated. **Flowering time** Dec.–Feb. Rocky grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad District S, Queenstown District and Kentani).

HOLOTHRIX Rich. ex Lindl.

(Orchidoideae—Orchideae)

Species ± 55, Arabian Peninsula, Africa; 23 in sthn Afr., often under arid conditions, LIM, M, FS, KZN, L, NC, WC, EC.

brevipetala Immelman & Schelpe

Terrestrial herb, geophyte with root tubers, up to 0.32 m high. **Scape** with stiff deflexed hairs. **Leaves** 2, flat on ground, up to 12 mm wide, densely hairy above, withering before flowering. **Inflorescence** a lax, hairy raceme; flowers secund, many, greenish yellow. **Sepals** subequal, connivent; dorsal sepal 2 mm long. **Petals** narrowly oblong, 3 mm long. **Lip** 3 mm long, divided into 3–5 short, subequal lobes; spur 2 mm long. **Flowering time** Dec.–Feb. Rocky areas in dry scrub; Eastern Fynbos-Renosterveld (Grahamstown District and to Humansdorp District).

burchellii (Lindl.) Rchb.f.

Tryphia

Terrestrial herb, geophyte with root tubers, up to 0.5 m high. **Scape** with stiff deflexed hairs towards base, 2–7 flowerless bracts. **Leaves** 2, flat on ground, up to 68 mm wide, glabrous, withering before flowering. **Inflorescence** a dense raceme; flowers secund, many, greenish to cream-coloured, dimorphic, upper flowers with elongated petal and lip lobes. **Sepals** subequal, connivent; dorsal sepal 4–6 mm long. **Petals** narrowly oblong, 4–8 mm long, divided into 5–7 slender lobes. **Lip** 7 mm long, divided into 7–9 slender lobes; spur 4 mm long, strongly curved. **Flowering time** Sept.–Nov. Dry, rocky slopes; Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Burgersdorp and Queenstown Districts S, from Victoria East to Komga, Humansdorp District to Uitenhage, Grahamstown and East London, and between Kabeljous and Rondebosch Rivers).

cernua (Burm.f.) Schelpe

Terrestrial herb, geophyte with root tubers, up to 0.26 m high. **Scape** with stiff deflexed hairs. **Leaves** 2, flat on ground, up to 28 mm wide, with or without scales above, not withering before flowering. **Inflorescence** a lax to dense hairy raceme; flowers secund, many, greenish yellow. **Sepals** subequal, connivent; dorsal sepal 2 mm long. **Petals** linear, 4–5 mm long. **Lip** 7 mm long, divided into 3–5 subequal lobes; spur 3 mm long. **Flowering time** Sept.–Dec. Fynbos and dry scrub; Eastern Fynbos-Renosterveld (Grahamstown District).

exilis Lindl.

Terrestrial herb, geophyte with root tubers, up to 0.29 m high. **Scape** minutely and thinly hairy. **Leaves** 2, flat on ground, up to 8 mm wide, thinly hairy above, withering before flowering. **Inflorescence** a lax, thinly hairy raceme; flowers secund, many, greenish yellow. **Sepals** subequal, connivent; dorsal sepal 1–2 mm long. **Petals** linear, 2–3 mm long. **Lip** 2–5 mm long, narrowly lanceolate, with or without side lobes; spur 1 mm long. **Flowering time** Oct.–Mar. Fynbos and dry scrub; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Komga E to Kei River Mouth and Kareedouw to Grahamstown District).

incurva Lindl.

Terrestrial herb, geophyte with root tubers, up to 0.17 m high. **Scape** minutely and thinly hairy. **Leaves** 2, flat on ground, up to 30 mm wide, glabrous, not withering before flowering. **Inflorescence** a lax, thinly hairy raceme; flowers secund, many, green to yellowish green. **Sepals** subequal, connivent; dorsal sepal 3 mm long. **Petals** linear, 8–9 mm long. **Lip** 7–9 mm long, deeply 5-lobed with subequal lobes; spur 2 mm long. **Flowering time** Jan., Feb. Grassy rock ledges and rock crevices; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey E to Matatiele).

[E]longicornu G.J.Lewis

Terrestrial herb, geophyte with root tubers, up to 0.16 m high. **Scape** with deflexed hairs. **Leaves** 2, flat on ground, up to 20 mm wide, dense, short hairs above, not withering before flowering. **Inflorescence** a lax, hairy raceme; flowers secund, many, yellowish green. **Sepals** subequal, connivent; dorsal sepal 3 mm long. **Petals** linear, 4 mm long. **Lip** 4 mm long, deeply 5-lobed with subequal lobes; spur 4 mm long. **Flowering time** Oct. Eastern Fynbos-Renosterveld/Albany Thicket (Port Elizabeth).

[E]macowaniana Rchb.f.

Terrestrial herb, geophyte with root tubers, up to 0.07 m high. **Scape** minutely and thinly hairy. **Leaves** 2, flat on ground, up to 15 mm wide, glabrous, not withering before flowering. **Inflorescence** a lax, hairy raceme; flowers secund, 3–6, green, petals and lip white. **Sepals** subequal, connivent; dorsal sepal 3 mm long. **Petals** lanceolate, 5 mm long. **Lip** obovate, shallowly notched 6–7 × 5–6 mm; spur 5–6 mm long. **Flowering time** Aug.–Oct. Restricted to forests; Indigenous Forests (Stockenström District, Katberg Mtn, Grahamstown).

mundii Sond.

Terrestrial herb, geophyte with root tubers, up to 0.16 m high. **Scape** thinly hairy. **Leaves** 2, flat on ground, up to 20 mm wide, not withering before flowering. **Inflorescence** a dense, thinly hairy raceme; flowers secund, 3–8, white. **Sepals** subequal, connivent; dorsal sepal 1.5 mm long. **Petals** lanceolate, 2 mm long. **Lip** 3–4 mm long, deeply lobed with 3–7 unequal lobes; spur 1 mm long. **Flowering time** Sept., Oct. Coastal fynbos; Eastern Fynbos-Renosterveld (Joubertina E to Humansdorp District).

orthoceras (Harv.) Rchb.f.

Tryphia

Terrestrial herb, geophyte or lithophyte with root tubers, 0.06–0.30 m high. **Scape** minutely hairy. **Leaves** 2, flat on ground, up to 40 mm wide, glabrous, dark green with silvery veins, not withering before flowering. **Inflorescence** a lax, thinly hairy raceme; flowers secund, many, green sepals, white petals purple-veined, white lip. **Sepals** sub-

equal, connivent; dorsal sepal 3 mm long. **Petals** lanceolate, 5–6 mm long. **Lip** 9–11 mm long, with 3 short front lobes and 2 long side lobes; spur 4–5 mm long. **Flowering time** Feb.–June. In humus on mossy rocks Forests; Indigenous Forests (Hogsback E to Stutterheim).

parviflora (Lindl.) Rchb.f.

Terrestrial herb, geophyte with root tubers, up to 0.24 m high. **Scape** minutely and thinly hairy. **Leaves** 2, flat on ground, up to 30 mm wide, glabrous, not withering before flowering. **Inflorescence** a lax, thinly hairy raceme; flowers secund, many, sepals green, petals and lip white. **Sepals** subequal, connivent; dorsal sepal 2–3 mm long. **Petals** lanceolate, 5–6 mm long. **Lip** up to 10 mm long, 5-lobed; spur 2–4 mm long, strongly curved. **Flowering time** June–Sept. In dry scrub; Dry Highveld Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Somerset East to Hogsback and King William's Town S, from Joubertina to Port Elizabeth and Grahamstown, and to Kareedouwkloof).

pilosa (Burch. ex Lindl.) Rchb.f.

Terrestrial herb, geophyte or lithophyte with root tubers, robust, up to 0.55 m high. **Scape** densely hairy towards base. **Leaves** 2, flat on ground, up to 140 mm wide, glabrous above, hairy below, withering before flowering. **Inflorescence** a lax to dense, hairy raceme; flowers secund, many, sepals green, petals cream-coloured. **Sepals** subequal, connivent; dorsal sepal 3 mm long. **Petals** narrowly linear, 7–10 mm long. **Lip** up to 10 × 7 mm, shallowly 5–7-lobed; spur 2 mm long. **Flowering time** Nov.–Mar. Rocky slopes and ledges in fynbos; Eastern Fynbos-Renosterveld (Joubertina, E to Port Elizabeth).

schlechteriana Schltr. ex Kraenzl.

Terrestrial herb, geophyte with root tubers, robust, up to 0.7 m high. **Scape** with 4–7 flowerless bracts, thinly and minutely hairy. **Leaves** 2, flat on ground, up to 100 mm wide, glabrous, not withering before flowering. **Inflorescence** lax, hairy raceme; flowers secund, many, green to cream-coloured petals and lip. **Sepals** subequal, connivent; dorsal sepal 4 mm long. **Petals** 6–9 mm long, lower $^1/_2$ divided into 5 or 6 slender lobes. **Lip** 6–7 mm, 7 or 8 slender lobes; spur 4 mm long. **Flowering time** Oct.–Dec. Dune bush or dry scrub; Upper Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg District, Joubertina, E to Port Elizabeth, Grahamstown and East London, and to Clarkson).

scopularia (Lindl.) Rchb.f.

Terrestrial herb, geophyte with root tubers, robust, 0.11–0.34 m high. **Scape** with long, thin, deflexed hairs. **Leaves** 2, flat on ground, up to 52 mm wide, glabrous, scattered, long hairs near the margins, often withering before flowering. **Inflorescence** dense, hairy raceme; flowers secund, many, white to pink petals and lip. **Sepals** subequal, connivent; dorsal sepal 3–4 mm long. **Petals** 3–11 mm long, upper $^1/_2$ divided into 3 slender lobes. **Lip** 5–9 mm, 5–12 slender lobes; spur 1–3 mm long. **Flowering time** Oct.–Jan. Rocky grassland at high altitudes; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna (Ongeluksnek to Ramatseliso's Gate and Maclear District S, from Engcobo to Mjika and Somerset East to King William's Town).

secunda (Thunb.) Rchb.f.

Terrestrial herb, geophyte with root tubers, robust, up to 0.31 m high. **Scape** minutely and thinly hairy. **Leaves** 2, flat on ground, up to 35 mm wide, glabrous, not withering before flowering. **Inflorescence** lax, hairy raceme; flowers secund, many, sepals green, petals and lip white to pale green. **Sepals** subequal, connivent; dorsal sepal 3 mm long. **Petals** 5 mm long, cohering with base of lip. **Lip** 7–9 mm, deeply 5-lobed; spur 3 mm long. **Flowering time** Aug.–Oct. Dry scrub; Eastern Fynbos-Renosterveld (Willowmore E to Port Elizabeth).

thodei Rolfe

Terrestrial herb, geophyte with root tubers, robust, 0.07–0.25 m high. **Scape** with deflexed hairs. **Leaves** 2, flat on ground, up to 14 mm wide, scattered broad hairs above, withering before flowering. **Inflorescence** lax to dense, hairy raceme; flowers secund, many, yellowish green. **Sepals** subequal, connivent; dorsal sepal 3–4 mm long. **Petals** linear-lanceolate, 4–5 mm long. **Lip** unequally 3-lobed, 4–6 mm long; spur 1 mm long. **Flowering time** Jan.–Mar. Rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland (EC Drakensberg).

villosa Lindl.

Terrestrial herb, geophyte, lithophyte with root tubers, slender, up to 0.3 m high. **Scape** with horizontal hairs. **Leaves** 2, flat on ground, up to 40 mm broad, scattered long hairs above, often withering before flowering. **Inflorescence** lax to dense, hairy raceme; flowers secund, many, greenish sepals, yellowish petals and lip. **Sepals** subequal, connivent; dorsal sepal 2 mm long. **Petals** linear, 2–3 mm long. **Lip** unequally 3-lobed, 4 mm long; spur 1 mm long, slightly curved.

Two varieties are recognised:

H. villosa Lindl. var. **condensata** (Sond.) Immelman

Flowering time Oct.–Jan. Rocky grassland; Eastern Fynbos-Renosterveld (WC and Humansdorp).

H. villosa Lindl. var. **villosa**

Flowering time Aug.–Dec. Rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate S to Matatiele).

HUTTONAEA Harv.

(Orchidoideae—Diseae)

Species 5, sthn Afr., M, FS, KZN, EC.

1a Lower leaf with long petiole; flowers up to 10 mm in diam.

fimbriata (Harv.) Rchb.f.

Plants erect, 0.17–0.32 m high. **Leaves**: lower leaf with petiole 25–80 mm long, blade cordate, broadly ovate, shortly acuminate, 60–90 × 40–70 mm; upper leaf smaller. **Inflorescences** laxly, 4–20-flowered. **Flowers** white, up to 10 mm in diam. **Sepals** unequal, margins crenate; median sepal reflexed, narrowly oblong, acute, 4 mm long; lateral sepals rhomboid, 4.0–4.5 × 3.5 mm. **Petal** erect, spathulate, claws 1 mm long, basally fused to sepals, blades ovate, shallowly saccate, margins finely lacerate, 4–5 mm long. **Lip** broadly angulate-ovate, outer margins fimbriate, 6 × 5 mm. **Flowering time** Jan.–Mar. In dark, cool forest; Indigenous Forests (Ugie and Nqadu Forest).

1b Lower leaf sessile; flowers 10–30 mm in diam.
2a Petal claws free from each other
3a Lower leaf 60–120 mm long; forest plants

pulchra Harv.

Plants erect, 0.15–0.40 m high. **Leaves** not petiolate; lower leaf with patent, cordate, elliptic, obtuse to acute and finely mucronate blade, 60–120 × 45–70 mm; upper leaf smaller. **Inflorescences** laxly, 6–20-flowered. **Flowers** up to 15 mm in diam. **Sepals** lime-green subequal, reflexed, margins entire; median sepal 5–6 × 2–3 mm; lateral sepals lanceolate, acute, 7 × 4 mm. **Petals** pale mauve, spathulate, claws cylindrical, 5–7 mm long, blades transversely obovate, shallowly calcarate, margins fimbriate, 6–7 mm in diam. **Lip** pendent, transversely ovate, margins fimbriate, 4–5 × 7–10 mm. **Flowering time** Mar. In dark, cool forest; Indigenous Forests (Malowe Forest S, Cala District, Somerset East and Hogsback).

2b Petal claws fused
3b Lower leaf 40–60 mm long; grassland plants

woodii Schltr.

Plants erect, up to 0.3 m high. **Leaves** sheathing at base; lower leaf narrowly elliptic, acute, 40–60 × 20–25 mm; upper leaf smaller. **Inflorescences** dense, 15–25-flowered. **Flowers** up to 12 mm in diam. **Sepals** lime-green, subequal, reflexed, margins entire; median sepal lorate, basal $^1/_2$ united with petal claws, 5 mm long; lateral sepals obliquely ovate, acute, 6 × 4 mm. **Petals** speckled and lined purple, spathulate, erect, claws 3 mm long, fused, blades galeate, margins fimbriate, 4 mm tall and 2 mm deep. **Lip** lime green, pendulous, spathulate, 5 × 7 mm, claw 3 × 4 mm, transversely ovate, margins fimbriate. **Flowering time** Feb. Damp marshy grassland; Sub-Escarpment Grassland (Kokstad area).

4a Flowers up to 20 mm in diam., petal fringes 2–4 mm long, petal claws fused in basal parts

oreophila Schltr.

Plants erect, 0.15–0.25 m high. **Leaves** not petiolate; lower leaf patent, cordate, broadly elliptic, obtuse, apiculate, 30–50 × 25–35 mm; upper leaf much reduced. **Inflorescences** lax, 2–4-flowered. **Flowers** white, up to 20 mm in diam. **Sepals** unequal, margins finely dentate; median sepal lorate, united with petal claws; lateral sepals quadrate-rhomboid, 6 mm long. **Petals** spathulate, erect, curved forwards, claws 4–5 mm long, fused, blades fan-shaped, concave, with callus near base, margins fimbriate. **Lip** transverse elliptic, finely fimbriate, 7 × 12 mm. **Flowering time** Feb. Damp marshy grassland; Drakensberg Grassland (Naude's Neck area).

4b Flowers 20–30 mm in diam., petal fringes 5–8 mm long, petal claws completely fused

grandiflora (Schltr.) Rolfe

Plants erect, 0.09–0.25 m high. **Leaves** not petiolate; lower leaf patent, cordate, broadly elliptic, obtuse, apiculate, 20–60 × 15–40 mm; upper leaf much reduced. **Inflorescences** lax, 1–5-flowered. **Flowers** white with mauve markings on petals, 20–25 mm in diam. **Sepals** unequal, margins dentate; median sepal lorate, 8 mm long; lateral sepals quadrate-rhomboid, 7–8 mm long. **Petals** spathulate, erect, blades curved forwards, fan-shaped, up to 12 mm long, saccate, with callus near base, finely and deeply fimbriate; claws 7–8 mm long, fused with median sepal. **Lip** transverse elliptic, pendent, margins fimbriate. **Flowering time** Feb., Mar. Damp marshy grassland; Drakensberg Grassland (Mount Fletcher District, Ramatseliso's Gate, Naude's Neck).

LIPARIS Rich.

(Epidendroideae—Malaxideae)

Species ± 250, cosmopolitan; 4 in sthn Afr., LIM, NW, M, S, KZN, WC, EC.

1a Flowering scapes without sheaths; pseudobulbs buried in soil

capensis Lindl.

Plants terrestrial, up to 0.1 m high. **Leaves** 2 or 3, spreading near soil surface, broadly ovate, acute, firm, 20–47 × 15–45 mm. **Inflorescence** a lax raceme, 7–20-flowered. **Flowers** green; ovary 5–15 m long. **Sepals** unequal; median sepal reflexed, 4–5 × 1.5 mm, margins rolled; lateral sepals oblong, oblique, facing each other, 4 × 2 mm. **Petals** linear, margins inrolled, spreading downwards, 4 × 1 mm. **Lip** oblong, widened in middle, emarginate, deeply concave with small callus at base, 4 × 2 mm. **Flowering time** Apr.–July. Fynbos near coast; Eastern Fynbos-Renosterveld (Storms River to Port Elizabeth).

1b Flowering scapes with sheaths; pseudobulbs above ground level
2a Pseudobulbs next to each other; lateral sepals free to base

bowkeri Harv.

Plants terrestrial or epiphytic, 0.1–0.2 m high. **Leaves** 2 or 3, ovate-elliptic, acute, ascending, 5–7 prominent veins below, thin-textured, 45–120 × 25–70 mm. **Inflorescence** a lax raceme, 2–16-flowered. **Flowers** green. **Sepals** unequal; median sepal patent, lorate, acute, 10–12 × 1.5–2.0 mm; lateral sepals patent, oblique, oblong, rounded to obtuse, 8–11 × 4–5 mm. **Petals** pendent to patent, linear, margins inrolled, 8–12 × 1 mm. **Lip** broadly obovate, rounded, concave, with small callus at base, 7–8 × 7–8 mm. **Flowering time** Nov.–Mar. Forest floors; Indigenous Forests (Tsolo to Mkambati Nature Reserve S, Mbashe River and Grahamstown).

2b Pseudobulbs spaced on a creeping rhizome; lateral sepals fused in lower part

remota J.L.Stewart & Schelpe

Plants terrestrial or epiphytic, 0.1–0.2 m high. **Leaves** 3, elliptic, obtuse, ascending, 3 prominent veins below, thin-textured, 25–100 × 15–45 mm. **Inflorescence** a lax raceme, 3–6-flowered. **Flowers** green; ovaries 10–15 mm long. **Sepals** unequal; median sepal erect, lorate, 6–9 × 2 mm; lateral sepals patent, oblique, broadly elliptic, 5–6 × 3–4 mm. **Petals** deflexed, linear, margins inrolled, 6–8 × 1 mm. **Lip** spathulate, limb ascending, 2 × 2 mm, blade rhomboid to lunate, 4–5 × 3–4 mm, acute to obtuse, with small callus at base. **Flowering time** Nov.–Mar. Forest floors; Indigenous Forests (Port St Johns S, Tsitsikamma, Grahamstown).

MYSTACIDIUM Lindl.

(Epidendroideae—Vandeae)

Species ± 9, mainly southern and south-central Africa; 7 in sthn Afr., LIM, M, S, KZN, WC, EC.

1a Flowers white, sepals > 6 mm long, spur 20–60 mm long
2a Spur 20–40 mm long; leaves 15–45 mm long; flowering mostly Apr.–July

venosum Harv. ex Rolfe

Plants epiphytic, up to 0.015 m high. **Leaves** lorate to elliptic, unequally bilobed, conduplicate at base, apically flat, 15–45 × 6–10 mm, often poorly developed. **Inflorescence** of several pendent racemes, 20–50 mm long, 4–10-flowered; pedicels 10–14 mm long.

Flowers white, sweet scented, 15 mm in diam. **Sepals** unequal, reflexed to spreading, narrowly elliptic-lanceolate, acute; median sepal 7–8 × 2.5–3.0 mm; lateral sepals 8–9 × 2–3 mm. **Petals** reflexed, linear-lanceolate, oblique, acute, 6–8 × 1–2 mm. **Lip** 3-lobed, midlobe sharply reflexed, narrowly triangular, acute, 6 × 1.5–2.0 mm; side lobes porate, 1.5 mm tall; spur tapering to acute apex, 20–40 mm long. **Flowering time** Apr.–July. Forests; Indigenous Forests (Stutterheim to King William's Town, Komga and Kentani).

2b Spur 35–60 mm long; leaves 40–120 mm long; flowering mostly Sept.–Jan.

capense (L.f.) Schltr.

Tree orchid, lacy tree orchid; *iPhamba* (Z)

Plants epiphytic, up to 0.025 m high. **Leaves** imbricate, ligulate, conduplicate at base, apically flat, unequally bilobed, 40–120 × 10–22 mm. **Inflorescence** of several pendent racemes, 70–180 mm long, 7–13-flowered; pedicels 10–20 mm long. **Flowers** white, 25–30 mm in diam. **Sepals** subequal, reflexed, linear-lanceolate, acute; median sepal 11–14 × 3.5–4.0 mm; lateral sepals suboblique, 13–17 × 3–4 mm. **Petals** reflexed, linear-lanceolate, acute, 9–13 × 3.0–3.5 mm. **Lip** 3-lobed, midlobe with apical margins upcurved, linear-lanceolate, acute, 10–15 × 3–4 mm; side lobes porate, reflexed, with dentate front margins; spur tapering to acute apex, 35–60 mm long. **Flowering time** Sept.–Jan. Forests; Indigenous Forests (Port Edward to Mkambati Nature Reserve SW, Fort Beaufort to Kei River Mouth, Storms River to East London and Humansdorp).

1b Flowers pale green, sepals < 6 mm long, spur 10–20 mm long
3a Spur 8–11 mm long

aliceae Bolus

Plants epiphytic, up to 0.01 m high. **Leaves** linear-lanceolate, widening somewhat towards apex, unequally bilobed, 20–60 × 4–9 mm. **Inflorescence** of several pendent racemes, 15 mm long, 5–10-flowered; pedicels 5 mm long. **Flowers** pale green, 10 mm in diam. **Sepals** equal, reflexed, narrowly elliptic, acute, 4–5 × 2 mm. **Petals** initially erect, then reflexed, lanceolate, acuminate, 5–2 mm. **Lip** 3-lobed, midlobe sharply deflexed, acute, 3 × 2 mm; side lobes rounded, porrect; spur tapering to acute apex, 8–11 mm long. **Flowering time** Nov.–Mar. Forests; Indigenous Forests (Kentani District).

3b Spur 12–25 mm long
4a Plants mostly leafless; tepal apices fleshy

gracile Harv.

Plants epiphytic, up to 0.015 m high. **Leaves** absent. **Inflorescence** of several pendent racemes, 30–50 mm long, 10-flowered; pedicels 10 mm long. **Flowers** pale green, 8 mm in diam. **Sepals** subequal; median sepal erect, narrowly ovate, acute, 3–5 × 1.5 mm; lateral sepals spreading, suboblique, narrowly rhomboid, 4–5 × 1.5 mm. **Petals** hooding anther, narrowly oblong, subacute, 3.0–3.5 × 1 mm. **Lip** 3-lobed, midlobe sharply deflexed, triangular, 2 × 0.5 mm; side lobes rounded, porrect; spur tapering to acute apex, 17–25 mm long. **Flowering time** June.–Oct. Forests; Indigenous Forests (uMzimkhulu, Fort Beaufort).

4b Plants with leaves at flowering; tepal apices not fleshy
5a Spur 18–25 mm long; flowering Dec., Jan.

flanaganii (Bolus) Bolus

Plants epiphytic, up to 0.01 m high. **Leaves** 3–5, lorate, obtuse, obscurely unequally bilobed, 12–35 × 3.0–4.5 mm. **Inflorescence** of 1–5 pendent racemes, 20–45 mm

long, 3–8-flowered; pedicels 5 mm long. **Flowers** pale green, 5–7 mm in diam. **Sepals** unequal, obtuse to rounded; median sepal oblong-ovate, 2.0–3.5 × 0.8–1.2 mm; lateral sepals narrowly rhomboid, 2.5–5.0 × 1.0–1.5 mm. **Petals** obliquely triangular, acute, 1.6–3.0 × 0.8–1.5 mm. **Lip** 3-lobed, midlobe sharply deflexed, 1.5–2.0 × 0.8–1.0 mm; side lobes, porrect, poorly developed; spur tapering to acute apex, 18–25 mm long. **Flowering time** Dec., Jan. Forests; Indigenous Forests (Katberg to Kentani District and East London).

5b Spur 12–18 mm long; flowering June–Aug.

pusillum Harv.

Plants epiphytic, up to 0.01 m high. **Leaves** 1–3, lorate-oblanceolate, rounded, obscurely unequally bilobed, 15–40 × 4–6 mm. **Inflorescence** of 1–5 pendent racemes, 15–35 mm long, 4–7-flowered' pedicels 5 mm long. **Flowers** pale green, 5 mm in diam. **Sepals** unequal, acute; median sepal oblong-ovate, 2.6–5.0 × 1 mm; lateral sepals spreading, oblanceolate-rhomboid, 3–5 × 0.7–2.0 mm. **Petals** ovate, acute, 2–3 × 1–2 mm. **Lip** 3-lobed, midlobe triangular, 1 mm long, acute; side lobes lost; spur tapering to acute apex, 12–18 mm long. **Flowering time** June–Aug. Forests; Indigenous Forests (Kentani District, Kei River Mouth).

NEOBOLUSIA Schltr.

(Orchidoideae—Orchideae)

Species 3, in eastern, central and sthn Afr.; 1 in sthn Afr., LIM, M, S, KZN, L, EC.

tysonii (Bolus) Schltr.

Terrestrial slender herb, 0.15–0.48 m high; stem ridged along length; small ovate root tubers. **Leaves** 2, basal, narrowly elliptic to oblong, acute, up to 80 × 20 mm, few small leaves above. **Inflorescence** a lax, few-flowered raceme; flowers 2–12, brownish green, lip white, central blotch pink to purple. **Sepals**: dorsal sepal 7–9 mm long. **Petals** obliquely ovate, basally fused to gynostemium. **Lip** spurless, 8–12 mm long, 4–8 mm broad at apex. **Flowering time** Dec.–Feb. Moist or marshy montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Ramatseliso's Gate E to Kokstad S from Engcobo to Mthatha and to Fort Cunynghame).

POLYSTACHYA Hook.

(Epidendroideae—Epidendreae)

Species ± 200, predominantly African, but also found in Asia, Australasia and American tropics; 11 in sthn Afr., LIM, M, S, KZN, WC, EC.

1a Pseudobulbs narrowly cylindrical, new pseudobulbs arise halfway along old pseudobulb, forming a branched elongated plant

fusiformis (Thouars) Lindl.

Plants epiphytic, up to 0.3 m high. **Pseudobulbs** 80–160 × 2–5 mm long with many nodes, **Leaves** 5 lower leaves reduced to sheathes, 3–5 upper leaves narrowly elliptic, acute, 7–100 × 15–30 mm. **Inflorescence** paniculate, 40–60 × 30–60 mm, branches up to 30 mm long, densely many-flowered. **Flowers** yellowish green, small. **Sepals** unequal, apiculate; median sepal narrowly triangulate, 3 × 1.8 mm; lateral sepals obliquely triangulate, 5 × 3 mm. **Petals** linear-lorate, acute, 3 × 0.6 mm. **Lip** 3-lobed, 4.5 × 3.5 mm, midlobe orbicular, apiculate, hinged, 2 mm in diam., side lobes rounded, porrect, 1 mm tall; mentum conical, 2.6 mm long. **Flowering time** Oct.–Jan. Forests; Indigenous Forests (Ntsubane Forest Station).

1b Pseudobulbs swollen arising close together in a dense tuft or forming cushion-like mat
2a Flowers small; median sepal 3–5 mm long

mauritanica Spreng.
(= *Polystachya tessellata* Lindl.)

Plants epiphytic or epilithic, up to 0.6 m high. **Pseudobulbs** narrowly conical, enclosed by leaf sheaths, 20–40 × 10–15 mm. **Leaves** 3–5, narrowly elliptic, rounded, veins prominent, 80–110 × 25–50 mm. **Inflorescence** branched, 40–500 mm high, branches up to 30–60 mm long, densely many-flowered. **Flowers** creamy yellow to pink. **Sepals** acute, apiculate; median sepal narrowly triangulate, 3.5–4.0 × 2 mm; lateral sepals obliquely ovate, 4.5–5.5 × 4.0–4.5 mm. **Petals** lorate to spathulate, rounded, 3.0–3.5 × 0.8–1.0 mm. **Lip** 3-lobed, clawed, 4.5–5.0 × 4–5 mm, callus a longitudinal ridge, midlobe suborbicular, apiculate, reflexed, margins crenate, 1.5 mm long, side lobes falcate, 1.5 mm long; mentum conical, 3 mm long. **Flowering time** Oct.–Jan. Forests; Indigenous Forests (Mkambati and Port St Johns).

2b Flowers medium-sized; median sepal 6–13 mm long
3a Mentum 1.5 mm long; flowers open and yellow

pubescens (Lindl.) Rchb.f.

Tree orchid, yellow tree orchid; *amabelejongosi* (Z)

Plants epiphytic or epilithic, 0.1–0.2 m high. **Pseudobulbs** ovoid, aggregated forming long chains, 20–35 × 5–15 mm. **Leaves** 1–3, erect to falcate, lorate-elliptic, obtuse to rounded, veins prominent, 25–120 × 9–20 mm. **Inflorescence** 8–20-flowered. **Flowers** opening widely, deep yellow, lip and lateral sepals with reddish markings. **Sepals** subequal, apiculate, shallowly concave; median sepal narrowly oblong, 8–10 × 3–5 mm; lateral sepals oblong, 8–11 × 3–6 mm. **Petals** obovate, rounded, flat, 6–9 × 2.5–6.0 mm. **Lip** 3-lobed, flat, 7 × 5–6 mm, midlobe straight, triangular, acute, 3–4 × 2–3 mm, side lobes subacute, porrect, 1–2 mm tall; mentum obscure, up to 1.5 mm long. **Flowering time** Oct.–Dec. Forests; Indigenous Forests (Umtamvuna River to Mkambati Nature Reserve S, Somerset East to Komga, Port Elizabeth to Grahamstown and East London).

3b Mentum 4–6 mm long; flowers white or green
4a Flowers 1–5 per inflorescence

ottoniana Rchb.f.

Iphamba lehlathi (Z)

Plants epiphytic, 0.04–0.15 m high. **Pseudobulbs** adjacent, forming long chains, conical, 10–25 × 5–15 mm. **Leaves** 2, linear-lorate, obtuse to rounded, unequally bilobed, 20–130 × 4–8 mm. **Inflorescence** lax, 1–5-flowered. **Flowers** cream-coloured or white, lip with yellow markings. **Sepals** subequal, acute, concave; median sepal narrowly oblong, 7.5–13.0 × 3–5 mm; lateral sepals suboblique, 9–13 × 4–7 mm. **Petals** narrowly spathulate, acute, 7–11 × 2–4 mm. **Lip** 3-lobed, 9–12 × 6–8 mm, midlobe suborbicular to oblong, acute to rounded, reflexed, 4–5 mm long, side lobes elongate, porrect, 1.0–1.5 mm tall; mentum conical, 4–6 mm long. **Flowering time** Aug.–Dec. Forests; Indigenous Forests (Drakensberg and Baziya Mts, Hogsback to Kentani District, Storms River to Grahamstown).

4b Flowers 6 or more per inflorescence

sandersonii Harv.

Amabelejongosi (Z)

Plants epiphytic, 0.08–0.20 m high. **Pseudobulbs** adjacent, conical, 20–40 × 3–10 mm. **Leaves** 2–4, erect, thin, lorate, round to apiculate, unequally bilobed, 40–100 × 7–20 mm. **Inflorescence** lax, 5–15-flowered. **Flowers** brownish yellow sepals and petals and white lip. **Sepals** concave, shortly acuminate; median sepal triangular, 7–9 × 3–5 mm; lateral sepals obliquely ovate, 9–12 × 5.0–7.5 mm. **Petals** spathulate, subacute, 7 × 2–3 mm. **Lip** erect, 3-lobed, horizontal, midlobe oblong, hinged, fleshy, acute, gradually decurved, side lobes rounded, porrect, 1.5–2.0 mm tall; mentum conical, 4–5 mm long. **Flowering time** Oct.–Dec. Forests; Indigenous Forests (Kentani District).

PTERYGODIUM Sw.

Manning and Goldblatt (2012)

(= *ANOCHILUS* Schltr., *CORYCIUM* Sw.)

(Orchidoideae—Diseae)

Bonnet orchid, monkshood orchid; *moederkappie* (A)

Species 32, mostly sthn Afr., extending into tropical Africa; ± 24 in sthn Afr., LIM, G, M, S, FS, KZN, L, NC, WC, EC.

Section 1. *Pterygodium*

acutifolium Lindl.

Plants terrestrial, slender, 0.22–0.47 m high. **Leaves** 3 or 4, oblong, subapiculate, up to 180 × 23 mm. **Inflorescence** lax, up to 100 mm long, 1–14-flowered. **Flowers** 17 × 15 mm, sepals lime green, petals and lip yellow. **Sepals** unequal; median sepal saccate, acute, 8–12 × 4–5 mm, adnate to petals; lateral sepals spreading, saccate, acute, 5 × 5–6 mm. **Petals** obliquely oblong, shallowly concave, 12–13 × 8–10 mm. **Lip** deltate, acute, 5 × 3–4 mm, margins undulate, appendage triangular, apex smooth, curved down, 7–10 × 4 mm. **Flowering time** Sept.–Dec., after fire. In swamps and seepages; Eastern Fynbos-Renosterveld (Storms River to Port Elizabeth).

alatum (Thunb.) Sw.

Vlerkies (A)

Plants terrestrial, slender, up to 0.18 m high. **Leaves** basically clustered, narrowly elliptic, acute, up to 60 × 10 mm. **Inflorescence** dense, up to 60 mm long, 2–many flowers. **Flowers** pale greenish yellow, 24 × 15 mm. **Sepals** unequal; median sepal narrowly elliptic, acute, 7–11 × 2–3 mm, adnate to petals; lateral sepals spreading to reflexed, suboblique, acute, 9–10 × 3 mm. **Petals** subdeltate, outer margin crenulate, 7–12 × 6–7 mm. **Lip** with 2 broad diverging lobes, apex erose, 5–7 × 2–5 mm, and a small pointed midlobe, 1.5 mm long, appendage 6–8 × 3 mm, spathulate, with an apical hooding gland. **Flowering time** Aug.–Oct. Coastal foreland and mountain base; Eastern Fynbos-Renosterveld (Humansdorp).

caffrum (L.) Sw.

Moederkappie (A)

Plants terrestrial, slender, up to 0.34 m high. **Leaves** cauline, 4 or more, ovate-lanceolate, acute, up to 85 × 32 mm. **Inflorescence** dense, up to 120 mm long, few to many

flowers. **Flowers** 28 × 15 mm, sepals pale green, petals and lip yellow. **Sepals** unequal; median sepal narrowly oblong, acute, 9–11 × 2.5–3.0 mm, adnate to petals; lateral sepals spreading, saccate, acute, 9–11 × 5 mm. **Petals** erect, subobdeltate, upper margin crenulate, 7–12 × 5–7 mm. **Lip** with 2 broad diverging, rounded lobes, 7–9 × 5–8 mm, sometimes with a minute ventral tooth, appendage erect, stout, apex with large ventral cavity, 5–7 × 5 mm. **Flowering time** Sept.–Nov. Low fynbos; Eastern Fynbos-Renosterveld (Port Elizabeth).

catholicum (L.) Sw.

Cowled friar; *mammakappie*, *mombakkiesblommetjie* (A)

Plants terrestrial, slender, 0.10–0.34 m high. **Leaves** 2–4, oblong-lanceolate, subacuminate, up to 120 × 30 mm. **Inflorescence** lax, up to 100 mm long, 1–14-flowered. **Flowers** 25 × 15 mm, facing down, sepals green, petals and lip yellowish green, flushed red pale green with small purple dots on petal and median sepal apices; older flowers turn red. **Sepals** unequal; median sepal saccate, acuminate, 9–10 × 3–4 mm, adnate to petals; lateral sepals spreading, saccate, acuminate, 7–13 × 4–5 mm. **Petals** almost quadrate, shallowly concave, 9–12 × 9 mm. **Lip** deltate, flat, 4–6 × 3 mm, appendage erect, triangular, denticulate, curved forward, 6–11 × 4 mm. **Flowering time** Sept.–Nov. In short fynbos scrub; Eastern Fynbos-Renosterveld (Storms River to Port Elizabeth).

cleistogamum (Bolus) Schltr.

(= *Pterygodium newdigateae* Bolus var. *cleistogamum* Bolus)

Plants terrestrial, slender, up to 0.35 m high. **Leaves** 2–4, elliptic-oblong, acuminate, up to 70 × 20 mm. **Inflorescence** lax, up to 70 mm long, 2–6-flowered. **Flowers** greenish yellow, 30 × 15 mm. **Sepals**: median sepal elliptic-acute, concave, 6–10 × 4 mm, adnate to petals; lateral sepals spreading, acute, 8–11 × 4 mm. **Petals** erose, 8 mm long. **Lip** oblong-lacerate, 5 mm long, appendage 5 mm long. **Flowering time** Nov. On stony slopes near the sea, forests; Indigenous Forests (Storms River and Witelsbos).

hastatum Bolus

Plants terrestrial, slender, 0.13–0.35 m high. **Leaves** 2–4, ovate-oblong, up to 210 × 60 mm. **Inflorescence** lax, up to 80 mm long, 2–many flowers. **Flowers** 20 × 15 mm, pale green with small purple dots on petal and median sepal apices. **Sepals** unequal; median sepal oblong-elliptic, subacute, 8–14 × 4–5 mm, adnate to petals; lateral sepals spreading, elliptic, saccate, apices recurved, 7–12 × 3–4 mm. **Petals** subrotund, margins erose, undulate, 6–10 × 8–12 mm. **Lip** broadly rounded, erose, acute, 3 × 3–5 mm long, appendage 3-pointed, 4–7 × 3 mm. **Flowering time** Jan.–Mar. Montane grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Engcobo, Kentani District).

leucanthum Bolus

Plants terrestrial, slender, up to 0.4 m high. **Leaves** 2–10, ovate-lanceolate, acute, up to 170 × 35 mm. **Inflorescence** lax, up to 160 mm long, 3–many flowers. **Flowers** 18 × 12 mm, sepals green, petals cream-coloured and lip appendage pale green with dark green apex. **Sepals** unequal; median sepal narrowly oblong-elliptic, shallowly concave, 8–9 × 3 mm, adnate to petals; lateral sepals spreading, saccate, acute, incurved 7–8 × 2 mm. **Petals** subrotund, outer margin involute, 6–7 × 8–9 mm. **Lip** reduced to 2 semi-circular lobes, 1.0–1.5 mm long, appendage 6 × 3 mm, topped by 2 rounded, down-curved, fleshy lobes. **Flowering time** Jan., Feb. In montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Mount Fletcher to Naude's Neck, Engcobo and Stutterheim).

Section 2. *Magnum* Kurzweil & Linder

magnum Rchb.f.

Plants terrestrial, robust, up to 1.5 m high. **Leaves** 6–many, oblong-lanceolate, acute, up to 250 × 60 mm. **Inflorescence** dense, up to 500 mm long, many flowers; bracts much longer than flowers. **Flowers** 25 × 12 mm. **Sepals** green; median sepal 8–12 × 2.5–5.0 mm, adnate to petals; lateral sepals spreading, lanceolate, acuminate, 7–12 × 3–5 mm. **Petals** yellow with red dots and darker veins, deltate, 8–12 × 5–7 mm, margins fimbriate. **Lip** pale green to mauve with darker veins, 6–8 × 5–6 mm, margins fimbriate, appendage 7–9 × 3 mm, 2-lobed, saccate, white speckled with purple. **Flowering time** Dec.–Mar. Marshy grassland and river floodplains; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Ramatseliso's Gate to Clydesdale S, from Lady Frere to Mthatha, Bedford to Stutterheim and to Grahamstown).

Section 3. *Ommatodium* (Lindl.) Kurzweil & Linder

cooperi Rolfe

Plants terrestrial, slender, 0.17–0.29 m high. **Leaves** 2–4; basal leaf large, broadly ovate; cauline leaves lanceolate to elliptic, subacute, up to 160 × 50 mm. **Inflorescence** lax, up to 100 mm long, 5–many flowers. **Flowers** 20 × 15 mm, sepals purplish green, petals white and green, lip and appendage white. **Sepals** unequal; median sepal elliptic, acute, 6–8 × 2–4 mm, adnate to petals; lateral sepals reflexed, oblique, subacute, concave basally, 7–9 × 4–5 mm. **Petals** broad, 6–9 × 6–11 mm. **Lip** deltate, acute, 3–5 mm long, with 2 stout, deflexed side lobes, appendage obdeltate with a longitudinal ridge, 4–5 × 5 mm. **Flowering time** Jan.–Mar. Montane grassland; Drakensberg Grassland (Ramatseliso's Gate to Naude's Neck).

volucris (L.f.) Sw.

Plants terrestrial, slender, up to 0.52 m high. **Leaves** 3 or 4, ovate-oblong, acute, up to 140 × 50 mm. **Inflorescence** lax to dense, up to 150 mm long, many flowers. **Flowers** 15 × 12 mm, sepals green, petals and lip lime. **Sepals** unequal; median sepal linear-oblong, acute, 7–8 × 2 mm, adnate to petals; lateral sepals reflexed, oblique, shallowly saccate, acuminate, 6–7 × 3 mm. **Petals** ovate, obliquely rounded, apically folded, 7.0–7.4 × 5–6 mm. **Lip** deltate, acute, 4–5 × 6 mm, with rounded side lobes 1 mm long, appendage 3–4 × 2 mm, spathulate-peltate forming a cup, apically notched. **Flowering time** Aug.–Oct. Coastal area under bushes; Eastern Fynbos-Renosterveld (Humansdorp District).

Section 4. *Anochilus* Schltr.

flanaganii Bolus

Terrestrial herb, fairly robust, geophyte, up to 0.3 m high, with root tubers. **Leaves** many, lanceolate, attenuate, 120 × 24 mm. **Inflorescence** a dense, terminal raceme. **Flowers** many, non-resupinate, green, lip striped dark maroon. **Sepals** subequal; median sepal ovate, obtuse, 5.0–5.5 × 3.0–3.5 mm; lateral sepals saccate, acute, 7–8 × 3 mm. **Petals** saccate, acute, 7–8 × 3 mm. **Lip** broadly oblong, acute, 7 × 3 mm; lip appendage oblong, emarginate, 5 × 2 mm. **Flowering time** Dec., Jan. In montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Barkly East to Naude's Neck and Matatiele S, Molteno to Queenstown and to King William's Town).

Section 5. *Corycium* (Sw.) J.C.Manning & Goldblatt
[= *Corycium* Sw., *Corycium* sect. *Microglossum* Kurzweil & H.P.Linder, *Corycium microglossum* (Lindl.)]

[E]alticola (Parkman & Schelpe) J.C.Manning & Goldblatt
(= *Corycium alticola* Parkman & Schelpe)

Terrestrial herb, slender to fairly robust, geophyte, up to 0.42 m high, with root tubers. **Leaves** cauline and forming basal cluster, many, lanceolate, imbricate, erect-spreading, up to 130 mm long. **Inflorescence** a dense, terminal raceme. **Flowers** many, globose with narrow entrance, resupinate, sepals white turning black, petals pale green, lip pale maroon. **Sepals** subequal; median sepal adnate to petals, 7–8 mm long; lateral sepals fused for $< {}^{1}/_{2}$ their length. **Petals** saccate, 7–9 mm long. **Lip** 5 mm long, almost square, notched at apex; lip appendage 5 mm tall, with 2 apical lobes, triangular, strongly deflexed. **Flowering time** Feb., Mar. Grassland vegetation; Mesic Highveld Grassland (Lady Grey District).

dracomontanum (Parkman & Schelpe) J.C.Manning & Goldblatt
(= *Corycium dracomontanum* Parkman & Schelpe)

Terrestrial herb, slender to fairly robust, geophyte, 0.12–0.54 m high; with root tubers. **Leaves** cauline and forming basal cluster, many, lanceolate, imbricate, erect-spreading, up to 200 × 16 mm. **Inflorescence** a dense, terminal raceme. **Flowers** many, globose with narrow entrance, resupinate, sepals pale green to pinkish turning black, petals and lip green tinged purple. **Sepals** subequal; median sepal adnate to petals, 2–5 mm long; lateral sepals fused for ${}^{1}/_{2}$ their length, free portions widely separated. **Petals** saccate, 4 mm long. **Lip** 4–5 mm long, acute to obtuse; lip appendage 5 mm tall, with 2 apical lobes, deflexed. **Flowering time** Nov.–Mar. In moist grassland and vleis; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Dry Highveld Grassland, Albany Thicket (Naude's Neck Pass E to Matatiele and Kokstad, Andriesberg to Port St Johns, Somerset East to Stutterheim and Grahamstown to Alexandria).

nigrescens (Sond.) Schltr.
Black-faced orchid; *moederkappie* (A); *umabelembuca* (Z)

Terrestrial herb, slender to fairly robust, geophyte, 0.17–0.55 m high; with root tubers. **Leaves** cauline and forming basal cluster, many, lanceolate, imbricate, erect-spreading, up to 200 × 24 mm. **Inflorescence** a dense, terminal raceme. **Flowers** many, globose with narrow entrance, resupinate, sepals pale green turning black, petals purple-brown to almost black, lip purplish green. **Sepals** subequal; median sepal adnate to petals, 3 mm long; lateral sepals fused for most of their length. **Petals** saccate, 4 mm long. **Lip** 3–4 mm long, obtuse; lip appendage 4 mm tall, with 2 apical lobes, deflexed. **Flowering time** Dec.–Feb. In moist grassland vegetation; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Ramatseliso's Post to Kokstad S, from King William's Town to Komga and Willowmore to Tsitsikamma and Grahamstown Districts).

tricuspidatum (Bolus) Schltr.
Terrestrial herb, slender, geophyte, up to 0.33 m high; with root tubers. **Leaves** cauline and forming basal cluster, many, narrowly lanceolate, imbricate, up to 70 mm long. **Inflorescence** a dense, terminal raceme. **Flowers** many, globose with narrow entrance, resupinate, purple. **Sepals** subequal; median sepal adnate to petals, reflexed, 3 mm long;

lateral sepals free. **Petals** saccate, 5 mm long. **Lip** 6 mm long, deeply lobed, lobes linear with tooth between lobes, margins undulate; lip appendage 4 mm tall, with 2 apical lobes, strongly deflexed. **Flowering time** Feb., Mar. In grassland vegetation; Sub-Escarpment Grassland (Queenstown and Kokstad Districts).

RANGAERIS (Schltr.) Summerh.

(Epidendroideae—Vandeae)

Species 6, tropical and subtropical Africa; 1 in sthn Afr., M, KZN, EC.

muscicola (Rchb.f.) Summerh.

Plants lithophyte or epiphyte, up to 0.18 m high. **Stems** short and stout, 30–80 × 7–10 mm. **Leaves** conduplicate, lorate, rounded, fleshy, leathery, 60–110 × 12–20 mm. **Inflorescence** erect or horizontal, racemose, 55–150 mm long, 5–15-flowered. **Flowers** white, star-like, 15 × 25 mm in diam. **Sepals** subequal, subacute, apices fleshy; median sepal ovate, acute, 8–11 × 5–6 mm; lateral sepals narrowly ovate, 9–11 × 4–5 mm. **Petals** lanceolate, 7–10 × 3–4 mm. **Lip** rhomboid, acute, flat, 10–12 × 8 mm; spur cylindrical 50–90 mm long. **Flowering time** Nov.–Jan. Sandstone rocks and cliffs; Indigenous Forests (Ntsubane Forest to Mkambati Nature Reserve, Port Edward, Umtamvuna River).

SATYRIUM Sw.

(Orchidoideae—Diseae)

Species ± 88, Africa and Madagascar, extending to India, Myanmar (= Burma) and China; 37 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

1a Leaves absent at flowering time, or borne on a sterile shoot
2a Lip subovoid, apical flap minute; flowers yellowish green, may be tinged maroon

parviflorum Sw.

Impimpi enkulu (Z)

Plants terrestrial, fairly robust, 0.15–1.30 m high. **Leaves** absent at flowering time, later 2–4. Basal, on sterile shoot, elliptic to broadly ovate, spreading, 10–330 mm long. **Inflorescence** lax to dense, 20–106-flowered; bracts deflexed. **Flowers** small, yellowish green, suffused brownish, olive to maroon, petals dry to brown shortly after anthesis. **Sepals**: median sepal 2–4 mm long, obovate-truncate; lateral sepals obovate, falcate, slightly longer. **Petals** narrowly obovate, minutely papillose. **Lip** subovoid with galea entrance very small; spur 5–15 mm long. **Flowering time** Dec.–Mar. Fynbos and marshy to dry places in grassland and forest; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck to Ntabankulu S, Queenstown to Port St Johns, Hogsback to Kei River Mouth, Kareedouw to East London and Tsitsikamma to Humansdorp).

2b Lip not subovoid, apical flap well developed; flowers red, pink white, orange or yellow
3a Apical lip flap hairy inside, spur 13–46 mm long

longicauda Lindl.

Long-tailed trewwa; *langsterttrewwa* (A); *uklamkleshe* (Z)

Plants terrestrial, robust, 0.17–0.81 m high. **Leaves** 1 or 2, radical, on sterile shoot, ovate-elliptic, spreading, 40–200 × 60–75 mm. **Inflorescence** lax, 12–60-flowered; bracts deflexed. **Flowers** white to pink, floral parts tinged pink, darker veins, petals

dry to brown shortly after anthesis. **Sepals** free. **Petals** forming tube with sides of lip, sharply deflexed. **Lip** with prominent apical flap; spur 15–46 mm long. **Flowering time** Dec.–Feb. Moist or rocky grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Dry Highveld Grassland, Albany Thicket (Qacha's Neck to Ntsikeni Nature Reserve S, Queenstown to Engcobo and Port Edward, Somerset East to Kentani and Grahamstown to East London).

3b Apical lip flap glabrous inside, spur 5–15 mm long

neglectum Schltr.

Plants terrestrial, fairly robust, 0.20–1.07 m high. **Leaves** 2, basal, on sterile shoot, partly spreading, ovate to lanceolate, 40–320 mm long. **Inflorescence** slender, dense, 17–100-flowered; bracts deflexed. **Flowers** small, pink to deep rose, sepals and petals fused to lip, curved distally. **Sepals** elliptic, 7–10 mm long. **Petals** obovate. **Lip** uppermost, apical flap reflexed, glabrous; spur 6–19 mm long. **Flowering time** Oct.–Mar. Moist grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Naude's Neck to Clydesdale, King William's Town and Kentani District).

1b Leaves borne on the fertile stem
4a Leaves basal, fully or partly appressed to the ground
5a Petals with deeply lacerate or fringed margins

membranaceum Sw.

Ouma trewwa (A)

Plants terrestrial, fairly robust, 0.17–0.57 m high. **Leaves** 2, appressed to ground, broadly ovate-elliptic, obtuse, 20–120 mm long. **Inflorescence** lax, 8–29-flowered; bracts dry and membranous, gradually becoming deflexed. **Flowers** pale to deep pink, sepals and petals $^1/_4$ fused to lip, then forming loose tube. **Sepals** 9–11 mm long. **Petals** oblong acute lacerate. **Lip** with terminal serrulate flap; spur 21–27 mm long. **Flowering time** Sept.–Nov. Open grassy slopes; Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck, Mount Fletcher, Katberg to Kentani, Oudebosch to Port Alfred, Humansdorp and Jeffreys Bay).

5b Petals with entire or crenulate margins
6a Lip from front taller than wide, shallowly galeate
7a Spur shorter than ovary, 5–11 mm long

erectum Sw.

Geelkappie, *geel trewwa* (A)

Plants terrestrial, stout, 0.10–0.56 m high. **Leaves** 2, appressed to ground, ovate-elliptic, acute to obtuse, 40–160 mm long. **Inflorescence** dense, 11–64-flowered; bracts partly to fully deflexed. **Flowers** pale to deep pink with darker tinges and spots on the petals, sepals and petals $^1/_3$ fused to lip, then curving downwards. **Sepals** 11–12 mm long. **Petals** oblong acute lacerate. **Lip** tall and narrow; spur 5–11 mm long. **Flowering time** Sept., Oct. Dry slopes and flats in dry fynbos or karroid scrub; Eastern Fynbos-Renosterveld (Storms River to Humansdorp).

7b Spur longer than ovary, 19–30 mm long

longicolle Lindl.

Plants terrestrial, slender to robust, 0.11–0.43 m high. **Leaves** 2, appressed to ground, ovate to rotund, 20–110 mm long. **Inflorescence** lax, 5–50-flowered; bracts deflexed. **Flowers** pale pink to ivory, dark purple along midveins; sepals and petals $^1/_3$ fused to lip,

then decurved. **Sepals** 9–15 mm long, narrow, partly fused with petals. **Petals** 9–15 mm long, oblong acute. **Lip** entrance 7–14 mm long, apical flap not bent back; spur 19–30 mm long. **Flowering time** Oct.–Dec., after fire. Moist slopes along the sea; Eastern Fynbos-Renosterveld, Albany Thicket (Storms River to Grahamstown).

6b Lip from front as tall as wide, deeply galeate
8a Flowers pink to carmine

princeps Bolus

Rooi trewwa (A)

Plants terrestrial, robust, 0.28–0.86 m high. **Leaves** 2, appressed to ground, broadly ovate-elliptic, obtuse, 70–230 mm long. **Inflorescence** dense, stout, 13–44-flowered; bracts gradually becoming deflexed. **Flowers** rose-pink to carmine-red; sepals and petals one-fifth fused to lip, then decurved. **Sepals** 9–15 mm long, narrow, partly fused with petals; median sepal oblong, obtuse, 11–14 mm long; lateral sepals elliptic acute. **Petals** lanceolate, acuminate, serrulate, margins crisped. **Lip** obovate, entrance 7–8 mm long, apical flap serrulate and crisped, 3–4 mm long; spur 16–20 mm long. **Flowering time** Sept.–Nov. Sandy soils amongst coastal scrub along the sea; Eastern Fynbos-Renosterveld, Albany Thicket (Storms River to Port Elizabeth).

8b Flowers white or yellow
9a Flowers yellow

bicorne (L.) Thunb.

Goue trewwa, *ouma trewwa*, *ewwa trewwa* (A)

Plants terrestrial, slender, 0.14–0.61 m high. **Leaves** 2, appressed to ground, ovate to rotund, 30–180 mm long. **Inflorescence** dense to lax, 4–40-flowered; bracts minutely ciliate, deflexed. **Flowers** pale greenish yellow, faintly tinged purple-brown; sepals and petals $^1/_3$ fused to lip, then deflexed, oblong, obtuse. **Sepals** 6–9 mm long. **Petals** 5–8 mm long. **Lip** entrance facing downwards, slight apical flap not bent; spurs 10–20 mm long. **Flowering time** Sept., Oct. Sandy soils amongst coastal scrub along the sea; Eastern Fynbos-Renosterveld (Storms River).

9b Flowers white or pale pink

acuminatum Lindl.

Pienk trewwa (A)

Plants terrestrial, robust to slender, 0.12–0.61 m high. **Leaves** 2, appressed to ground, ovate to subrotund, obtuse, 20–80 mm long. **Inflorescence** dense, 15–27-flowered; bracts partly to fully becoming deflexed. **Flowers** white to pale pink tinged green; sepals and petals similar, free to base, basal part forms U-shaped entrance to galea, apices deflexed. **Sepals** elliptic-oblong, obtuse, 4 mm long. **Lip** elliptic, with prominent dorsal ridge, entrance 4–7 mm long, apical flap 1 mm long, partly deflexed; spur 12–22 mm long. **Flowering time** Sept.–Dec., after fire. Moist fynbos or bushy vegetation on S-facing slopes; Eastern Fynbos-Renosterveld, Albany Thicket (Tsitsikamma to Grahamstown, Witelsbos to Humansdorp).

4b Leaves cauline but spreading or suberect
10a Rostellum with 2 spreading arms, lip flap absent or weak
11a Spurs filiform, up to 10 mm long

pygmaeum Sond.

Plants terrestrial, slender, decumbent to erect, 0.05–0.20 m high. **Leaves** 1–3, lowest spreading near the ground, upper erect, the largest ovate, obtuse, V-shaped, 10–40 mm

long. **Inflorescence** fairly dense, 15–23-flowered; bracts deflexed. **Flowers** dull yellowish green tinged pale to dark purple. **Sepals** fused to petals and base of lip for $^{1}/_{4}$ of their length, apices deflexed; median sepals narrowly ovate, 3–4 mm long; lateral sepals broadly ovate, 3–4 mm long. **Lip** ovate-deltate, flat, without an apical flap; spur 6–10 mm long. **Flowering time** Oct., Nov. On moist mossy ledges on slopes and cliffs; Eastern Fynbos-Renosterveld (Storms River).

11b Spurs saccate or absent, up to 3 mm long
12a Bracts deflexed

microrrhynchum Schltr.

Plants terrestrial, slender, glabrous, 0.15–0.36 m high. **Leaves** 2 or 3, longest partly spreading, thick and smooth, elliptic, 50–120 mm long. **Inflorescence** dense, 5–56-flowered; bracts deflexed. **Flowers** yellowish green to dull white, thick-textured, short hairs in basal parts. **Sepals**: median sepal truncate to obtuse, 3–5 mm long; lateral sepals slightly shorter, broadly elliptic-oblong. **Petals** slightly shorter, narrowly ovate; **Lip** from front taller than deep, with prominent apical flap; spur absent or small sacs at lip base. **Flowering time** Jan., Feb. On high altitude, moist, stony, grassy slopes; Sub-Escarpment Grassland (Cala District).

12b Bracts horizontal, partly reflexed
13a Sepals spreading sideways

retusum Lindl.

Plants terrestrial, slender, 0.04–0.31 m high. **Leaves** 1 or 2, basal, spreading, broadly ovate, 7–60 mm long, gradual transition to bracts. **Inflorescence** dense, 5–60-flowered; bracts narrowly ovate, acuminate. **Flowers** greenish to yellowish white, with deep red lines inside lip. **Sepals** 1–4 mm long; median sepal projecting forward with margins deflexed; lateral sepals spreading widely. **Petals** narrowly lanceolate; projecting forwards. **Lip** forming a shallow hood, taller than deep, with weakly formed apical flap; spur saccate to clavate, curved, 1–3 mm long. **Flowering time** Sept.–Nov., after fire. Fynbos on acid peaty, moist soil; Eastern Fynbos-Renosterveld (Witelsbos and Kareedouw).

13b Sepals facing down from the lip entrance

bracteatum (L.f.) Thunb.

Plants terrestrial, slender to stout, 0.03–0.33 m high. **Leaves** 3–8, spreading, 9–63 mm long. **Inflorescence** dense, 4–15-flowered; bracts overtopping flowers, broadly ovate, conspicuous, maroon to plum-coloured. **Flowers** dull white or yellow with dark reddish brown markings along veins. **Sepals**: median sepal subtruncate, 4–6 mm long, fused to bases of lateral sepals and petals to form a thickened mentum; lateral sepals broadly elliptic falcate. **Petals** deltoid-falcate, 4–6 mm long. **Lip** hemispherical, 4–19 mm long, taller than deep; spur saccate, 1 mm long. **Flowering time** Sept.–Nov. In wet marshy sites; Drakensberg Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Mount Ayliff S, Maclear to Baziya, Katberg to Stutterheim, Tsitsikamma to Humansdorp).

10b Rostellum not with 2 spreading arms, lip flap distinct, reflexed
14a Bracts erect and only partly deflexed
15a Bracts erect, green; spurs 19–30 mm long

stenopetalum Lindl.

Plants terrestrial, slender, 0.15–0.56 m high. **Leaves** basal, suberect, stiff-textured, elliptic, 20–80 mm long. **Inflorescence** lax, 10–16-flowered; bracts erect, ciliolate.

Flowers white faintly tinged cream or pink. **Sepals** free almost to base, lanceolate, recurving, 5–13 mm long. **Petals** similar to sepals but more recurved. **Lip** with large 4 mm long apical flap, bent backwards; spur green to brown, 9–30 mm long. **Flowering time** Sept.–Nov., after fire. In open stony, marshy places in fynbos; Eastern Fynbos-Renosterveld (Storms River to Kareedouw and Humansdorp).

15b Bracts partly deflexed, white; spurs saccate, up to 5 mm long

trinerve Lindl.

Plants terrestrial, slender to fairly robust, 0.21–0.87 m high. **Leaves** 2–5, cauline, nearly erect, lanceolate, 60–250 mm long. **Inflorescence** dense, 15–60-flowered; bracts prominent, white with green spreading. **Flowers** white, median sepal and petals lemon-yellow. **Sepals**: median sepal narrowly ovate-falcate, up to 4 mm long; lateral sepals slightly longer. **Petals** fused to sepals in basal part, narrowly oblong to obovate. **Lip** galeate with wide entrance, taller than deep, apical flap prominent; spur saccate, 1.5–4.5 mm long, hairy in mouth. **Flowering time** Dec., Jan. On rich black, wet soils; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket (Engcobo to Port St Johns, East London District).

14b Bracts fully deflexed at anthesis
16a Flowers deep yellow or orange; leaves with red spots at base

coriifolium Sw.

Goue trewwa, *ouma trewwa* (A)

Plants terrestrial, fairly robust, stout, erect, 0.18–0.77 m high. **Leaves** 2–4, basal, erect to spreading, purple-spotted at base, coriaceous, elliptic to ovate, acute, 30–150 mm long. **Inflorescence** dense, 7–42-flowered; bracts deflexed. **Flowers** bright yellow to orange, lip red-tinged. **Sepals** 7–13 mm long, partly fused to petals and lip. **Petals** narrower. **Lip** nodding forward, as deep as tall, apical flap bent backwards, 2 mm long; spur slender, 9–12 mm long. **Flowering time** Aug.–Oct. Sandy, moist open flats; Eastern Fynbos-Renosterveld (Storms River to Port Elizabeth and Humansdorp).

16b Flowers pale yellow, pink or white; leaves without red spots
17a Perianth lobes with narrow apices which become dry after flower opens, lateral sepals and petals facing sideways

ligulatum Lindl.

Plants terrestrial, slender to stout, 0.09–0.55 m high. **Leaves** 1–4, clustered at base, spreading near soil surface, ovate, 30–140 mm long. **Inflorescence** slender, 10–85-flowered; bracts deflexed. **Flowers** yellowish green to dull creamy white, parts tinged light to dark purple, apex dry to brown at anthesis. **Sepals** 5–10 mm long; median sepal strongly recurved; lateral sepals erect for $^{2}/_{3}$ of their length, then twisted and reflexed. **Petals** similar to lateral sepals. **Lip** with apical flap 2–3 mm long; spur 5–10 mm long. **Flowering time** Sept.–Dec. Moist grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Lady Grey to Maclear S, Queenstown District to Ugie, Katberg to Stockenström, Tsitsikamma to Grahamstown and Humansdorp).

17b Flower not as above
18a Lateral sepals facing upwards, 3–5 mm long, spur < 4 mm long

rupestre Schltr. ex Bolus

Plants terrestrial, slender, 0.10–0.43 m high. **Leaves** 2–4, spreading near soil surface, ovate, acute, 40–150 mm long. **Inflorescence** dense, 6–45-flowered; bracts deflexed.

Flowers white with pale green tinges along midveins. **Sepals** fused in basal quarter with petals and lip, apices spread; median sepal reflexed 3–4 mm long, strongly recurved; lateral sepals slightly larger, falcate. **Petals** similar to lateral sepals. **Lip** with minute apical flap, bent back; spur slender, 2–4 mm long. **Flowering time** Nov., Dec. Shaded forest or damp, mossy, rock faces on mountains; Eastern Fynbos-Renosterveld (Willowmore and Steytlerville Districts, Storms River).

18b Lateral sepals facing downwards, spur > 4 mm long
19a Flowers white or cream-coloured, with red markings; sepals 13–18 mm long

sphaerocarpum Lindl.

Uklamkleshe (Z)

Plants terrestrial, robust, glabrous, 0.17–0.51 m high. **Leaves** 2, spreading near soil surface, oblong to ovate, 30–170 mm long. **Inflorescence** dense, 8–19-flowered; bracts partly to fully deflexed. **Flowers** white to cream-coloured, marked brownish red to red-purple. **Sepals** 13–18 mm long, fused to petals and lip. **Lip** taller than deep, apical flap 1 mm long, bent back; spur slender, 8–15 mm long. **Flowering time** Nov.–Mar. Sandy upland grasslands and coastal flats; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Ramatseliso's Gate to Kokstad, Ugie to Port St Johns, Toise River Station to Kentani, Willowvale to East London).

19b Flowers yellow, pink or white; sepals < 13 mm long
20a Lip long and slender, rostellum arms with minute teeth on both sides of the viscidia

macrophyllum Lindl.

Unoklamu (Z)

Plants terrestrial, robust, 0.25–1.06 m high. **Leaves** 2 or 3, basal, partly erect, ovate-obtuse to oblong-lanceolate, 50–300 mm long. **Inflorescence** dense, 31–64-flowered; bracts fully deflexed. **Flowers** white to deep pink tinged darker on sepals and petals. **Sepals** 7–14 mm long, fused to petals and lip. **Lip** deeper than tall, apical flap 0.5 mm long, bent back with minute ridge; spur slender, 13–26 mm long. **Flowering time** Feb., Mar. Moist grassy slopes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Clydesdale S, Mqanduli District to Coffee Bay, Willowvale to Kentani District).

20b Lip short and not slender, rostellum arms without teeth
21a Flowers yellow-green to pale cream-coloured, tinged with brown or purple
22a Stigma oblong, 4–5 mm long
23a Leaves clustered near base, undersides purple, not fleshy

lupulinum Lindl.

Plants terrestrial, slender, 0.14–0.50 m high. **Leaves** 1–3, basal, spreading near the ground, ovate, obtuse, 20–80 mm long, underside purple. **Inflorescence** dense, 12–20-flowered; bracts strongly deflexed, margins glabrous. **Flowers** dull yellowish green tinged dark purple. **Sepals** free almost to base, strongly recurving, 6–8 mm long. **Petals** basal parts from loose tube, distal part falcate, crenulate, obtuse. **Lip** taller than deep, apical flap 2 mm long, bent back; spur slender, 13–18 mm long. **Flowering time** Sept., Oct., after fire. Moist sandy flats or slopes; Eastern Fynbos-Renosterveld (Storms River and Port Elizabeth).

23b Leaves cauline, rather fleshy

odorum Sond.

Ruik trewwa, *soet trewwa* (A)

Plants terrestrial, robust and stout, 0.10–0.56 m high. **Leaves** 2–6, cauline, ovate, 40–240 mm long. **Inflorescence** dense, 7–23-flowered; bracts strongly deflexed. **Flowers** pale green and yellowish with tinges of dull purple-brown. **Sepals** deflexed; median sepals 3–7 mm long; lateral sepals slightly longer. **Petals** 2–4 mm long, less deflexed, basal parts from short tube. **Lip** deeper than tall, apical flap 2 mm long, bent back; spur slender, 13–18 mm long. **Flowering time** Aug.–Oct. Humus-rich soils under trees or bushes near boulders; Eastern Fynbos-Renosterveld (Storms River).

22b Stigma short and rounded, up to 2 mm long

outeniquense Schltr.

Plants terrestrial, slender, 0.10–0.28 m high. **Leaves** 2–4, lowest close to the ground, 10–40 mm long. **Inflorescence** lax, 6–15-flowered; bracts glabrous, deflexed. **Flowers** pale greenish yellow. **Sepals** 6–7 mm long, oblong, obtuse, free almost to base, forming loose tube with lip, deflexed; lateral sepals curving sideways. **Petals** similar, slightly smaller, margins crisped. **Lip** taller than deep, apical flap 2 mm long, bent back, margins undulate; spur slender, 12–16 mm long. **Flowering time** Oct., Nov. Sandy, stony soils in fynbos; Eastern Fynbos-Renosterveld (Storms River to Humansdorp).

21b Flowers pink or white
24a Leaves cauline; perianth lobes pink or white
25a Spur < 15 mm long

hallackii Bolus

Plants terrestrial, stout and fleshy, 0.19–0.62 m high. **Leaves** 4–6, cauline, partly erect, oblong to elliptic-oblong, acute, 70–200 mm long. **Inflorescence** dense, 20–50-flowered; bracts slightly deflexed, margins glabrous. **Flowers** pink. **Sepals** 6–10 mm long, partly fused to petals and lip forming loose tube with lip, deflexed. **Petals** similar. **Lip** taller than deep, apical flap 1 mm long, rounded, bent back; spur slender, 7–31 mm long. **Flowering time** Dec., Jan. Moist saline soils along the sea; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Katberg to Kentani District and Port Elizabeth).

25b Spur > 15 mm long

ocellatum Bolus

[= *S. hallackii* Bolus subsp. *ocellatum* (Bolus) A.V.Hall]

Moederkappie (A)

Plants terrestrial, stout and fleshy, 0.19–0.62 m high. **Leaves** 4–6, cauline, partly erect, oblong to elliptic-oblong, acute, 70–200 mm long. **Inflorescence** dense, 20–50-flowered; bracts slightly deflexed, margins glabrous. **Flowers** pink. **Sepals** 6–10 mm long, partly fused to petals and lip, oblong, obtuse, forming loose tube with lip, deflexed. **Petals** similar. **Lip** taller than deep, apical flap 1 mm long, rounded, bent back; spur slender, 7–31 mm long. **Flowering time** Dec.–Feb. Tall grassy vegetation in marshes at high altitudes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland (Kokstad S to Lusikisiki, from King William's Town to Komga).

24b Leaves basal; perianth lobes white with red markings

cristatum Sond.

Plants terrestrial, slender, glabrous, 0.14–0.55 m high. **Leaves** 2, spreading near the ground, ovate to elliptic, 20–160 mm long. **Inflorescence** dense and slender, 15–40-flowered; bracts fully deflexed. **Flowers** white with bright purple-red to brownish red blotches and lines. **Sepals** 6–10 mm long, partly fused to petals and lip. **Petals** similar. **Lip** uppermost, with crest, apical flap 0.7 mm long, bent back; spur slender, 3–12 mm long. **Flowering time** Jan.–Mar. Grassland on moist grassy or marshy flats; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna (Ramatseliso's Gate to uMzimkhulu S, Queenstown to Baziya, Somerset East to Idutywa District).

SCHIZOCHILUS Sond.

(Orchidoideae—Orchideae)

Species 11, eastern and sthn Afr.; 8 in sthn Afr., LIM, G, M, S, FS, KZN, L, EC.

bulbinella (Rchb.f.) Bolus

Terrestrial herb, slender, geophyte, with root tubers, 0.08–0.25 m high. **Leaves** linear, grass-like, 10–30, the lower 4–20 radical, 30–100 × 2–9 mm, narrowly oblanceolate; upper leaves smaller grading into floral bracts. **Inflorescence** dense, nodding, 20–40 mm long; flowers many, 3 mm in diam., not resupinate, yellow. **Sepals** subequal, 2.5–3.5 mm long. **Petals** 1.5–2.0 mm long. **Lip** with central lobe, 1 mm long, lateral lobes 0.3 mm long, spur cylindrical, 0.3 mm long, calli absent. **Flowering time** Jan., Feb. Shallow rocky soils in montane grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Qacha's Neck E to Matatiele, Kokstad and Insizwa).

flexuosus Harv. ex Rolfe

Terrestrial herb, slender, geophyte, with root tubers, 0.05–0.25 m high. **Leaves** linear, grass-like, 6–11 radical, 4–6 cauline; basal leaves broadest, 28–50 × 2–3 mm, glabrous, channelled, apex rounded. **Inflorescence** dense, subcapitate, nodding, secund, 20–40 mm long; flowers 5–20, 5 mm in diam., not resupinate, sepals and petals white, lip yellow and white. **Sepals** subequal, porrect, 5–9 mm long; dorsal sepal galeate. **Petals** 2.5–4.5 mm long. **Lip** with central lobe, 2 mm long, lateral lobes 1 mm long, spur translucent, cylindrical, 0.3–3.5 mm long, calli rudimentary. **Flowering time** Dec.–Feb. Moist montane grassland on sandstone outcrops, S-facing slopes, exposed ledges, in rock cracks; Drakensberg Grassland, Sub-Escarpment Grassland (Maclear E to Kokstad).

zeyheri Sond.

Terrestrial herb, slender, geophyte, with root tubers, 0.15–0.60 m high. **Leaves** linear, grass-like, 5–7 radical, 3–7 cauline; basal leaves broadest, 40–140 mm long; upper leaves smaller, grading into floral bracts, glabrous. **Inflorescence** lax, nodding, secund, 100 mm long; flowers 10–30, 4–6 mm in diam., not resupinate, bright yellow. **Sepals** subequal; dorsal sepal 4–11 mm long. **Petals** 2.5–6.0 mm long. **Lip** deeply 3-lobed, 6–12 mm long, spur cylindrical, 2–6 mm long, calli 3, fleshy. **Flowering time** Dec.–Feb. Moist montane grassland in seepages or vleis or wet rock ledges; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Klein Pot River to Kokstad S, from Maclear to Port St Johns, and Stockenström to Stutterheim and King William's Town).

SCHIZODIUM Lindl.

(Orchidoideae—Diseae)

Species 6, sthn Afr., NC, WC, EC.

Median sepal 3–6 mm wide, spur slender and curved upwards

bifidum (Thunb.) Rchb.f.

Kapotjie (A)

Plants terrestrial, straight or subflexuose, up to 0.6 m high. **Leaves**: basal leaves spreading, narrowly obovate, apiculate 10–20 × 5–10 mm; cauline leaves lanceolate. **Inflorescence** lax and slender, 1–7-flowered. **Flowers** pink, lip tooth greenish to purple, mesochile with purple spots, apex of petals darker. **Sepals**: median sepals shallowly galeate, narrowly obovate to oblong, acute, 10–15 × 3–6 mm; spur upcurved 10–13 mm long; lateral sepals narrowly oblong, acute, 10–14 × 2.5–5.0 mm. **Petals** lorate, 7–8 mm long; basal anticous lobe reduced, apex unequally bifid. **Lip** 10–17 mm long, apical tooth pendent, mesochile 3–4 mm wide. **Flowering time** Sept., Oct. Deep sandy flats in fynbos; Eastern Fynbos-Renosterveld (Humansdorp to Port Elizabeth).

Median sepal 2–3 mm wide, spur thick and curved downwards or straight

inflexum Lindl.

Kapotjie (A)

Plants terrestrial, straight or subflexuose, 0.08–0.35 m high. **Leaves**: basal leaves spreading, oblanceolate, apiculate 10–20 × 5–9 mm; cauline leaves closely sheathing stem, distant. **Inflorescence** lax and slender, 1–7-flowered. **Flowers** pink, lip tooth purple, mesochile with darker purple spots along margins, apex of petals darker. **Sepals**: median sepals galeate, narrowly oblong, acute, 6–8 × 2–4 mm; spur straight or decurved 5–8 mm long; lateral sepals narrowly oblong, 7–10 × 2–3 mm. **Petals** lorate, 5–7 mm long; basal anticous lobe reduced. **Lip** 9–13 mm long, apical tooth pendent, mesochile 3–5 mm wide, margins flat to undulating. **Flowering time** Oct., Nov. Mountain slopes in fynbos; Eastern Fynbos-Renosterveld (Storms River to Humansdorp and Grahamstown).

STENOGLOTTIS Lindl.

(Orchidoideae—Orchideae)

Species 4, 1 extending northwards as far as Tanzania; 4 in sthn Afr., LIM, M, S, KZN, EC.

fimbriata Lindl.

Terrestrial, lithophytic or epiphytic herb, 0.10–0.35 m high; many tuberous roots. **Leaves** 5–20, radical, in rosette at base of stem, oblong or narrowly lanceolate, 25–190 × 5–16 mm, dark purple-spotted, glabrous, margins undulate. **Inflorescence** slender, erect, lax, many-flowered raceme, subsecund, up to 300 mm long, often shorter; peduncle spotted; flowers whitish pink or lilac with purple markings; bracts small, spotted purple. **Sepals** ovate, subequal, spreading, unlobed, longer than petals; dorsal sepal 3–8 mm long. **Petals** slightly narrower than sepals, unlobed, porrect, enclosing column. **Lip** 6–15 mm long, obovate oblong, unequally 3-lobed, sometimes with additional teeth, spur absent. **Flowering time** Jan.–Mar. On trees or rocks in forests; Indigenous Forests (Ramatseliso's Gate to Kokstad and Insizwa S, from Stockenström to Port St Johns, Fort Beaufort to Kentani and Grahamstown to East London).

longifolia Hook.f.

Terrestrial or lithophytic herb, 0.3–0.6 m high; many tuberous roots. **Leaves** ± 10, radical, in rosette at base of stem, lorate to narrowly elliptic, up to 60 × 150 mm, light green, glabrous, margins undulate, acute, apices recurved; cauline leaves distant, narrowly lanceolate, acute, up to 15 mm long. **Inflorescence** a slender, erect, lax, 50–80-flowered raceme, up to 600 mm long; flowers subsecund, lilac with darker spots. **Sepals** subequal, narrowly ovate, spreading, unlobed, longer than petals; dorsal sepal up to 6 mm long; median sepal concave; lateral sepals oblique. **Petals** unlobed, porrect, enclosing column. **Lip** patent, narrowly obtriangular 8–12 × 5 mm long, linear-oblong, unequally 5-lobed, spur absent. **Flowering time** Mar.–May. Rocks in forests; Indigenous Forests (Ramatseliso's Gate E to Kokstad, S to Port St Johns).

woodii Schltr.

Terrestrial, lithophytic herb, 0.09–0.20 m high; many tuberous roots. **Leaves** 5–20, radical, in rosette at base of stem, elliptic, up to 150 × 30 mm, dull green, glabrous, margins undulate, acute, recurved apices. **Inflorescence** slender, erect, lax, many-flowered raceme, subsecund; up to 180 mm long, 5–40 flowers, white or pinkish mauve with few darker spots on lip. **Sepals** ovate, subequal, spreading, unlobed, rounded, longer than petals; dorsal sepal up to 6 mm long. **Petals** unlobed, porrect, enclosing column. **Lip** unequally 3-lobed; spur minute. **Flowering time** Jan.–Apr. On rocks in forests; Indigenous Forests (Kokstad S to Port St Johns).

TRIDACTYLE Schltr.

(Epidendroideae—Vandeae)

Species ± 42, sub-Saharan Africa; 4 in sthn Afr., LIM, S, KZN, WC, EC.

1a Leaves terete; inflorescence with 2–5 flowers

tridentata (Harv.) Schltr.

iPhamba (Z)

Plants epiphyte, up to 0.18 m high. **Roots** restricted to base. **Stems** up to 300 mm long, branching, tangled. **Leaves** terete, sulcate, stiff, fleshy, 60–100 × 2–4 mm. **Inflorescence** borne below leaves, < 5 mm long, 2–5-flowered. **Flowers** cream-coloured, star-like, 3 mm in diam. **Sepals** triangular, spreading, acute, 3 × 2 mm. **Petals** lorate, 2.5 × 1 mm. **Lip** narrowly oblong, 2–3 mm long, tridentate, teeth acute, lateral teeth shorter than median; spur cylindrical 7–8 mm long. **Flowering time** Nov., Dec. Forests near coast; Indigenous Forests (Port Edward to Mkambati Nature Reserve).

1b Leaves flat; inflorescence with 6–30 flowers
2a Lip side lobes acute, entire; roots produced at base of leaves

tricuspis (Bolus) Schltr.

Plants epiphyte, up to 0.25 m high. **Roots** restricted to base. **Stems** erect, up to 200 mm long. **Leaves** imbricate, ensiform, linear-lorate, unequally bilobed, rounded, 50–60 × 5–12 mm. **Inflorescence** borne in axils of dehisced leaves, racemose, arcuate, 40–120 mm long, 10–25-flowered. **Flowers** cream-coloured, star-like, 10–15 mm in diam. **Sepals** lorate, acute, reflexed, 6–9 × 2 mm. **Petals** lorate, acute, reflexed 5–6 × 1.5 mm. **Lip** pendent, lorate, ecallose, 7–9 × 2.5 mm long, trilobed side lobes diverging; spur 12–14 mm long. **Flowering time** Mar.–May. Inland forests; Indigenous Forests (Clydesdale S, Kokstad and Cala).

2b Lip side lobes fringed; upper roots and lower leaves separated by a length of stem

bicaudata (Lindl.) Schltr.

Tree orchid, Steltzen orchid; *iPhamba* (Z)

Plants epiphyte or lithophyte, up to 0.5 m high. **Stems** erect, up to 350 mm long. **Leaves** not imbricate, leathery, somewhat succulent, linear-lorate, unequally bilobed, rounded, 30–120 × 7–12 mm. **Inflorescence** borne in axils of leaves, as well as dehisced leaves, racemose arcuate, 30–80 mm long, 6–20-flowered. **Flowers** pale yellowish brown, star-like, 10 mm in diam. **Sepals** spreading, twisting; median sepal narrowly oblong, 3.5–6.0 × 2 mm; lateral sepals ovate 4–6 × 3 mm. **Petals** lorate, acute, 3–5 × 1.5 mm, margins uneven. **Lip** obtriangulate, 5 mm long, 5–6 mm wide at apex, basal calli prominent, tridentate, teeth 1–2 mm long; spur 9–13 mm long. **Flowering time** Oct.–Feb. Inland and coastal forests; Indigenous Forests (Umtamvuna River to Port St Johns, King William's Town to Kentani, Tsitsikamma to Groendal Wilderness, Coega and Port Alfred).

YPSILOPUS Summerh.

(Epidendroideae—Vandeae)

Species 4, from East Africa to sthn Afr.; 1 in sthn Afr., subtropical parts of KZN and EC.

erectus (P.J.Cribb) P.J.Cribb & J.L.Stewart

Plants epiphytic, up to 0.15 m high. **Stems** erect or pendent, woody, 20–30 mm long, old stems covered with grey leaf sheaths. **Leaves** linear-lorate, flat or conduplicate, 150 × 6.5 mm; borne in a fan. **Inflorescence** several, from below leaves, arching or pendent, up to 120 mm long, 2–12-flowered, in 2 ranks. **Flowers** white, star-like, 10 mm in diam. **Sepals** equal, reflexed, narrowly oblong, subacute, apiculate, 4.5 × 2 mm. **Petals** similar but smaller. **Lip** patent, flat, ecallose, shallowly trilobed, acute, 4.5 × 3 mm; spur slender, cylindrical, curved, 45 × 1 mm. **Flowering time** Apr., May. Coastal forests; Indigenous Forests (Transkei Coast: Port Edward to Mkambati Nature Reserve).

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POACEAE

(Order Poales)

Compiled by L. Fish, C.L. Bredenkamp & Z.L. Magwaza

1a Rhizomatous, lawn-forming, herbaceous perennial; inflorescence inconspicuous as enclosed in upper leaf sheath, only anthers and stigmas long-exserted; spikelets 2–4 per inflorescence .... ***Pennisetum clandestinum**

1b Characters not in above combination:

2a Bamboos; culms woody:

3a Leaf blade strongly cross-veined, forming a tessellate pattern; spikelets not in globose clusters; stamens 3 ..... **Thamnocalamus**

3b Leaf blade not strongly cross-veined; spikelets in globose clusters; stamens 6 ..... ***Bambusa**

2b Herbs (usually), reed-like to woody in some species:

4a Inflorescence digitate to subdigitate with 2–many racemes, sometimes these in a leafy, complex, false panicle:

5a Spikelets awned (glumes and/or lemmas):

6a Spikelets all ± similar, even if in sessile-pedicelled pairs:

7a Spikelet pairs in sessile-pedicelled combination; raceme divided into internodes and pedicels:

8a Spikelets 5–7 mm long; lemma awn robust; tufted perennial ..... **Eulalia**

8b Spikelets 3.5–4.5 mm long; lemma awn hair-like; annual, spreading, rooting at nodes ..... **Microstegium**

7b Spikelets all sessile, subsessile or on unequal pedicels (may be paired); raceme continuous, undivided:

9a Spikelets dorsiventrally compressed; lower glume 3–5-nerved; lowest floret male or sterile... **Alloteropsis**

9b Spikelets laterally compressed; lower glume 1-nerved; lowest floret bisexual or floret 1:
10a Spikelets 12–15 mm long; floret 1 ..... **Spartina**
10b Spikelets 2.0–6.5 mm long; florets 2 or more:
11a Racemes ending in a naked point; glumes ± equal ..... **Dactyloctenium**
11b Racemes ending with spikelets; glumes unequal:
12a Lowest lemma awnless, or awn 0.8 mm long or mucronate ..... **Eustachys**
12b Lowest lemma awn 3–27 mm long ..... **Chloris**
6b Spikelets dissimilar, if paired in sessile-pedicelled combination, pedicelled spikelet may be absent, but pedicel is present:
13a Inflorescence conspicuously leafy with spathes and spatheoles clearly subtending raceme pairs:
14a Sessile spikelet lemma awn hairy; callus tip of sessile spikelet visible on apex of internode; fresh shoots not aromatic ..... **Hyparrhenia**
14b Sessile spikelet lemma awn glabrous, scabrid or smooth; callus tip of sessile spikelet inserted into apex of internode and not visible; fresh shoots aromatic ..... **Cymbopogon**
13b Inflorescence not leafy, without spathes and spatheoles, or if these present, not conspicuous:
15a Pedicelled spikelet lower glume awn long and robust; sessile spikelet awnless ..... **Urelytrum**
15b Pedicelled spikelet lower glume awnless or awn slender or spikelet absent; sessile spikelet lemma with a long robust awn:
16a Sessile spikelets dorsally compressed, pedicelled spikelets laterally compressed; both sessile and pedicelled spikelets upper lemmas with robust awns; sessile spikelet lower floret male ..... **Ischaemum**
16b Sessile and pedicelled spikelets both either laterally or dorsiventrally compressed; pedicelled spikelet upper lemma awnless or awn slender; sessile spikelet lower floret barren:
17a Sessile spikelet upper lemma entire, gradually passing into an awn ..... **Bothriochloa**
17b Sessile spikelet upper lemma lobed, awned from between lobes or low down on back:
18a Callus long, acute to pungent ..... **Diheteropogon**
18b Callus usually short, obtuse to truncate ..... **Andropogon**
5b Spikelets awnless or mucronate (glumes and/or lemma apices may be acuminate and appear awn-like):
19a Raceme rhachis divided; spikelets in sessile-pedicelled pairs ..... **Andropogon**
19b Raceme rhachis undivided; spikelets if paired, not in sessile-pedicelled pairs:
20a Florets many ..... **Eleusine**
20b Florets 1 or 2:
21a Spikelets 12–15 mm long ..... **Spartina**
21b Spikelets 2–8 mm long:
22a Florets 1 ..... **Cynodon**
22b Florets 2:
23a Spikelets 2–many at point of attachment on rhachis; upper lemma margins flat and covering most of the palea ..... **Digitaria**
23b Spikelet solitary at point of attachment on rhachis; upper lemma margins inrolled and clasping only the edge of the palea:
24a Lower glume (absent or scale-like) turned away from rachis, upper glume and lower lemma facing rhachis; lower lemma with a median nerve ..... **Paspalum**
24b Upper glume and lower lemma turned away from rhachis; lower lemma without median nerve ..... ***Axonopus**
4b Inflorescence an open to contracted panicle, a number of racemes scattered up along the central axis, a true spike or spike-like, 1–4 spikelets clustered at the apex or a complex, leafy, false panicle:
25a Inflorescence solitary, secund (spikelets on one side of axis) (25b on p. 1960):
26a Spikelets of 2 kinds in inflorescence; sterile spikelets consisting of glumes and lemmas produced as long pale awns; fertile spikelets 2–5 florets, lemmas awned; small annuals ..... ***Cynosurus**
26b Not as above; annuals or perennials:
27a Spikelets long awned; lemma awn 4.5–5.5 mm long; upper glume awned from $^1/_2$ way up central nerve ..... **Ctenium**
27b Spikelets awnless, minutely awned or mucronate:
28a Spikelets 12–15 mm long ..... **Spartina**
28b Spikelets up to 10 mm long:
29a Floret 1:
30a Spikelet dorsiventrally compressed; glumes ± equal; spikelets not sunk in rhachis ..... **Microchloa**

30b Spikelet laterally compressed; lateral spikelets glumes unequal (terminal spikelet glumes ± equal); spikelet sunk in rhachis ..... **Oropetium**
29b Florets 2–many:
31a Florets 3–many:
32a Upper glume as long as spikelet..... **Harpochloa**
32b Upper glume shorter than spikelet..... **Tribolium**
31b Florets 2:
33a Inflorescence with short racemes of 1–7 spikelets borne one side of central axis:
34a Inflorescence of short racemes, borne in cavities on central axis..... **Stenotaphrum**
34b Inflorescence of short racemes, these not borne in cavities on central axis..... **Paspalidium**
33b Inflorescence a single raceme:
35a Glumes ± equal, as long as to longer than spikelet..... **Rendlia**
35b Glumes unequal (disregard terminal spikelets), lower reduced to small scale or absent, upper up to as long as spikelet:
36a Spikelet sunk in rhachis..... **Oropetium**
36b Spikelets not sunk in rhachis..... **Digitaria**
25b Inflorescence variable, but never distinctly secund:
37a Inflorescence a true spike or spike-like panicle, a raceme or of 1–6 spikelets clustered at apex of central axis (37b on p. 1963):
38a Inflorescence with long soft white or yellow silky hairs, spikelets not visible:
39a Annual; spikelets 7–10 mm long, awned; ligule an unfringed membrane ..... ***Lagurus**
39b Perennial; spikelets 3–6 mm long, awnless; ligule a fringed membrane..... **Imperata**
38b Inflorescence, if hairy, spikelets visible:
40a Spikelets burr-like due to spines:
41a Spikelets enclosed in 8–40 spines, thin ones and broad ones, outer spines connate and spreading, inner plumose ..... **Cenchrus**
41b Spikelet covered with a number of rows of straight or hooked spines..... **Tragus**
40b Spikelets not burr-like, maybe bristly or subtended by bristles:
42a Spikelet(s) subtended by long robust bristles:
43a Bristles remaining on inflorescence after spikelets have fallen ..... **Setaria**
43b Bristles falling with spikelets:
44a Bristles free throughout ..... **Pennisetum**
44b Bristles connate and flattened below, forming a disc ..... **Cenchrus**
42b Spikelets not subtended by robust bristles:
45a Inflorescence with spikelets or spikelet pairs appearing to be directly attached on central axis (pedicels may be present, branching unclear) (45b on p. 1961):
46a Spikelets awned or mucronate (maybe minutely so):
47a Ligule a fringe of hairs or a fringed membrane:
48a Awn or mucro short and not obvious:
49a Small perennials, up to 100 mm high; spikelets 2.5–4.0 mm long, all similar; inflorescences glabrous ..... **Oropetium**
49b Perennials, 200–1 200 mm high; spikelets 6–14 mm long, in dissimilar pairs: one sessile, one pedicelled; inflorescences hairy ..... **Elionurus**
48b Awn long and obvious (if lower glume 2-toothed and spikelet hairy, see *Elionurus*):
50a Spikelets all similar:
51a Florets 2–5; lemmas lobed, hairs present in tufts ..... **Tenaxia disticha** (= *Merxmuellera disticha*)
51b Florets 1; lemma not lobed, scabrid or smooth, rarely hairy or hairless..... **Aristida**
50b Spikelets dissimilar; in pairs: one sessile, one pedicelled:
52a Spikelets of lower part of inflorescence awnless; upper part with sessile spikelets long awned; awns hairy ..... **Heteropogon**
52b Spikelets awned along entire inflorescence; awns glabrous ..... **Schizachyrium**
47b Ligule an unfringed membrane:
53a Spikelets all similar:
54a Lower glume absent or very reduced except in terminal spikelets; spikelets lying edgeways on rachis. ..... ***Lolium**

54b Lower glume present; spikelets not lying edgeways:
55a Floret 1 ..... ***Ammophila**
55b Florets 3–12:
56a Lower lemma awn straight, second lemma awn geniculate, third lemma awnless ..... **Anthoxanthum**
56b All lemmas with straight awns:
57a Spikelets (15)28–40 mm long; plant of coastal sand dunes, exposed to wind and sea..... **Thinopyrum**
57b Spikelets 10–20 mm long; plant of disturbed areas; gardens and cultivated lands ..... ***Elytrigia**
53b Spikelets dissimilar:
58a Spikelets in triads or sterile spikelets surrounding and concealing fertile spikelets:
59a Inflorescence with fertile spikelets surrounded and concealed by sterile spikelets; spikelets disarticulating above glumes; glumes acuminate not awned ..... ***Cynosurus**
59b Spikelets in triads, falling as a unit; central spikelet bisexual, 2 laterals male or sterile; rachis fragile; all glumes bristle-like and usually awned..... **Hordeum**
58b Spikelets not in triads, but in pairs of one sessile and one pedicelled spikelet:
60a Longest awn 5 mm long..... **Rhytachne**
60b Longest awn 8–120 mm long:
61a Pedicelled spikelet lower glume awn 30–120 mm long; awn flattened, short-hairy; internodes clavate, stout; culm nodes glabrous..... **Urelytrum**
61b Long-pedicelled spikelet glumes awnless; upper lemma awn 40–100 mm long; awn terete, long-hairy; internodes linear, slender; culm nodes hairy..... **Trachypogon**
46b Spikelets awnless:
62a Spikelets laterally compressed:
63a Spikelets pedicelled, not sunk into central axis:
64a Spikelets 1.3–3.2 mm long; florets 2..... **Sacciolepis**
64b Spikelets 5–15 mm long; florets 3–6..... **Melica**
63b Spikelets sessile, ± sunk into cavities in central axis:
65a Floret 1 ..... ***Parapholis**
65b Florets 2–many..... ***Lolium**
62b Spikelets dorsiventrally compressed:
66a Ligule an unfringed membrane:
67a Annual; spikelets similar..... ***Hainardia**
67b Perennial; spikelets in dissimilar pairs: one sessile, one pedicelled ..... **Rhytachne**
66b Ligule a fringe of hairs or fringed membrane:
68a Inflorescence of short racemes sunk in cavities on central axis..... **Stenotaphrum**
68b Inflorescence not of racemes with a number of spikelets:
69a Pedicels of spikelet pairs distinct:
70a Inflorescence joints oblique; inflorescences conspicuously hairy ..... **Elionurus**
70b Inflorescence joints transverse; inflorescence glabrous or hairy, but not conspicuously so ... **Coelorachis**
69b Pedicels fused to internode:
71a Inflorescences dorsally compressed, not breaking up ..... **Hemarthria**
71b Inflorescences cylindrical, breaking up at maturity:
72a Annuals; both sessile and pedicelled spikelets present although internodes and pedicels fused ..... **Rottboellia**
72b Perennials; apparently only sessile spikelets present as pedicels fused to rhachis..... **Oxyrhachis**
45b Inflorescence condensed, spike-like but branching obvious, or of 1–6 spikelets clustered at apex:
73a 1–6 spikelets clustered at apex:
74a Florets 5–many, all similar except upper maybe reduced and sterile ..... **Brachypodium**
74b Florets 3, lower 2 sterile, usually different to fertile upper floret ..... **Ehrharta**
73b Inflorescence condensed, spike-like:
75a Spikelets dissimilar, usually sterile and bisexual on same inflorescence:
76a Spikelets in triads, falling as a unit; central spikelet bisexual, 2 laterals male or sterile; rachis fragile; all glumes bristle-like and usually awned..... **Hordeum**
76b Spikelets paired; rest not as above:
77a Spikelet laterally compressed ..... ***Cynosurus**
77b Spikelets dorsiventrally compressed or squeezed between internode and pedicel..... **Schizachyrium**

75b Spikelets all similar (may differ in size):
78a Spikelets similar, but in sessile-pedicelled pairs; inflorescence golden-hairy due to long callus hairs of sessile spikelet ..... **Eriochrysis**
78b Spikelets similar, if paired, then not in sessile-pedicelled pairs; if inflorescence golden, then not due to callus hairs:
79a Spikelets awnless, minutely awned or mucronate:
80a Florets 1:
81a Ligule an unfringed membrane ..... **Agrostis**
81b Ligule a fringed membrane or a fringe of hairs:
82a Spikelets up to 2.5 mm long ..... **Sporobolus**
82b Spikelets 3.5–5.0 mm long:
83a Spikelets dorsiventrally compressed, pedicelled; lower glume shorter than upper, but not reduced to a scale ..... **Polevansia**
83b Spikelets laterally compressed, sessile to subsessile; lower glume reduced to a scale or very small ..... **Catalepis**
80b Florets 2–many:
84a Lower 1 or 2 florets sterile, differing from rest, sometimes reduced and very small:
85a Glumes 5-nerved ..... **Ehrharta**
85b Glumes 3-nerved ..... ***Phalaris**
84b Lower florets fertile:
86a Lemmas lobed:
87a Florets 4–10 ..... **Schismus**
87b Florets 2 ..... **Pentameris** section **Pentaschistis** (= *Pentaschistis*)
86b Lemmas entire:
88a Ligule an unfringed membrane:
89a Glumes shorter than spikelets ..... **Festuca**
89b Glumes, at least upper, as long as to longer than spikelets:
90a Spikelets 3–4 mm long ..... **Koeleria**
90b Spikelets 5–15 mm long ..... **Melica**
88b Ligule a fringed membrane or fringe of hairs:
91a Spikelets glabrous, maybe scaberulous, but never hairy ..... **Eragrostis**
91b Spikelets hairy:
92a Glumes 1-nerved; lemmas 3-nerved; lemmas densely hairy all over ..... **Stiburus**
92b Glumes 3–7-nerved; lemmas 5–9-nerved; lemmas glabrous, sparsely hairy, or if densely hairy, then not hairy all over ..... **Tribolium**
79b Spikelet awned, at least one awn longer than 1.1 mm long:
93a Lemma 9-awned; central awn absent ..... **Enneapogon**
93b Lemmas, at least one, 1–3-awned, if awnless, then glume awned:
94a Floret 1:
95a Ligule a fringed membrane or a fringe of hairs:
96a Lemma mucronate or minutely awned, glumes awned ..... **Dinebra**
96b Lemma awns long and obvious:
97a Awns glabrous or scabrid ..... **Aristida**
97b Awns, at least 1, plumose ..... **Stipagrostis**
95b Ligule an unfringed membrane:
98a Glume awn 4–15 mm long; spikelets disarticulating with glumes and part of pedicels ..... **Polypogon**
98b Glumes awnless or mucronate; spikelets disarticulating above glumes:
99a Spikelet up to 5 mm long; callus glabrous or with hairs up to $^1/_2$ as long as lemma ..... **Agrostis**
99b Spikelet 5.5–8.0 mm long; callus hairs as long as to longer than lemma ..... **Calamagrostis**
94b Florets 2–many:
100a Florets 3; lower 2 sterile or male, awned or awnless, uppermost bisexual, awnless:
101a Lowest lemma awned from middle of back, awn straight; second lemma awned from base, awn geniculated ..... **Anthoxanthum**
101b Lower 2 lemmas similar, apex awned ..... **Ehrharta**

100b Florets 2–many, if 3, all (except sometimes uppermost) usually bisexual and awned:
102a Lemmas entire:
103a Ligule an unfringed membrane:
104a Ovary with conspicuous hairy apical appendage; lemmas 6–25 mm long ..... **Bromus**
104b Ovary without conspicuous hairy apical appendage; lemmas 4.0–7.5 mm long..... ***Vulpia**
103b Ligule a fringed membrane or fringe of hairs:
105a Glumes 3–7-nerved ..... **Tribolium**
105b Glumes 1-nerved:
106a Spikelets disarticulating with glumes; inflorescence dense, branching and central axis not visible ... .**Fingerhuthia**
106b Spikelets disarticulating above glumes; inflorescence central axis visible between closely scattered racemes..... **Dinebra**
102b Lemmas emarginate to lobed:
107a Ligule an unfringed membrane; annual .....***Lophochloa**
107b Ligule a fringed membrane or fringe of hairs; annual or perennial:
108a Glumes unequal; lemma central awn straight .....**Styppeiochloa**
108b Glumes ± equal; lemma mucronate, awn minute or central awn twisted:
109a Lemma 3-nerved, emarginate..... **Dinebra**
109b Lemma 5-nerved, distinctly lobed:
110a Lemma hairs in tufts or rows .....**Merxmuellera**
110b Lemma glabrous or hairy all over .....**Pentameris** section **Pentaschistis** (= *Pentaschistis*)
37b Inflorescence an open or condensed panicle (branching obvious), a number of racemes scattered up along central axis or a leafy false panicle:
111a Inflorescence an open to condensed panicle or a number of racemes scattered up central axis (111b on p. 1967):
112a Inflorescence with male spikelets below and female spikelets above; female spikelets on clavate pedicels and lower glume long awned; leaf pseudopetiolate, cross-venation present.....**Olyra**
112b Not in above combination:
113a Spikelets in triads resembling a single large spikelet.....**Tristachya**
113b Spikelets never in triads resembling a single spikelet:
114a Lemmas 9-awned ..... **Enneapogon**
114b Lemmas, at least one, 1–3-awned, mucronate, or awnless or glume awned:
115a Floret 1:
116a Ligule an unfringed membrane:
117a Glumes both very reduced or missing; spikelet usually hard to interpret; strongly laterally compressed, keeled; keel and margins with stiff hairs; plants of moist places .....**Leersia**
117b Characters not in above combination:
118a Spikelets falling with glumes and part of pedicels .....**Polypogon**
118b Spikelets disarticulating above glumes:
119a Lemma firmer than glumes in texture and becoming indurated/hard:
120a Lemma rough; plants of disturbed places and open grassland .....***Nassella**
120b Lemma smooth; plants of moist forest.....**Stipa** (also see **Amelichloa*)
119b Lemma as firm as or less firm than glumes, never indurated/hard:
121a Lemma awn long, 10–20 mm long..... **Festuca**
121b Lemma awn short, up to 8 mm long:
122a Callus with hairs as long as to longer than lemma; spikelets 5.5–13.0 mm long.....**Calamagrostis**
122b Callus glabrous or hairs up to half as long as lemma; spikelets 1.5–5.5 mm long ..... **Agrostis**
116b Ligule a fringed membrane or fringe of hairs:
123a Lemma 3-awned, awns fused to appear as one with 3 branches:
124a Awns, one or all three long-hairy (plumose) ..... **Stipagrostis**
124b Awns all glabrous, maybe scabrid, but never hairy.....**Aristida**
123b Lemma (at least one) awnless, 1-awned or mucronate, or only glumes awned:
125a Spikelets 10–20 mm long; inflorescences large and plumose ..... ***Cortaderia**
125b Spikelets 0.8–9.0 mm long; if inflorescences large, then not plumose:
126a Lemma awn 11–20 mm long.....***Amelichloa**

126b Lemma awnless, or awn up to 5 mm long or mucronate:
127a Spikelets dorsiventrally compressed..... **Polevansia**
127b Spikelets laterally compressed to not noticeably compressed:
128a Spikelets awned ..... **Dinebra**
128b Spikelets awnless:
129a Lemma glabrous..... **Sporobolus**
129b Lemma hairy ..... **Catalepis**
115b Florets 2–many:
130a Spikelets of 2 kinds in inflorescence; sterile spikelets consisting of glumes and lemmas produced as long pale awns; fertile spikelets 2–5 florets, lemmas awned; small annual; inflorescence bristly..... ..... ***Cynosurus**
130b Not as above; annuals or perennials; inflorescence bristly or not:
131a Florets 2, dissimilar (131b on p. 1965):
132a Spikelets in sessile-pedicelled dissimilar pairs; sessile spikelets dorsiventrally compressed:
133a Rachis internodes and pedicels with a translucent longitudinal groove; spikelets 3–4 mm long; sessile spikelets lower glume keels not winged ..... **Bothriochloa**
133b Rachis internodes and pedicels without a translucent longitudinal groove; spikelets 4–7 mm long; sessile spikelets lower glume keels winged ..... **Sorghum**
132b Spikelets, if in sessile-pedicelled pairs, then spikelets similar (may differ in size); spikelets laterally, dorsiventrally to not noticeable compressed:
134a Inflorescences tawny hairy ..... **Eriochrysis**
134b Inflorescences glabrous, if hairy, hairs not tawny:
135a Glumes equal:
136a Spikelets 10–18 mm long; lemmas awned ..... **Chaetobromus**
136b Spikelets up to 8 mm long; lemmas (at least one) awned, mucronate or awnless:
137a Lower glume awn 3–14 mm long; glumes shorter than spikelet ..... **Oplismenus**
137b Lower glume awn up to 1 mm long, or awnless; glumes as long as to longer than spikelet:
138a Upper lemma awned:
139a Spikelets laterally compressed; lower lemma firmer than glumes, shiny ..... **Holcus**
139b Spikelets dorsiventrally compressed; lower lemma hyaline, less firm than glumes..... **Miscanthus**
138b Upper lemma awnless:
140a Lemmas hairy ..... ***Phalaris**
140b Lemmas glabrous:
141a Inflorescence a panicle ..... **Panicum**
141b Inflorescence of slender racemes scattered along central axis..... **Pseudechinolaena**
135b Glumes unequal:
142a Upper lemma lobed or emarginate:
143a Upper lemma hairs in tufts..... **Trichopteryx**
143b Upper lemma glabrous, or if hairy, hairs not in tufts:
144a Upper lemma awn 3–6 mm long; callus short..... **Arundinella**
144b Upper lemma awn 20–100 mm long; callus long:
145a Upper lemma glabrous; lower lemma 5–7-nerved; callus pungent; spikelets in triads ..... **Tristachya**
145b Upper lemma hairy; lower lemma 3-nerved; callus 2-toothed or truncate; spikelets not in triads..... ..... **Loudetia**
142b Upper lemma entire:
146a Some spikelets subtended by a bristle (may need to look carefully) ..... **Setaria**
146b Spikelets not subtended by any bristle(s) (long hairs may be present):
147a Upper glume and lower lemma thickened and nipped at apex, upper lemma with a distinct, usually green, indurated crest at apex..... **Acroceras**
147b Features not as above:
148a Spikelets supported on a bead-like swelling..... **Eriochloa**
148b Spikelet not supported on a bead-like swelling, a stipe may be present:
149a Upper glume gibbous, distinctly ribbed ..... **Sacciolepis**
149b Upper glume neither gibbous or ribbed:
150a Inflorescences ± open, branched panicles:
151a Spikelets laterally compressed..... **Melinis**

151b Spikelets dorsiventrally compressed to not noticeably compressed to globose ..... **Panicum**
150b Inflorescences of secund racemes, sometimes these branched, scattered up central axis:
152a Lemma margins flat on and almost concealing the palea (digitaria type) ..... **Digitaria**
152b Lemma margins only clasping palea edges (paspalum type):
153a Lower glume absent..... **Paspalum**
153b Lower glume present (maybe small):
154a Upper lemma awned:
155a Lower glume turned away from rhachis..... **Urochloa**
155b Lower glume turned towards rhachis ..... **Brachiaria**
154b Upper lemma awnless:
156a Spikelets with rigid hard hairs/hispid along nerves, hairs never in tufts ..... **Echinochloa**
156b Spikelets glabrous or soft hairy, if hairs stiff, then in tufts near apex of upper glume and/or lower lemma:
157a Lower glume turned towards rhachis..... **Brachiaria**
157b Lower glume turned away from rhachis..... **Paspalidium**
131b Florets 2–many, if 2, then both similar:
158a Florets 3, usually dissimilar, lower 1 or 2 male or sterile, upper bisexual:
159a Glumes very reduced and joined to form a small cup; lemmas with hyaline spines; climbing forest grass with leaves of 2 dissimilar kinds..... **Prosphytochloa**
159b Features not as above:
160a Lower lemma awned from middle, second lemma awned from near base..... **Anthoxanthum**
160b Lower 2 lemmas awnless or awned from apex or just below:
161a Uppermost floret hairy; spikelets awnless..... ***Phalaris**
161b Uppermost floret glabrous; spikelets awned or awnless:
162a Callus with long silky hairs enveloping florets; tall robust reeds..... **Phragmites**
162b Callus absent ..... **Ehrharta**
158b Florets 2–many, if 3, only then usually all similar, bisexual (uppermost may be reduced and sterile):
163a Lemmas emarginate, lobed, distinctly bifid:
164a Lobes awned:
165a Central awn straight, not twisted below:
166a Glumes as long as to longer than spikelet (awns excluded):
167a Lemma hairs in tufts; plants not reed-like; leaves basal..... **Merxmuellera**
167b Lemma hairs not tufted; tall reed-like plants; leaves cauline..... ***Arundo**
166b Glumes shorter than spikelet:
168a Loosely tufted; rhizome long creeping; basal sheaths dark brown to reddish, not splitting into fibres ..... **Triraphis**
168b Densely tufted; basal sheath pallid, splitting into hard fibres and forming dense resistant mats .... **Styppeiochloa**
165b Central awn bent (geniculate) or not but twisted below:
169a Annuals:
170a Spikelets 12–35 mm long..... ***Avena**
170b Spikelets 2–5 mm long ..... **Pentameris** section **Pentaschistis** (= *Pentaschistis*)
169b Perennials:
171a Pedicel articulated a distance from spikelet, beaded with long hairs at articulation, spikelet and part of pedicel falling as a whole ..... **Chaetobromus**
171b Not as above:
172a Ligule an unfringed membrane ..... **Helictotrichon**
172b Ligules a fringed membrane or fringe of hairs:
173a Florets 3–10:
174a Spikelets 8–25 mm long..... **Merxmuellera**
174b Spikelets 4–7 mm long..... **Tribolium** (= *Karroochloa*)
173b Florets 2:
175a Ovary apex hairy; fruit an achene..... **Pentameris**
175b Ovary apex glabrous; fruit a caryopsis:
176a Spikelets (9.0)13.5–30.0 mm long..... **Merxmuellera**

176b Spikelets 2.5–13.0 mm long.....**Pentameris** section **Pentaschistis** (= *Pentaschistis*)
164b Lobes awnless; lemmas awned or awnless:
177a Lemma with central awn almost as long to longer than lemma:
178a Lemma awned from base or base up to middle of back:
179a Perennials; anther 1–2 mm long; rachilla long and hairy, florets well separated, rachilla elongated .. .. ***Deschampsia**
179b Annuals; anther 0.3–0.6 mm long; rachilla short, florets arising ± same point..... ***Aira**
178b Lemma awned from between lobes or sinus or just below apex:
180a Glumes shorter than spikelet:
181a Awn fine, twisted, geniculate; awns from all florets intertwine and spikelets fall as a unit..... ..... **Streblochaete**
181b Awn not fine, nor twisted or geniculate only; awns from all florets not intertwining and spikelets not falling as a unit:
182a Awn usually straight and stiff; spikelets disarticulating above glumes ..... **Bromus**
182b Awn either geniculate or with a straight column, florets breaking up at maturity and disarticulating below each fertile floret ..... **Ellisochloa**
180b Glumes as long as to longer than spikelet:
183a Florets 2; lemma hairs never in tufts..... *Pentaschistis* = **Pentameris** section **Pentaschistis**
183b Florets 3–many, if 2, then lemma hairs in tufts:
184a Spikelets 8–25 mm long ..... **Merxmuellera**
184b Spikelets 4–7(10) mm long..... **Tribolium** (= *Karroochloa*)
177b Lemma awnless (all lemmas), mucronate or awn shorter than lemma:
185a Glumes 5–9-nerved:
186a Ligule a fringe of hairs ..... **Schismus**
186b Ligule an unfringed membrane:
187a Glumes cordate at base; ovary glabrous..... ***Briza**
187b Glume base not cordate; ovary hairy..... **Bromus**
185b Glumes 1–3-nerved:
188a Glumes shorter than spikelet:
189a Upper glume 3–9-nerved; lemma 5–15-nerved; ovary hairy, conspicuous hairy appendage on apex ..... **Bromus**
189b Upper glume 1-nerved; lemma 3-nerved; ovary glabrous; hairy appendage absent ..... **Leptochloa**
188b Glumes, at least upper, as long as to longer than spikelet:
190a Ligule an unfringed membrane:
191a Perennials; spikelets 5–14 mm long; lemma back rounded ..... **Trichoneura**
191b Annuals; spikelets 2.5–5.0 mm long; lemma keeled ..... ***Lophochloa**
190b Ligule a fringed membrane or fringe of hairs:
192a Lemma back rounded; lemmas 7–9-nerved..... **Pentameris** section **Pentaschistis** (= *Pentaschistis*)
192b Lemma back keeled; lemmas 3-nerved ..... **Dinebra**
163b Lemmas entire:
193a Annuals:
194a Ligule a fringed membrane or fringe of hairs:
195a Glumes as long as spikelet..... **Dinebra**
195b Glumes shorter than spikelet:
196a Inflorescence of usually falcately curved racemes along a long central axis ..... **Pogonarthria**
196b Inflorescence not as above..... **Eragrostis**
194b Ligule an unfringed membrane:
197a Lemmas awned:
198a Ovary apex with hairy appendage; upper glume 3–9-nerved; lemmas 5–15-nerved..... **Bromus**
198b Ovary apex glabrous; upper glume 1–3-nerved; lemmas 3–5-nerved..... ***Vulpia**
197b Lemmas awnless:
199a Lemma keeled, if lightly so, then rachillae fragile:
200a Lemmas hairy or glabrous, if glabrous, then rachillae not fragile, disarticulating above glumes; lemma 5–11-nerved ..... **Poa**
200b Lemma glabrous; rachillae fragile, disarticulating between florets; lemma 3-nerved..... **Diandrochloa**

199b Lemma rounded on back:
201a Spikelets nodding; lemmas plump, almost as long as wide, cordate at base ..... ***Briza**
201b Spikelets erect, inflorescence branches stiff; lemmas oblong, not cordate at base ..... ***Catapodium**
193b Perennials:
202a Ligule an unfringed membrane:
203a Glumes equal to longer than spikelet:
204a Spikelets 3.5–4.0 mm long; lemma keeled, 3-nerved ..... **Koeleria**
204b Spikelets 5–15 mm long; lemma rounded on back, 7–9-nerved ..... **Melica**
203b Glumes shorter than spikelet:
205a Lemma keeled:
206a Spikelets almost sessile in dense secund clusters ..... ***Dactylis**
206b Spikelets pedicellate:
207a Ovary with hairy appendage at apex; spikelets 10–50 mm long; lemmas usually long awned .... **Bromus**
207b Ovary glabrous; spikelet 3–7 mm long; lemma awnless ..... **Poa**
205b Lemma rounded on back, at least at base:
208a Ovary with a conspicuous, villous appendage at apex ..... **Bromus**
208b Ovary hairy or glabrous, but without villous appendage at apex:
209a Inflorescence usually a raceme with few to many spikelets scattered up central axis; glumes 5–9-nerved ..... **Brachypodium**
209b Inflorescence usually an open to contracted panicle or of many racemes scatted up central axis; glumes 1–3-nerved:
210a Upper glume 1-nerved; lemma nerves hairy at base ..... **Leptochloa**
210b Upper glume 3–5-nerved; lemma glabrous or hairy:
211a Spikelets 4–8 mm long; lemma margins membranous ..... **Puccinellia**
211b Spikelets 7–20 mm long; lemma margins firm not membranous ..... **Festuca**
202b Ligule a fringe of hairs or fringed membrane:
212a Lemma 5–9-nerved:
213a Inflorescences large, 400–700 mm long, plumose; plants up to 4 m high ..... ***Cortaderia**
213b Inflorescences up to 120 mm long, if hairy, then not plumose; plants up to 900 mm high:
214a Inflorescence an open or contracted panicle or distichous spike:
215a Lower glume 1–3-nerved; lemma nerves and margins woolly-hairy basally ..... **Poa**
215b Lower glume (3)5(7)-nerved; lemma glabrous or hairy, never woolly-hairy ..... **Tribolium**
214b Inflorescence of racemes or spikelets scattered up central axis:
216a Inflorescence of scattered racemes up central axis; lowest 2 florets sterile; glumes 1-nerved ..... **Tetrachne**
216b Inflorescence of scattered spikelets up central axis; lowest 2 florets also fertile; glumes 5–9-nerved ..... **Brachypodium**
212b Lemma 1–3-nerved:
217a Glumes 3–5-nerved; large reeds, not tufted, leaves cauline ..... **Phragmites**
217b Glumes 1-nerved; if large, then tufted, leaves mainly basal:
218a Spikelets hairy:
219a Glumes and lemmas densely hairy ..... **Stiburus**
219b Glumes glabrous, lemmas with hairs:
220a Lemmas hairy on nerves below ..... **Leptochloa**
220b Lemmas hairy all over ..... ***Cortaderia**
218b Spikelets glabrous
221a Inflorescence of secund racemes falcately curved and closely scattered up central axis; glumes reddish ..... **Pogonarthria**
221b Not as above ..... **Eragrostis**
111b Inflorescence a distinct leafy false panicle, branches of a single inflorescence all closely associated with spathes, spatheoles or leaves:
222a Inflorescence branches each subtended by a smooth ivory-like bead or cupule enclosing female spikelets; male spikelets on a tassel exserted from bead; annuals ..... ***Coix**
222b Inflorescence branches not subtended by a smooth ivory-like bead or cupule; annuals or perennials:
223a Spikelet(s) subtended by a bristle ..... **Pennisetum**

223b Spikelets not subtended by a bristle:
224a Upper lemma of sessile spikelet awnless:
225a Racemes dorsally compressed, resembling the culm, tough; plants perennial, decumbent or rambling; basal sheaths without irritant hairs; spikelets of a pair similar, especially in sexuality..... **Hemarthria**
225b Racemes cylindrical, fragile; robust annuals, erect; basal sheaths with irritant hairs; spikelets of a pair very dissimilar, especially in sexuality..... **Rottboellia**
224b Upper lemma of sessile spikelet awned or mucronate (sometimes minutely so):
226a Spikelets clustered into triangular units resembling a single spikelet, each composed of a single, sessile, bisexual spikelet and 2 pedicelled spikelets, enclosed by an involucre of 4 sterile sessile spikelets..... **Themeda**
226b Spikelets not in triangular units resembling a single spikelet:
227a Racemes solitary in spatheoles:
228a Ligule an unfringed membrane; spatheole boat-shaped, distinct and closely associated with spikelet-bearing axis; sessile spikelet 3.5–4.0 mm long..... **Monocymbium**
228b Ligule a fringed membrane or a fringe of hairs; spatheole not boat-shaped, closely or not closely associated with spikelet-bearing axis; sessile spikelet 4–20 mm long (rarely 2–3 mm long):
229a Pedicelled spikelet smaller than sessile spikelet..... **Schizachyrium**
229b Pedicelled spikelet larger than sessile spikelet..... **Andropogon**
227b Racemes 2 or more in conspicuous spatheoles and spathes:
230a Awn of upper lemma of sessile spikelet glabrous; plants usually aromatic..... **Cymbopogon**
230b Awn of upper lemma of sessile spikelet distinctly hairy; plants not aromatic..... **Hyparrhenia**

A new generic classification of the largely southern hemisphere grass subfamily Danthonioideae was presented by Linder et al. (2010). The authors recognised 17 genera including 5 new genera, of which *Capeochloa* H.P.Linder & N.P.Barker, *Geochloa* H.P.Linder & N.P.Barker and *Tenaxia* H.P.Linder & N.P.Barker occur in sthn Afr. and the EC. Two new sections (section *Dracomontanum* H.P.Linder & Galley and section *Pentaschistis* (Nees) H.P.Linder & Galley) were designated for *Pentameris* P.Beauv. Of the remaining genera, the delimitation of seven have been changed; *Merxmuellera* Conert is much reduced by the segregation of *Geochloa*, *Capeochloa* and *Tenaxia*; *Pentameris* is expanded to include *Prionanthium* Desv. and *Pentaschistis* (Nees) Spach; and the species previously assigned to *Karoochloa* Conert & Türpe, *Schismus* P.Beauv., *Urochlaena* Nees and *Tribolium* Desv., have been reassigned to only two genera. Finally the Himalayan species of *Danthonia* DC. have been transferred to *Tenaxia* and the remaining African species of *Danthonia* to *Merxmuellera*. Although 100 new combinations were made, the current treatment includes only those relevant to the EC.

Key to the EC genera of the subfamily Danthonioideae

Adapted from Linder et al. (2010).

1a Spikelets with (1)2 florets with a minute rachilla extension; palea keels parallel; setae inserted in sinuses between lemma lobes and awns..... **Pentameris**
1b Spikelets generally with > 2 florets, if only 2, then with a well-developed rachilla extension; palea keels sinuose; setae when present at apices of lemma lobes:
2a Palea flaps often with long hair; lemma with scattered indumentum:
3a Geophytes with persistent woolly leaf bases..... **Geochloa**
3b Tall caespitose plants, or if geophytes, then leaf bases glabrous..... **Capeochloa**
2b Palea flaps usually glabrous; lemma indumentum various:
4a Hilum linear; embryo mark < $^2/_5$ of caryopsis..... **Merxmuellera**
4b Hilum punctiform; embryo mark > $^2/_5$ of caryopsis:
5a Glumes with tubercle-based hairs or plants stoloniferous or inflorescences spicate; lemmas often awnless..... **Tribolium**

5b Glumes lacking tubercle-based hairs, not stoloniferous, and if the inflorescence is spicate, then the lemmas have well-developed awns:

6a Lemmas acute or lobed; central awn usually shorter than lobes: plants < 0.35 m high; often annual… ..... **Schismus**

6b Lemmas lobed; plants 0.12–0.90 m high; always perennial..... **Tenaxia**

ACROCERAS Stapf

Species ± 19, Africa, Madagascar and Indomalayan region; 1 in sthn Afr., N, B, LIM, G, M, KZN, WC, EC.

macrum Stapf

Nile grass; *nylvleigras* (A)

Tufted perennial, 0.4–1.1 m high; rhizome creeping extensively. **Leaf blade** 120 × 10 mm; ligule a very short fringe of hairs. **Inflorescence** of a number of secund, spike-like racemes scattered on a central axis, sometimes a panicle. **Spikelet** 4–5 × 1.5 mm, awnless; glumes and upper lemma thickened and nipped at apex forming a distinct indurated green crest; glumes unequal in size, similar; lower glume $^{2}/_{3}$ as long as spikelet, 3-nerved; upper glume as long as spikelet, 5–7-nerved. **Florets** 2; lower floret male or sterile, lemma similar to upper glume; upper floret bisexual, lemma hard, glabrous and shiny; anther 2.0–2.5 mm long. **Flowering time** Nov.–July. Flooded areas near rivers, swamps or vleis; in a wide range of soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Ntsubane Forest S to East London and Humansdorp District).

AGROSTIS L.

Species ± 220, temperate regions throughout the world, and on mountains in the tropics; ± 12 (2 naturalised) in sthn Afr., N, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC, but generally absent from the dry central regions.

1a Inflorescence spike-like

continuata Stapf

Coarse, tufted perennial, 600–900 mm high. **Leaf blade** up to 250 × 6(–8) mm; ligule an unfringed membrane. **Inflorescence** a dense, narrow, spike-like panicle; spikelets overlapping, closely imbricate on appressed branches. **Spikelet** 3–5 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, mucronate, 1-nerved, keels scabrid. **Floret** 1, bisexual, rachilla not produced; lemma less firm than glumes, glabrous or sparsely hairy, 5-nerved, awned from $^{1}/_{4}$ way up back or less; awn up to 4.5 mm long, geniculate; palea $^{1}/_{4}$–$^{1}/_{3}$ as long as lemma; callus glabrous or hairs minute; anther 0.7–1.5 mm long. **Flowering time** Dec.–Apr. Vlei grassland and wet places, sometimes at high altitudes; Sub-Escarpment Grassland (Underberg District, KZN Border).

1b Inflorescence open or contracted
2a Pedicels long and hair-like

*montevidensis Spreng. ex Nees

Fog grass

Tufted annual, 200–600 mm high. **Leaf blade** up to 130 × 1–2 mm; ligule an unfringed membrane. **Inflorescence** a very diffuse panicle, branches hair-like; pedicels 20 mm long or more. **Spikelet** 1.5–2.5 mm long, laterally compressed, disarticulating above glumes;

glumes ± equal, as long as to longer than spikelet, lanceolate, acuminate, 1-nerved, keels scabrid. **Floret** 1, rachilla not produced; lemma less firm than glumes, glabrous, 5-nerved; awned from just above middle, awn up to 2.5 mm long; palea absent; callus glabrous; anther 0.5–1.1 mm long. **Flowering time** Nov.–Apr. Moist and disturbed places in mountain grassland; Eastern Fynbos-Renosterveld (Tsitsikamma National Park).

2b Pedicels short or long, not hair-like

*avenacea C.C.Gmel.

Bent grass, blown grass

Annual, 180–600 mm high. **Leaf blade** up to 170 × 2 mm, flat; ligule an unfringed membrane. **Inflorescence** an open panicle, 80–190 mm long. **Spikelet** 2.5–4.0 mm long, laterally compressed; rachilla less than $^1/_2$ as long as spikelet; glumes ± equal, as long as to longer than spikelet, acute to acuminate, 1-nerved, keels scaberulous. **Floret** 1, disarticulating above glumes; bisexual; lemma less firm than glumes, hairy, 4-nerved, awn arising from middle of back; awn 4.0–7.5 mm long; usually fine, geniculate; palea subequal to shorter than lemma; callus hairs up to 0.5 mm long; anther 0.2–4.0 mm long. **Flowering time** July–Mar. Disturbed areas or wet places; Drakensberg Grassland, Albany Thicket, Indigenous Forests (Dordrecht S to Stutterheim District and Nature's Valley Forest).

barbuligera Stapf

Tufted perennial, 200–800 mm high; basal sheaths splitting into fibres. **Leaf blade** up to 250 × 2–6 mm, flat; ligule an unfringed membrane. **Inflorescence** a panicle, branches flexuous, spreading at maturity. **Spikelet** 4.0–5.5 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, acute, 1-nerved, keels scaberulous. **Floret** 1, bisexual; rachilla produced as a hairy bristle; lemma less firm than glumes, hairy all over or only below middle, 5-nerved, awned from lowest quarter near base; awn up to 7 mm long, very fine, bent and twisted; palea subequal to shorter than lemma; callus short-hairy; anther 1.2–2.5 mm long. **Flowering time** Nov.–Mar. Mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland (Barkly East District S to Keiskammahoek District, Maclear District, and Somerset East).

bergiana Trin.

Delicate, weak perennial, or annual, 150–300(–600) mm high. **Leaf blade** up to 90 × 1–2 mm, expanded, rolled, filiform; ligule an unfringed membrane. **Inflorescence** a very diffuse panicle, branches hair-like. **Spikelet** 1.5–2.5 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, acute or acuminate, 1-nerved, keels scabrid. **Floret** 1, bisexual, rachilla not produced; lemma less firm than glumes, glabrous, 5-nerved, awnless or awned; awn very short, straight or slightly bent, from ± middle of back; palea subequal to shorter than lemma; callus short-hairy; anther 0.8–1.2 mm long. **Flowering time** Nov.–Feb. Mountain grassland in sheltered or wet places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East District SE to Baziya Mts and S to Nature's Valley Forest).

eriantha Hack.

Tufted perennial, up to 700 mm high; rhizomatous. **Leaf blade** up to 180 × 1–2 mm, folded; ligule an unfringed membrane. **Inflorescence** a panicle, branches rigid, straight,

held ascending at maturity. **Spikelet** 3.5–5.0 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, acute to acuminate, 1-nerved, keel scabrid. **Floret** 1, bisexual, rachillae not produced; lemma less firm than glumes, 5-nerved; awn from ± middle, bent or twisted; palea subequal to shorter than lemma; callus glabrous to short-hairy; anther 1.9–2.5 mm long. **Flowering time** Jan.–Apr. Wet places, sometimes in disturbed areas or cultivation; Upper Karoo, Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna (Bethulie E to Ntsikeni Wetland, from Middelburg to Keiskammahoek).

gigantea Roth

Bent grass

Perennial, 400–750 mm high; usually stoloniferous, sometimes rhizomatous; culm erect. **Leaf blade** up to 90 × 3–5 mm, flat; ligule an unfringed membrane. **Inflorescence** an open panicle, 70–200 mm long, branches ascending. **Spikelet** 1.5–2.5 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, acute, 1-nerved, keels scabrid on the above. **Floret** 1, bisexual, rachilla not produced; lemma less firm than glumes, glabrous, 4-nerved; awnless or rarely minutely awned; palea $^{1}/_{2}$ as long as lemma; callus glabrous; anther 1.0–1.5 mm long. **Flowering time** Nov.–Apr. Wet disturbed places; Dry Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket (Tarka and Cathcart Districts, S to Bathurst).

lachnantha Nees

South African bent grass; *vinkagrostis* (A)

Loosely tufted, short-lived perennial or annual, 300–900 mm high, usually robust. **Leaf blade** 70–200 × 2–4 mm, flat; ligule an unfringed membrane. **Inflorescence** a panicle, 150–400 mm long, narrow and sinuous, branches held nearly erect. **Spikelet** 1.5–2.5(–3.0) mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, lanceolate, 1-nerved, keeled, smooth or granular except keel scabrid, 1-nerved. **Floret** 1, bisexual, rachilla not produced; lemma less firm than glumes, pubescent to pilose with hairs up to 1 mm long, rarely glabrous, denticulately obtuse, 3-nerved; awnless or with subapical awn up to 0.5 mm long; palea almost as long or shorter than lemma; callus minutely hairy; anther 0.5–0.7 mm long. **Flowering time** Oct.–Mar. (occasionally earlier or later). Riverbanks and wet places; in all bioregions, except Rainshadow Valley Karoo (Oviston Nature Reserve E to Mount Currie, Kentani District and Humansdorp District).

subulifolia Stapf

Tufted, delicate perennial, or possibly annual, 50–300 mm high; hygrophyte. **Leaf blade** up to 70 × 0.5–1.0 mm, folded; ligule an unfringed membrane. **Inflorescence** a contracted to open panicle, 15–80 mm long, branches ascending. **Spikelet** 2–3 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as to longer than spikelet, acute or acuminate, usually dark purple, 1-nerved, keel scaberulous. **Floret** 1, bisexual, rachilla not produced; lemma less firm than glumes, glabrous, 5-nerved; awned from middle of back or awnless; awn up to 1.5 mm long, straight; palea subequal to lemma; callus glabrous; anther 0.8–1.7 mm long. **Flowering time** Jan.–Mar. Mountain bogs; Drakensberg Grassland (Barkly East).

*AIRA L.

Species 8, Europe and Mediterranean to Iran, most widespread weeds; 1 in sthn Afr., FS, KZN, L, NC, WC, EC.

cupaniana Guss.

Tufted annual, 30–400 mm high. **Leaf blade** 10–95 × 3 mm; ligule an unfringed membrane. **Inflorescence** an open, spreading or sometimes contracted panicle; pedicels mostly longer than spikelet. **Spikelet** 2–3 mm long, laterally compressed, rachilla very short, spikelets appearing as from one point; both glumes ± equal, ± equal to spikelet, pear-shaped, obtuse or subobtuse, denticulate towards apex, often mucronate, keeled, 1-nerved. **Florets** 2, bisexual; rachilla short, florets appear at ± from same point; lower lemma awned or awnless; upper lemma awned from $^1/_3$ above base or from below middle; awn 2–3 mm long, with a column 0.8–1.2 mm long, twisted or not, bent; anther 0.3–0.6 mm long. **Flowering time** Sept.–Jan. Shallow soils in damp to wet areas; Albany Thicket, Eastern Fynbos-Renosterveld, Indigenous Forests (Bathurst District E to Swartkops River, S to Humansdorp District).

ALLOTEROPSIS J.Presl

Species ± 8, Old World tropics; 3 in sthn Afr., N, LIM, NW, G, M, S, FS, KZN, L, EC.

semialata (R.Br.) Hitchc.

Tufted perennial; old basal leaf sheaths usually with veins, 0.3–1.1 mm wide. **Leaf blade** 1–12 mm wide; ligule a fringed membrane or a fringe of hairs. **Inflorescence** digitate or subdigitate; racemes secund; spikelets 2- or 3-nate, unequally pedicelled, tightly packed and dark-coloured or loosely arranged and light-coloured. **Spikelet** 5–8 mm long, dorsiventrally compressed; glumes unequal; lower glume shorter than spikelet, pubescent, 3–5-nerved, usually awnless; upper glume equalling lemma, 5-nerved, hairy on margins. **Florets** 2; lower floret male or sterile, lemma resembling upper glume but not hairy, indurated, 3–5-nerved; palea shorter than lemma, deeply 2-lobed with marginal flaps, awnless; upper floret bisexual, lemma similar in texture to glumes, membranous to chartaceous, margins flat and exposed on palea, covering most of palea, 5-nerved, awned or mucronate; awn 1.5–3.0 mm long, straight. **Flowering time** Sept.–Mar. Grassland and bushveld; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Maclear District, Port Edward S to Greater Addo Elephant National Park).

A. semialata is a very variable species both morphologically and photosynthetically and is most unusual in having two photosynthetic types in one species and therefore 2 subspecies are usually recognised:

A. semialata subsp. eckloniana (Nees) Gibbs Russ.

Has C3 photosynthesis, old basal leaf sheaths usually with veins up to 0.3 mm wide; racemes usually < 80 mm long, spikelets tightly packed and dark-coloured. Grassland, rocky places and forest margins; usually at higher altitudes and more acid soil than subsp. *semialata*.

A. semialata subsp. semialata

Has C4 photosynthesis, old basal leaf sheaths with veins forming ribs 0.5–1.1 mm wide; racemes usually > 80 mm long, spikelets loosely arranged and light-coloured. Grasslands and bushveld.

*AMELICHLOA Arriaga & Barkworth

Species ± 5, South America and northern Mexico, 1 naturalised in sthn Afr., NC, EC.

clandestina (Hack.) Arriaga & Barkworth

[*Achnatherum clandestinum* (Hack.) Barkworth, *Stipa clandestina* Hack.]

Densely tufted perennial, 0.5–1.5 m high, forming big hard tufts; base rhizomatous, knotty. **Leaf blade** up to 750 × 1 mm, rolled, setaceous, sharply pointed; ligule a fringed membrane. **Inflorescence** a panicle. **Spikelet** 5–7 mm long (excluding awn), disarticulating above glumes; glumes ± equal, longer than spikelet. **Floret** 1; lemma strongly and firmly overlapping, firmer than glumes becoming indurated, hairs 0.5–0.8 mm long, apex with a ring of hairs below lemma-awn junction, awned; awn 11–20 mm long, bent and twisted, callus blunt, bearded; palea keeled, 2-nerved, pilose between nerves; anther 2.8–4.2 mm long. **Flowering time** Nov.–May. Weed in disturbed places in grassland; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Dry Highveld Grassland (Lady Grey District S to Kopshorn and Graaff-Reinet District).

*AMMOPHILA Host

Species 2, north temperate; 1 naturalised in sthn Afr., used for reclamation work on sand dunes in WC and EC.

arenaria (L.) Link

Marram grass; *sandhawer* (A)

Robust, tufted, rhizomatous perennial, 0.6–1.3 m high; culms creeping through blown sand. **Leaf blade** up to 750 mm long, rolled, appearing setaceous; ligule a conspicuous tapering unfringed membrane which splits into 2. **Inflorescence** a very narrow, spike-like panicle; old inflorescences persistent until autumn. **Spikelet** 9–13 mm long, laterally compressed, disarticulating above glumes; glumes equal to or longer than spikelet, keeled; lower glume 1-nerved; upper glume 1–3-nerved. **Floret** 1; lemma less firm than glumes, 5–7-nerved, keeled, lobed, mucronate at apex; callus hard, knob-like; anther 4.5–6.5 mm long. **Flowering time** Oct.–Dec. Seaside dunes; Albany Thicket (Port Elizabeth and Kowie).

ANDROPOGON L.

Species ± 100, pantropical; 15 in sthn Afr., widespread.

1a Spikelet awnless

festuciformis Rendle

Densely tufted perennial, 0.16–1.00 m high; basal sheaths distichous, keeled, flattened; culms much branched above, slender, reddish throughout. **Leaf blade** 50–280 × 1.8–4.0 mm; ligule a minutely fimbriate membrane. **Inflorescence** a glabrous, solitary raceme, in fascicles of 1–6; pedicels linear, short, rounded, glabrous; internodes ± $^1/_5$ length of sessile spikelet; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 4.0–4.5 mm long, awnless; lower glume flat on back; upper glume boat-shaped, sharply keeled. **Florets** 2; lower floret reduced to a lemma; upper floret bisexual. **Pedicellate spikelet** larger, 4.0–5.3 mm long, male. **Flowering time** July–Jan. Coastal grassland, seeps and drainage lines; Indian Ocean Coastal Belt (Port Edward).

1b Spikelet awned
2a Inflorescence plumose

eucomus Nees

Snowflake grass, old man's beard, silver thread grass; *kapokgras* (A); *mohlaala* (SS)

Densely tufted perennial, 200–900 mm high; culms much branched above, tinged reddish. **Leaf blade** 40–200 × 1–3 mm; sheaths shortly auriculate; ligule a minutely fimbriate membrane. **Inflorescence** digitate, plumose, of 2–5 racemes; pedicels and internodes filiform, white silky hairs 5–10 mm long on margins; sessile spikelets are accompanied by a hairy empty pedicel in place of pedicelled spikelet. **Sessile spikelet** 2–3 mm long, glabrous; lower glume deeply and narrowly grooved; upper glume flat, awnless. **Florets** 2; lower floret reduced to a lemma, awnless; upper floret bisexual, lemma entire or minutely lobed, awn 12–18 mm long, flexuous, glabrous. **Pedicellate spikelets** absent. **Flowering time** Nov.–May. Vleis and wet places; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld, Indigenous Forests (Oribi Gorge SW along coast to Humansdorp District).

2b Inflorescence glabrous or hairy but not plumose
3a Sessile spikelet lower glume winged

amethystinus Steud.

Rhizomatous perennial, 80–700 mm high; culms branched below, reddish. **Leaf blade** pilose; leaf base auriculate, tapering to fine point; ligule a very short, fimbriate membrane. **Inflorescence** paired or digitate, of 2 spike-like racemes, crowded into a spatheate false panicle, glabrous to densely hairy; pedicels and internodes slightly clavate, glabrous to hairy on margins; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 5.0–8.5 mm long; lower glume asymmetrical, margins with hyaline wings, rarely wingless, flat or with a shallow median groove, hairs longer than 1 mm or glabrous, bidentate, often mucronate; upper glume awn 2–6 mm long. **Florets** 2; lower floret awnless; upper floret bisexual, lemma 2-lobed to ± middle, awned, sometimes entire and awnless, awn 10–15 mm long, geniculate, conspicuous with a glabrous or hairy twisted column; callus oblong, up to 1 mm long. **Pedicellate spikelet** 4–8 mm long, male; lower glume awn 1–3 mm long; upper glume mucro 0.7–1.4 mm long (rarely longer). **Flowering time** Feb.–June. Mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland (Ongeluksnek District S to Naude's Neck).

distachyos L.

Mountain andropogon; *tweevingergras* (A)

Tufted perennial, 0.3–1.0 m high; rhizome sometimes present; base silky woolly-hairy; culms unbranched. **Leaf blade** 70–240 × 2–9 mm; ligule a minutely fimbriate membrane, with long hairs at back. **Inflorescence** of digitate racemes; pedicels and internodes stout, oblong to slightly clavate, ciliate with hairs up to 3.5 mm long on one margin and few short hairs on other; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 9–16 mm long; lower glume keels broadly winged except at base, flat, apex bidentate, often awned between teeth, back glabrous or minutely hairy; upper glume awned, awn 4–10 mm long. **Florets** 2; lower floret reduced to a lemma, awnless; upper floret bisexual, lemma lobed to middle, awn 15–30 mm long, geniculate, glabrous or with very short hairs, column twisted; callus 1–2 mm long, oblong. **Pedicellate spike-**

let shorter, 6–11 mm long, lower glume bidentate, awn 3–9 mm long; upper glume awn ± 2 mm long. **Flowering time** Jan.–June. Mountain grassland; Drakensberg Grassland (KZN Border).

3b Sessile spikelet lower glume not winged

appendiculatus Nees

Blougras (A)

Densely tufted perennial, 0.3–1.3 m high; basal sheaths keeled, flattened, distichous, shining; culms branched, yellowish with reddish tinge. **Leaf blade** reddish; ligule a minutely fringed membrane. **Inflorescence** subdigitate, of 4–20 racemes per spathe, (30–)60–150 mm long, dark purple-tinged; pedicels and internodes filiform, hairy on margins; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 5–7 mm long; lower glume with a shallow groove or ± flat, awnless, glabrous; upper glume concave on back. **Florets** 2; lower floret sterile, lemma hyaline, 2-nerved, awnless; upper floret bisexual, lemma lobed to middle, awned from sinus, awn 10–15 mm long, geniculate, conspicuous with a glabrous or hairy twisted column, sometimes entire and awnless; callus obtuse, short, inserted in a membranous-edged socket, with hairs inside. **Pedicellate spikelet** 3.5–4.5 mm long, shortly mucronate, male. **Flowering time** Oct.–Apr. Wet or shady places; widespread in all bioregions, except Lower Karoo and Rainshadow Valley Karoo (widespread in EC).

ravus J.G.Anderson

Perennial, 150–900 mm high, glaucous grey; rhizomes branched, knotted. **Ligule** an unfringed membrane, 1.5–2.0 mm long. **Inflorescence** digitate, of 2(3) racemes; pedicels and internodes clavate, margins long-hairy; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 7–9 mm long; lower glume deeply, narrowly to widely grooved, awnless. **Florets** 2; lower floret reduced to a lemma, awnless; upper floret bisexual, lemma deeply lobed, lobes acute; awn 15–20 mm long, geniculate, lower part with short stiff hairs; callus broad and obtuse, hairy. **Pedicellate spikelet** considerably longer, 7–12 mm long, male. **Flowering time** Jan.–Mar. Mountain sourveld; Drakensberg Grassland, Sub-Escarpment Grassland (Mount Fletcher District S to Maclear District).

schirensis A.Rich.

Stab grass; *gesteektegras* (A)

Densely tufted perennial, 0.6–1.2 m high, reddish; culms branched, sometimes glaucous, tinged with purple or dark red. **Leaf blade** 100–300 × 2 mm; ligule a fimbriate membrane. **Inflorescence** digitate, of 2(–5) racemes; pedicels and internodes clavate, margins long-hairy; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 5–7 mm long; glumes acute, awnless; lower glume deeply and very narrowly grooved, keels nearly meeting or narrow towards apex; upper glume convex on back. **Florets** 2; lower floret reduced to a lemma, awnless; upper floret bisexual, lemma lobed to middle, awn 25–30 mm long, twice geniculate, column twisted, short-hairy; callus obtuse. **Pedicellate spikelet** 5–10 mm long, longer than sessile spikelet, acute rarely acuminate, awnless, rarely mucronate. **Flowering time** Dec.–Apr. Open veld and rocky hillsides; Drakensberg Grassland, Sub-Escarpment Grassland (KZN Border).

ANTHOXANTHUM L.

Species ± 20, north temperate and mountains of tropical Africa and Asia; ± 4 (1 naturalised) in sthn Afr., M, FS, KZN, L, WC, EC.

[E]brevifolium Stapf

Tufted, rhizomatous perennial, 150–220 mm high; leaves crowded at base. **Leaf blade** up to 37.5 × 5.6 mm, short, broad, apex blunt; ligule an unfringed membrane. **Inflorescence** a narrow, spike-like panicle, 30–40 mm long. **Spikelet** 7 mm long, laterally compressed; glumes unequal, subacuminate, glabrous or scabrid on back, keels smooth or scaberulous; lower glume 1-nerved, subhyaline; upper glume 3-nerved, longer than and enfolding spikelet. **Florets** 3; lower 2 florets male or sterile, lower lemma 5-nerved, light brown, not densely hairy, hairs somewhat shaggy, with a short straight awn from above middle of back, second lemma awned from near base, awn geniculate, lower part twisted; uppermost floret bisexual, lemma glabrous, awnless; anther 2.4 mm long. **Flowering time** Mar. Moist places, streamsides, grassy mountain slopes, extending to forest margins; Drakensberg Grassland (Barkly East District).

ecklonii (Nees ex Trin.) Stapf

Sweet vernal grass

Loosely or densely tufted, rhizomatous perennial, 350–800 mm high; base of culm usually bulbous. **Leaf blade** 70–250 × 4–9 mm, expanded or folded, tapering to a very fine acute apex; ligule an unfringed membrane. **Inflorescence** a narrow, spike-like panicle, 40–130 mm long. **Spikelet** 6–8 mm long, laterally compressed; glumes unequal, acute to acuminate, glabrous or scabrid on backs, keels scaberulous; lower glume 1-nerved, hyaline; upper glume 3-nerved (rarely 1-nerved), subhyaline, longer than and enfolding spikelet. **Florets** 3; lower 2 florets male or sterile, lower lemma pale to light brown, usually sparsely hairy, awn short, straight from above middle of back, second lemma awned from near base, awns with lower part twisted, geniculate; uppermost floret bisexual, lemma glabrous, awnless; anther 2.0–2.3 mm long. **Flowering time** Dec.–Apr. Usually in moist places such as streamsides and on grassy mountain slopes, extending to forest margins; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Maclear District E to Ntsikeni Wetlands, S to Mount Currie District and to Humansdorp District).

*odoratum L.

Sweet vernal grass

Loosely or densely tufted perennial, 0.3–0.6(–1.0) m high, fresh plant smells of coumarin (scent of vanilla or newly mown hay). **Leaf blade** 150–300 × 2–8 mm, expanded, apex acute to acuminate; ligule an unfringed membrane. **Inflorescence** a narrow, spike-like panicle, 10–90 mm long. **Spikelet** 7–10 mm long, laterally compressed; glumes unequal acute, hyaline, glabrous or minutely pilose on back, keel scaberulous; lower glume 1-nerved; upper glume longer than and enfolding spikelet. **Florets** 3; lower 2 florets male or sterile, lower lemma long, always dark brown, densely hairy, awn short, straight from above middle of back, second lemma awned from near base, awns with lower part twisted, geniculate; uppermost floret bisexual, lemma glabrous, awnless; anther 4.0–4.5 mm long. **Flowering time** Oct.–Feb. Humic soils in moist, swampy areas; Drakensberg Grassland, Indigenous Forests, Sub-Escarpment Savanna (Franklin S to Amatole Mts).

ARISTIDA L.

Species ± 290, tropics and subtropics; 28 in sthn Afr., widespread.

1a Annual

adscensionis L.

Annual bristle grass; *steekgras* (A)

Tufted annual, up to 1 m high, erect, often branched. **Leaf blade** up to 300 × 3 mm; ligule a dense fringe of hairs. **Inflorescence** a narrowly oblong to lanceolate, 10–50 mm wide, usually a spike-like panicle, interrupted at base, side branches appressed to main axis, sometimes branches open and spreading; spikelets densely clustered on branches. **Spikelet** 10–40 mm long (including awns), disarticulating above glumes; lower glume $^{2}/_{3}$–$^{3}/_{4}$ length of upper glume, sometimes with a mucro or short awn up to 0.8 mm long. **Floret** 1; lemma laterally compressed, articulation and column absent; awns 3, glabrous, laterals well developed, shorter than central awn; callus with rounded, naked tip. **Flowering time** Dec.–Sept. Stony, sandy loam, clayey, calcareous, shallow soils on stony hills, moist areas along pans and rivers, along roads and other disturbed ground; in all bioregions, except Sub-Escarpment Savanna, Indian Ocean Coastal Belt and Indigenous Forests (widespread from Oviston to Middelburg, Queenstown, Steytlerville and Uitenhage).

congesta Roem. & Schult.

Spreading prickle grass; *witsteekgras*, *katstertsteekgras* (A)

Slender to densely tufted, perennial or annual, up to 900 mm high. **Leaf blade** up to 200 × 3 mm; ligule a dense fringe of hairs. **Inflorescence** a variable panicle either with a few spikelets laxly clustered or with many spikelets densely clustered at ends of long, naked, side branches or very dense with branches closely appressed, enclosing main axis, except occasionally at base where 1 or 2 subspicate side branches spread away from main axis; spikelet clusters narrow, obovate to ovate. **Spikelets** 20–30(–50) mm long (including awns), disarticulating above glumes; lower glume awned. **Floret** 1; lemma articulation between apex of column and branching point of awns, articulation sometimes represented only by a swollen line or colour differentiation; 3-awned, laterals well developed, glabrous, column present; callus 0.5–1.5 mm long, tip naked, narrow or broadly rounded to truncate. **Flowering time** Oct.–May. Hard or stony loam or deep, sandy clayey soils on rocky hillsides, old lands and disturbed ground; in all bioregions, except Eastern Fynbos-Renosterveld and Indigenous Forests (common in EC).

1b Perennial
2a Lemma articulation absent

bipartita (Nees) Trin. & Rupr.

Three-awned rolling grass; *krulgras*, *rolgras* (A)

Tufted perennial to biennial, up to 650 mm high, erect or geniculate. **Leaf blade** up to 200 × 2 mm; ligule a dense fringe of hairs. **Inflorescence** an open panicle; branches rigid, naked for most of their length, spreading at 90 degrees from main axis; spikelets borne at apex of long, naked branches. **Spikelet** 18–20 mm long (including awns), disarticulating above glumes; lower glume equal to or longer than upper glume, awned. **Floret** 1; lemma articulation and column absent; awns 3, subequal, glabrous; callus tip thickened, naked, rounded to obtuse. **Flowering time** Oct.–May. Sandy, stony, loamy, clayey and black turf soils in moist areas around vleis and dongas, and in overgrazed and other disturbed ground; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grass-

land, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Indigenous Forests (Bethulie and Lady Grey Districts E to Mount Frere, S to Mthatha and Grahamstown Districts).

canescens Henrard

Vaalsteekgras (A)

Slender, erect, tufted perennial, up to 1.5 m high; unbranched to branched from upper nodes. **Leaf blade** up to 300 × 2 mm, flat or rolled, curved to curled; ligule a dense fringe of hairs. **Inflorescence** a contracted panicle, branches erect or spreading, not more than 45 degrees from main axis; spikelets congested on branches. **Spikelet** 15–22 mm long (including awns), disarticulating above glumes; lower glume firm except for membranous apex, $^{1}/_{2}$ to nearly equalling upper glume, awned or without mucro or awn. **Floret** 1; lemma articulation and column absent, sometimes with a minute constriction at branching point of awns; awns 3, glabrous; callus tip naked, subobtuse to rounded. **Flowering time** July, Dec.–May. Shallow, sandy, stony soils on rocky ridges, eroded and disturbed ground, dolerite slopes; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Dry Highveld Grassland, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Middelburg SE to Cradock District, Hogsback and S to Sundays River).

junciformis Trin. & Rupr.

Wire grass; *gongoni-steekgras* (A)

Densely tufted, erect perennial, up to 900 mm high; rhizome stout or long, thin and oblique; culms unbranched to branched at some nodes. **Leaf blade** up to 300 × 3 mm; leaves either mainly basal, forming a dense basal tuft in which culms remain hidden or mainly cauline and culms clearly visible for most of their lengths; ligule a dense fringe of hairs. **Inflorescence** a contracted, dense to lax panicle; branches erect to spreading up to 45 degrees from main axis. **Spikelet** 20–30 mm long (including awns), disarticulating above glumes; glumes usually very unequal; lower glume $^{1}/_{2}$–$^{2}/_{3}$ length of upper glume, awned. **Floret** 1; lemma narrowly lanceolate, distinctly tapering into a beak or column, articulation absent; awns 3, laterals well developed, glabrous; callus tip naked, swollen, rounded to truncate. **Flowering time** Nov.–May. Sandy, clayey, stony soils, on stony hillsides, rocky slopes of high mountains, depressions and damp places, roadsides, overgrazed and disturbed areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Indigenous Forests, Eastern Fynbos-Renosterveld (Qacha's Neck to Mkambati Nature Reserve, southwards from Queenstown to Kentani and from Tsitsikamma National Park to Port Alfred).

monticola Henrard

Tufted, erect to geniculate perennial, up to 900 mm high; long rhizomatous; culms much branched. **Leaf blade** up to 120 × 2 mm; ligule a dense fringe of hairs. **Inflorescence** an open, erect panicle. **Spikelet** 18–25 mm long (including awns), disarticulating above glumes; lower glume longer than upper glume, long tapering to an acuminate apex (this often breaks very early, giving a false idea of length), awn or mucro absent. **Floret** 1; lemma without articulation, but a beak or short, twisted column is present; awns 3, two laterals shorter than central, glabrous; callus tip naked, rounded to truncate. **Flowering time** Jan.–May. Moist and shady situations such as streambanks and seepage areas on mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland (KwaZulu-Natal border).

2b Lemma articulation present

congesta Roem. & Schult. (see 1a above)

diffusa Trin.

Koperdraadgras, *ystergras* (A)

Slender, densely tufted, erect perennial, up to 1 m high; culms 1.5–3.0 mm in diam., unbranched or sparsely branched. **Leaf blade** up to 300 × 2 mm; leaf auricles glabrous or short-hairy, not woolly; ligule a dense fringe of hairs. **Inflorescence** an open panicle, spikelets distant from one another. **Spikelet** 25–45 mm long (including awns), disarticulating above glumes; lower glume obtuse, occasionally coarsely fimbriate at apex, $^{1}/_{2}$–$^{2}/_{3}$ length of upper glume, mucro or awn absent; upper glume 12–18 mm long. **Floret** 1; lemma articulation present between apex of lemma and base of column, or absent; 3-awned; awns glabrous, column present; callus tip naked, deeply bifid. **Flowering time** Oct.–Apr. Dry, sandy, gravelly loam soils on hilly slopes and in disturbed places; in all bioregions, except Indian Ocean Coastal Belt and Indigenous Forests (Ongeluksnek S to Komga, southwards from Willowmore to Uitenhage and Grahamstown Districts).

vestita Thunb.

Large woolly three-awn; *harde steekgras* (A)

Densely tufted perennial, up to 850 mm high; lower culm internodes pubescent to woolly-hairy, upper internodes pubescent to glabrous. **Leaf blade** up to 240 × 4 mm; ligule a dense fringe of hairs. **Inflorescence** a narrowly oblong to narrowly elliptic, usually asymmetric panicle, up to 200 × 120 mm. **Spikelet** 30–50 mm long (including awns), disarticulating above glumes; lower glume up to $^{2}/_{3}$ length of upper glume, awn or mucro absent. **Floret** 1; lemma articulation between lemma apex and base of column; column 5–7 mm long; awns 3, laterals well developed, glabrous; callus tip naked, distinctly bifid. **Flowering time** sporadic, but mostly Nov.–May. Dry sandy loam or black clay, limestone soils in stony and rocky veld; Dry Highveld Grassland, Drakensberg Grassland, Mesic Highveld Grassland, Albany Thicket (Aliwal North E to Lady Grey District, S to Albany District and Swartkops River).

ARUNDINELLA Raddi

Species ± 50, tropics and subtropics but mainly Asia; 1 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

nepalensis Trin.

River grass; *beesgras*, *rietgras* (A)

Tufted perennial, 0.9–1.5 m high; robust, creeping rhizome often covered with short scale-like leaves, resulting in a plaited look. **Leaf blade** 80–300 × 3–10 mm; sheath hairy; ligule a fringed membrane. **Inflorescence** a dense panicle, 120–300 mm long; spikelets usually in pairs; pedicels free. **Spikelet** 4–6 mm long, laterally compressed, brown, sometimes tinged with green or purple, glabrous; glumes unequal; lower glume acute to mucronate, 3-nerved; upper glume as long as spikelet, acuminate, 5-nerved. **Florets** 2; lower floret male, awnless; upper floret bisexual; lemma lobed, awn 3–6 mm long, longer than body of lemma, scabrid, column brown and twisted, bristle white; callus truncate, hairy; anther 1.0–1.5 mm long. **Flowering time** Dec.–Mar. Vleis, riverbanks and moist grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad S to Queenstown District, Mkambati Nature Reserve across Amatole Mts to Uitenhage District).

*ARUNDO L.

Species 3, Mediterranean to China, widely introduced elsewhere; 1 naturalised and cultivated in sthn Afr., widespread.

donax L.

Giant reed, bamboo reed; *Spaanseriet* (A)

Robust, rhizomatous, reed-like perennial, up to 3 m high; leaf base collar or auricle large and distinct, clasping culm. **Leaf blade** 700 × 80 mm, deciduous, base rounded or caudate, apex not sharp; ligule a short fringed membrane. **Inflorescence** a compact, plumose panicle, 300–600 mm long; mature branches stiff and ascending; lowest branches without silky hairs at base. **Spikelet** 8–15 mm long, laterally compressed; glumes ± equal, ± as long as spikelet, membranous, 3–5-nerved, awnless. **Florets** 2–7, bisexual or uppermost floret reduced; lemma 3–9-nerved, back long-hairy, lobes awned; central awn straight, shorter than body of lemma; callus short, blunt, hairy; anther 2.5–3.5 mm long. **Flowering time** Feb.–Apr. Moist disturbed places; origin Mediterranean to China, declared weed (category 1); Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Graaff-Reinet District SE to Uitenhage and East London).

*AVENA L.

Species ± 25, mainly Mediterranean and Middle East; 5 naturalised in sthn Afr., LIM, NW, G, M, FS, KZN, L, NC, WC, EC, mainly escapes from cultivation.

barbata Pott ex Link

Bearded oats; *baardhawer* (A)

Tufted annual, 0.3–1.3 m high; culms solitary. **Leaf blade** 70–300 × 3–10 mm, soft, expanded; ligule an unfringed membrane. **Inflorescence** an open panicle. **Spikelets** 18–26 mm long, laterally compressed; glumes ± equal, as long as to longer than spikelet; lower glume 3–5-veined; upper glume 5–7-veined, lanceolate or elliptical, acute at apex. **Florets** 2 or 3; lemma hairy in lower half, 5–9-nerved; lobes awned, awns 4–8 mm long; central awn 35–40 mm long, longer than body of lemma, lower part twisted; palea shorter than lemma, hairy on keels; callus present on all lemmas; anther 2.0–3.2 mm long. Variable in plant height and spikelet size, easily distinguished by lemma lobes awned. **Flowering time** Aug.–Dec. Weed found in waste and/or disturbed places, roadsides on sandy soil; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown District).

fatua L.

Wild oats; *gewone wilde-hawer* (A)

Loosely tufted annual, 250–700 mm high; culms solitary. **Leaf blade** 50–280 × 3–8 mm; ligule an unfringed membrane. **Inflorescence** an open panicle. **Spikelet** 18–32 mm long, laterally compressed; glumes ± equal, 7–11-nerved, as long as to longer than spikelet. **Florets** 2 or 3; lemma 5–9-nerved, usually brownish in colour especially hairs, hairs loosely scattered; lobes usually 1.0–1.5 mm long, awnless; central awn longer than body of lemma, lower part twisted; palea shorter than lemma, densely, minutely hairy on both keels; callus present on all lemmas; anther 2.0–4.7 mm long. **Flowering time** Aug.–Nov. Weed in disturbed and waste places, roadsides on sandy soil; Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Alice S to Grahamstown, Port Elizabeth and Humansdorp District).

sativa L.

Oat; *gewone hawer* (A); *habore* (SS)

Loosely tufted annual, 0.35–1.50 m high; culms solitary. **Leaf blade** 100–400 × 3–9 mm; ligule an unfringed membrane. **Inflorescence** an open panicle. **Spikelet** 17–35 mm long, laterally compressed; glumes ± equal, 7–9-nerved, as long as to longer than spikelet, membranous on margins. **Florets** 2 or 3, rachilla disarticulating at maturity only above glumes; lemma 5–9-nerved, sparsely hairy or glabrous, lobed; lobes awnless or awned up to 4.5 mm long; central awn longer than body of lemma, with a distinct, twisted column, almost straight, sometimes absent; palea enclosed by margins of lemma, scabrid on keels; callus present on all lemmas; anther 2.0–4.6 mm long. **Flowering time** Sept.–Nov. Waste places, disturbed areas, roadsides; Mesic Highveld Grassland, Drakensberg Grassland, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (Dordrecht S to Hogsback and Fort Beaufort, Grahamstown and Humansdorp).

*AXONOPUS P.Beauv.

Species 110, tropical and subtropical America; 1 naturalised in sthn Afr., M, S, KZN, EC.

affinis Chase

Carpet grass; *gewone matgras* (A)

Perennial, 250–600 mm high, strongly stoloniferous, forming dense swards; culm nodes glabrous. **Leaf blade** 200 × 8 mm, rounded at apex; ligule a fringed membrane. **Inflorescence** digitate or subdigitate, of 2–many slender racemes; spikelets adaxial on branches and solitary at point of attachment. **Spikelet** 2 × 1 mm, dorsiventrally compressed, awnless; glumes unequal; lower glume absent; upper glume and lower lemma similar, backs turned away from rachis. **Florets** 2; lower floret sterile, lemma without median nerve; upper floret bisexual, lemma as long as spikelet, 4-nerved, glabrous, entire, margins narrow, inrolled and covering only edges of palea; anther 0.7–1.0 mm long. **Flowering time** Dec.–May. Moist and disturbed ground; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve and Tsitsikamma National Park).

*BAMBUSA Schreb.

Species ± 120, tropical Asia and America; 1 naturalised and cultivated in sthn Afr., LIM, M, KZN, EC.

balcooa Roxb. ex Roxb.

Bamboo; *bamboes* (A)

Woody tree, 15–21 m high, grows in dense clumps; rhizomes sympodial; reproduces freely from rhizomes, as well as from seeds; culms 60–80(–120) mm in diam., arch gracefully at top; culm sheath with brown hairs. **Leaf blade** up to 150 × 40 mm, pseudopetiolate; auricles absent; ligule an unfringed membrane. **Inflorescence** a panicle of 1–many pseudospikelets in globose clusters, sessile on nodes. **Spikelet** 7–16 mm long; glumes 1–3, ± equal. **Florets** 1–many, bisexual; lemma and palea hairy; anther 4–5 mm long, brown, many, hanging outside on very long filaments; style hairy. **Flowering** rare and sporadic. Streambanks and forest margins; Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Port St Johns, Fort Beaufort, Kei River Mouth, Kareedouw and Humansdorp District).

BOTHRIOCHLOA Kuntze

Species ± 35, throughout the tropics; 3 in sthn Afr., widespread.

bladhii (Retz.) S.T.Blake

Purple plume grass; *blouklosgras* (A)

Tufted perennial, 0.6–1.8 m high. **Leaf blade** 100–550 × 2–12 mm; ligule a fringed membrane, hairs shorter than membrane. **Inflorescence** paniculate, of > 20 racemes, axis longer than racemes; pedicels and internodes longitudinally grooved with a translucent median line; pedicel hairs usually < 1 mm long; spikelets paired: one sessile, other pedicelled. **Sessile spikelet** 3–4 mm long, dorsiventrally compressed; lower glume acute to subacute, pitted or pits absent. **Florets** 2; lower floret sterile, reduced to hyaline lemma, awnless; upper floret bisexual, lemma less firm than glumes, entire; awn 10–18 mm long, glabrous; callus hairs usually < 1 mm long; anther 1.0–1.5 mm long. **Pedicelled spikelet** smaller than sessile, awnless, sterile, usually reduced, lower glumes pitted. **Flowering time** Dec.–June. Riverbanks and vleis; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Mdumbi River).

insculpta (A.Rich.) A.Camus

Pinhole grass; *klosgras*, *stippelgras* (A)

Perennial, up to 1.5 m high, sometimes stoloniferous; aromatic. **Leaf blade** 40–300 mm; ligule a fringed membrane, hairs shorter than membrane. **Inflorescence** digitate or subdigitate, of 3–20 racemes; pedicels and internodes longitudinally grooved with a translucent median line; pedicel hairs 1–3 mm long. **Sessile spikelet** 4.5–5.0 mm long; dorsiventrally compressed; glumes ± equal, dissimilar; lower glume acute to subacute, flattened on back, 2-keeled, with 1–3 pits in middle; upper glume distinctly keeled. **Florets** 2; lower floret sterile, reduced to hyaline lemma, awnless; upper floret bisexual, lemma glabrous, entire; awn glabrous, geniculate, longer than body of lemma; callus short, rounded, hairs 1–3 mm long; anther 1.5–2.0 mm long. **Pedicelled spikelet** up to 5.0 mm long; sterile or male, awnless. **Flowering time** Oct.–June. Grassland and hillsides, often in overgrazed places; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Drakensberg Grassland (Mount Frere SE to Port St Johns, S to Adelaide and Grahamstown District).

radicans (Lehm.) A.Camus

Smelly grass; *stinkgras*, *vlestinkgras* (A)

Perennial, 300–700 mm high, often stoloniferous; aromatic. **Leaf blade** 60–200 × 2–6 mm; ligule a fringed membrane, hairs shorter than membrane. **Inflorescence** digitate or subdigitate, of 5–16 racemes; pedicels and internodes longitudinally grooved with a translucent median line. **Sessile spikelet** 2.5–5.0 mm long, dorsiventrally compressed; lower glume acute to subacute, flattened on back, 2-keeled, sparsely hairy, without pits; upper glume distinctly keeled. **Florets** 2; lower floret sterile, reduced to a hyaline lemma, awnless; upper floret bisexual, lemma glabrous, entire; awn glabrous, geniculate, longer than body of lemma; callus short, rounded, hairy; anther 1.0–1.5 mm long. **Pedicelled spikelet** 3.0–3.5 mm long; sterile or male, awnless. **Flowering time** Oct.–Apr. Rocky hillsides; Upper Karoo, Lower Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland (Graaff-Reinet E to Stockenström District and Somerset East).

BRACHIARIA (Trin.) Griseb.

Species ± 100, tropics, mainly Old World; 21 in sthn Afr., widespread.

***advena** Vickery

Clock plants; *vingerkanna* (A); *motabo* (SS); *lemelanthufe* (T); *ibohlololo*, *umuthi wenhlahla* (X); *umjuluka*, *unwele lwentaba* (Z)

Very loosely tufted, perennial or annual, 200–800 mm high; occasionally stoloniferous; culms erect, sometimes straggly or decumbent and rooting at nodes. **Leaf blade** 50–130 × 2–6 mm; ligule a fringe of hairs. **Inflorescence** a number of secund racemes, 10–30 mm long, scattered up stout central axis; spikelets arranged in 2 rows, covering whole length of rachis; pedicels of equal lengths. **Spikelet** 3.0–3.8 mm long, dorsiventrally compressed, distinctly flattened on one side, sparsely hairy, hairs short; glumes unequal, awnless; lower glume $^1/_4$ as long as spikelet, acute or obtuse, not separated from upper glume by an internode, 1-nerved or unobtrusively nerved. **Florets** 2; lower floret male or sterile, lemma similar to upper glume, acute or rounded, mucronate, 5–7-nerved; upper floret bisexual, lemma indurated, narrow obovate-oblong, entire, minutely papillose-rugose, margins only clasping edges of palea; anther 0.7–1.3 mm long. **Flowering time** Dec.–Mar. Usually in damp, disturbed areas on black clayey soil, often in maize or sunflower fields; Drakensberg Grassland, Sub-Escarpment Grassland (Thaba Chitja District S to Qacha's Neck).

arrecta (T.Durand & Schinz) Stent

Phetola (SS)

Tufted perennial, 0.5–1.3 m high; usually a hygrophyte; stoloniferous; culms prostrate and rooting at nodes. **Leaf blade** 50–250 × 5–15 mm; ligule a fringe of hairs. **Inflorescence** of secund racemes, 10–50 mm long, scattered up central axis; rachis 1.0–1.9 mm wide, flat and ribbon-like, broadly winged, margins scabrid; spikelets arranged in 2 rows; pedicels of equal lengths. **Spikelets** 3.0–4.3 mm long, dorsiventrally compressed, glabrous; lower glume less than $^1/_2$ as long as spikelet, not separated from upper glume by an internode, 1-nerved. **Florets** 2; lower floret male or sterile, lemma acute or rounded, 5–7-nerved; upper floret bisexual, lemma obtuse, indurated, with ± obscure mucro, rugulose, entire, margins only clasping edges of palea; anther 1.1–2.3 mm long. **Flowering time** Dec.–June. In shallow water of river floodplains or vleis, extending to areas around rivers and lakes, often in shade and usually on wet soils; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve S to King William's Town, Bathurst District and Kraggakamma).

chusqueoides (Hack.) Clayton

Tufted annual, 300–750 mm high; scandent or creeping. **Leaf blade** 30–120 × 3–10 mm, cordate and pseudopetiolate at base; ligule an unfringed membrane. **Inflorescence** usually of < 5 racemes, 15–70 mm long, lax and widely spaced up central axis; rachis triquetrous, pubescent; spikelets more than their own length apart, borne loosely, singly, in pairs or the lower on short branchlets; pedicels of unequal lengths. **Spikelets** 3–5 mm long, dorsiventrally compressed, glabrous; lower glume $^1/_3$–$^1/_2$ as long as spikelet, separated from upper glume by a short internode, 3-nerved. **Florets** 2; lower floret male or sterile; upper floret bisexual, lemma acute, firmer than glumes, indurated, rugose, entire, margins only clasping edges of palea; anther 2.1–2.6 mm long. **Flowering time** Oct.–Apr. Forest undergrowth in disturbed or more open places, frequently

in coastal dune forest, on deep sand or humus-rich soil; Indigenous Forests, Drakensberg Grassland, Indian Ocean Coastal Belt (along coast from Kokstad to Alexandria District).

eruciformis (Sm.) Griseb.

Sweet signal grass; *litjiesrysgras* (A); *khalane* (SS); *umfisane* (Z)

Loosely tufted annual, 0.1–0.5(–1.0) m high; culms erect, decumbent, sometimes straggly or procumbent and rooting at nodes. **Leaf blade** 20–150 × 2–6 mm; ligule a fringe of hairs. **Inflorescence** of secund racemes, 10–25(–30) mm long, scattered up central axis; rachis < 1 mm wide, solid, triquetrous or crescentic, sometimes narrowly winged; spikelets covering whole length of rachis and arranged in 2 rows; pedicels of equal lengths. **Spikelet** 1.7–2.7 mm long, dorsiventrally compressed, sparsely hairy (rarely glabrous), hairs short; lower glume up to $^{1}/_{5}$ as long as spikelet, not separated from upper glume by an internode, 1-nerved or nerveless. **Florets** 2; lower floret male or sterile, lemma acute or rounded, without mucro; upper floret bisexual, lemma firmer than glumes, indurated, readily deciduous, obtuse, smooth, shiny, entire, margins only clasping edges of palea; palea rounded at apex; anther 0.9–1.1 mm long. **Flowering time** Nov.–May. In moist places on clay or black turf and in disturbed areas; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Aliwal North E to Bizana, S to Alice and Queenstown District).

marlothii (Hack.) Stent

Small signal grass; *kleinsinjaalgras* (A); *phetola* (SS)

Tufted, usually annual, 70–500 mm high; mat-forming, stoloniferous; culms decumbent and rooting from lower nodes. **Leaf blade** 10–140 × 1–5 mm; ligule a fringe of hairs. **Inflorescence** of secund racemes, 25–50 mm long, scattered up central axis; rachis triquetrous; spikelets arranged in 4 rows; pedicels of equal lengths. **Spikelet** 2.0–2.5 mm long, dorsiventrally compressed, sparsely hairy on nerves, upper glume and lower lemma with very distinct tufts of erect, stiff hairs in upper $^{1}/_{2}$ on either side below apex; lower glume ± $^{1}/_{2}$ as long as spikelet, not separated from upper glume by an internode, 1-nerved or nerveless. **Florets** 2; lower floret male or sterile, lemma minutely mucronate or mucro absent; upper floret bisexual, lemma firmer than glumes, indurated, white, finely rugulose, apex a blunt point, slightly hooded, margins only clasping edges of palea; anther 0.9–2.2 mm long. **Flowering time** Dec.–May. Most frequent in disturbed or heavily grazed areas on shallow sand or loam near dams or in seasonally moist spots; Dry Highveld Grassland, Upper Karoo (Aliwal North S to Middelburg District).

serrata (Thunb.) Stapf

Red top grass, velvet signal; *rooisinjaalgras* (A)

Densely or loosely tufted, rhizomatous perennial, 300–750 mm high; basal sheath silky hairy. **Leaves** a dense tuft at base or cauline, leaving base bare. **Leaf blade** 50–250 × 2–10 mm, margins ± cartilaginous, white and usually crinkled; ligule a fringe of hairs. **Inflorescence** of secund racemes, 10–25 mm long, scattered up central axis; rachis < 1 mm wide, solid, triquetrous or crescentic, sometimes narrowly winged; spikelets covering whole length of rachis, arranged in 2 rows; pedicels of equal lengths. **Spikelets** 2.3–4.5 mm long, dorsiventrally compressed, stipe absent; covered in dense, long, silky, white or purple hairs concentrated at apex; lower glume $^{1}/_{2}$ as long as spikelet, not separated from upper glume by an internode, 3-nerved, turned towards rhachis. **Florets** 2; lower floret male or sterile, lemma acute or rounded, with a short stout mucro or awn

up to 1.5 mm long, palea similar; upper floret bisexual, lemma firmer than glumes, indurated, ovate, striate, acute to awned, rugulose, entire, margins only clasping edges of palea; anther 1.0–2.5 mm long. **Flowering time** Oct.–May. On shallow sandy soil, usually in rocky areas or on mountain slopes, but extending into open bush, grassland and occasionally to vlei edges; widespread in all bioregions, except Upper Karoo, Lower Karoo, Rainshadow Valley Karoo and Indian Ocean Coastal Belt (Kokstad District S to Sterkstroom District and Uniondale).

BRACHYPODIUM P.Beauv.

Species 16, temperate Eurasian, tropical mountains, Mexico to Bolivia; 3 in sthn Afr., LIM, NW, M, S, FS, KZN, L, NC, WC, EC.

bolusii Stapf

Densely tufted perennial, 150–450(–700) mm high; leaves basal. **Leaf blade** 20–70 (–170) × 8 mm, lanceolate, erect, rigid, rough; ligule an unfringed or fringed membrane. **Inflorescence** of racemes up to 55 mm long, straight, with 1–4 spikelets crowded near apex. **Spikelets** up to 30 × 2–8 mm, slightly laterally compressed; glumes unequal, shorter than spikelet, 5–9-nerved. **Florets** 5–22, bisexual; lemma entire, rounded on back, glabrous, 5–7-nerved, awn 4–8 mm long, straight; anther 2.5–3.0 mm long. **Flowering time** Nov.–Mar. In mountain grassland; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland (Qacha's Neck S to Graaff-Reinet).

flexum Nees

Katstertgras (A)

Perennial, 300–900 mm high; leaves mainly cauline; culms straggling, slender, wiry, sometimes decumbent and rooting at lower nodes. **Leaf blade** 50–170 × 2–8 mm, linear, rough; ligule an unfringed or fringed membrane. **Inflorescence** of racemes, 60–120 mm long on central axis, usually flexuous, of (3–)5–9 spikelets spread along rachis. **Spikelets** 12–44 × 1.5–4.0 mm, slightly laterally compressed; glumes unequal, shorter than spikelet, 5–9-nerved. **Florets** 5–22, bisexual; lemma entire, rounded on back, glabrous, 5–7-nerved, awn 4–8 mm long, straight; anther 2.0–2.5 mm long. **Flowering time** Oct.–Apr. In moist shady places of forests, usually near streams, occasionally in thickets and bushland; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Seymour E to Baziya Mts southwards, from Stockenström to Komga, Kentani, Kraggakamma, Port Elizabeth and Humansdorp).

*BRIZA L.

Species ± 20, temperate Eurasia, South America; 3 naturalised in sthn Afr., widespread, except N, B.

maxima L.

Big quaking grass; *grootbewertjiegras* (A)

Loosely tufted annual, 0.1–0.6(–1.0) m high; culms erect, simple or branched. **Leaf blade** 70–250 × 3–8 mm; ligule an unfringed membrane. **Inflorescence** an open panicle, appearing secund, branches single or in fascicles of 2–4; spikelets 3–12, but solitary at apices of slender branches, prettily nodding. **Spikelet** 8–25 × 8–15 mm, longer than wide, awnless; glumes ± equal, shorter than spikelet, green, brown or purple, 5–9-nerved. **Florets** 7–20, bisexual; lemma obtuse, broad, cordate at base, entire,

straw-coloured, occasionally variegated with purple, sometimes minutely papillose and hairy; anther 1.0–1.5 mm long. **Flowering time** July–Dec. **Caryopsis** 2.5 × 2.0 mm. Weed, mostly on well-drained soils in disturbed areas, especially on roadsides or on margins of irrigated lands; Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Port St Johns S to Cradock District, Amatole Mts, Walmer, Port Alfred and Humansdorp).

minor L.

Little quaking grass; *kleinbewertjiegras* (A)

Loosely tufted annual, 100–600(–700) mm high; culms soft with dark nodes, often branched near base. **Leaf blade** 40–220 × 3–9 mm; ligule an unfringed membrane. **Inflorescence** an open panicle, spreading, branches single or in fascicles of 2–4; spikelets > 20. **Spikelet** 3–5 × 3–6 mm, almost as wide as or slightly wider than length, awnless; glumes ± equal, shorter than spikelet, 3–5-nerved. **Florets** 4–8; lemmas obtuse, broad, cordate at base, entire, green, usually tinged with purple, margins distinctly lighter in colour, back papillose, glabrous; anther 0.3–0.5 mm long. **Flowering time** Sept.–Dec. **Caryopsis** 0.6 × 0.5 mm. Weed on roadsides, usually found in moist shady and disturbed places around streams and vleis on loam or clayey soils; Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Kentani District S to Uitenhage, Port Elizabeth, Kowie and Humansdorp District).

subaristatum Lam.

Tufted perennial, 300–600 mm high; basal sheaths persist as fibres. **Leaf blade** 80–200 × 1–2 mm, rolled; ligule an unfringed membrane. **Inflorescence** a contracted panicle. **Spikelet** 4.0–5.0 × 2.0–3.5 mm, ovoid; glumes ± equal, shorter than spikelet, mucronate, 5–7-nerved. **Florets** 6–10; lemma acuminate, lobed, minutely mucronate, cordate at base. **Flowering time** Oct.–Dec. **Caryopsis** 0.5 × 0.5 mm. In moist cultivated areas and on roadsides; Albany Thicket (Albany District).

BROMUS L.

Species ± 150, mainly north temperate areas, tropical mountains, South America; ± 15 in sthn Afr., widespread.

Annual or biennial

***catharticus** Vahl

Rescue grass; *reddingsgras* (A)

Tufted annual or biennial, 0.15–1.00 mm high. **Leaf blade** up to 400 × 8 mm; ligule an unfringed membrane. **Inflorescence** an open panicle, flexuous; pedicels longer than some spikelets. **Spikelet** 20–35 × 5–8 mm, strongly laterally compressed; glumes unequal, shorter than spikelet; lower glume 3–7-nerved; upper glume 5–9-nerved. **Florets** 6–many; lemma 15–25 mm long, acuminate, entire or minutely lobed, lobes < 0.5 mm long, 9–11-nerved, keeled, awnless or awn 0.5–5.0 mm long; palea much shorter than lemma, keels ciliate, glabrous in between; ovary with a conspicuous hairy appendage at apex; anther 0.5–1.0 mm long. **Flowering time** Oct.–Apr. Usually in moist to wet places, often in shade; in disturbed and natural veld; common in all bioregions, except Mesic Highveld Grassland and Indian Ocean Coastal Belt (widespread in EC).

*commutatus Schrad.

Hairy chess

Tufted annual or biennial, 150–900 mm high. **Leaf blade** 60–150 × 3–6 mm; ligule an unfringed membrane. **Inflorescence** an open or contracted panicle, 60–160 × 30–60 mm, eventually dropping to one side; pedicels, at least some, as long as to longer than spikelets; culm glabrous below inflorescences. **Spikelet** 10–25 × 4–7 mm, almost linear at maturity, slightly laterally compressed; glumes unequal, shorter than spikelet; lower glume 3–5-nerved; upper glume 5–9-nerved. **Florets** 4–many; lemma 7–9 mm long, back rounded, obtuse, apex lobed, awn 3–8 mm long, inserted just below apex, palea much shorter than lemma, keels ciliate; ovary with a conspicuous hairy appendage at apex; anther 0.5–1.7 mm long. **Flowering time** Sept.–Dec. In disturbed, wet places; Dry Highveld Grassland, Upper Karoo (Graaff-Reinet District E to Middelburg, Molteno and Buffelsfontein).

*diandrus Roth

Ripgut brome; *langnaaldbromus* (A)

Loosely tufted annual, 0.3–1.1 m high; basal sheaths split. **Leaf blade** 50–400 × 3–8 mm, hairy; ligule an unfringed membrane. **Inflorescence** usually an open panicle; culm hairy below inflorescence; pedicels glabrous, scabrid or villous. **Spikelet** 30–90 × 3–8 mm (including awns), wedge-shaped, moderately laterally compressed; glumes unequal, shorter than spikelet; lower glume 1-nerved, upper 3-nerved. **Florets** 5–many; lemma 12–22 mm long, back rounded, apex acute, distinctly lobed; awn 30–70 mm long, stiff, straight; palea keels ciliate; ovary with a conspicuous hairy appendage at apex; anther 0.8–1.6 mm long. **Flowering time** Sept.–Jan., occasionally in Mar. In disturbed and weedy places; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Middelburg District E to Somerset East and Seymour, S to Port Elizabeth, Jeffreys Bay and Bushman's River).

*hordeaceus L.

Tufted annual or biennial, up to 600 mm high; culms decumbent to erect. **Leaf blade** 50–150 × 3–4 mm, somewhat glaucous, flat, soft; ligule an unfringed membrane. **Inflorescence** a panicle up to 50 mm long, dense, stiffly erect; culms glabrous or minutely hairy below inflorescences; spikelets few. **Spikelet** 7–22 mm long, slightly laterally compressed, densely hairy to glabrous; glumes unequal, shorter than spikelet; lower glume 3–5-nerved; upper glume 5–7-nerved. **Florets** 5–many; lemma back rounded, lobed, awn 3–10 mm long, fine, not flattened, somewhat spreading and twisted, erect to bent; ovary with a conspicuous hairy appendage at apex; anther 0.5–1.0 mm long. **Flowering time** Oct.–Feb. Cultivated lands, embankments and other disturbed areas; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket (Naude's Neck S to Swartberg District and Somerset East).

pectinatus Thunb.

Hawergras (A)

Tufted annual, 100–800 mm high. **Leaf blade** 50–300 × 2–8 mm; sheaths hairy; ligule an unfringed membrane. **Inflorescence** a panicle, open, nodding; culms glabrous below inflorescences; pedicels as long as to longer than spikelets. **Spikelet** 10–30 × 3–6 mm, laterally compressed, wedge-shaped at maturity; glumes unequal, shorter than spikelet; lower glume 1–3-nerved; upper glume 3–7-nerved. **Florets** 5–many; lemma back, round-

ed, apex acute to subacuminate, hyaline; awn 6–18 mm long, longer than lemma, straight; palea ciliate on keels, glabrous between keels; ovary with a conspicuous hairy appendage at apex; anther 0.5(–1.5) mm long. **Flowering time** Aug.–Feb. In disturbed and eroded areas; Upper Karoo, Lower Karoo, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Burgersdorp District SE to Fort Beaufort District, S to Willowmore District, Alexandria District and Port Elizabeth).

*rigidus Roth

Ripgut brome

Loosely tufted annual, 400–700 mm high. **Leaf blade** 50–150 × 3–7 mm; ligule an unfringed membrane. **Inflorescence** a contracted panicle; pedicels hispid to villous. **Spikelet** 15–25 × 2–6 mm (excluding awns); glumes unequal, shorter than spikelet; lower glume 1-nerved, upper 3-nerved. **Florets** 4–many; lemma 20–25 mm long, apex acute, distinctly lobed, awn 30–50 mm long; palea ciliate on and rarely hairy between keels; ovary with a conspicuous hairy appendage at apex; anther 0.5–0.7 mm long. **Flowering time** Sept., Oct. Disturbed and weedy places; Albany Thicket, Eastern Fynbos-Renosterveld (Willowmore District E to Paterson District).

Perennial

firmior (Nees) Stapf

Tufted perennial, 0.5–1.5 m high; culms sparsely to densely pilose; old leaf sheaths breaking into fibres or not, firm, erect. **Leaf blade** 200–400 × 4–8 mm, flat, glabrous to sparsely or densely hairy, smooth to rough; ligule an unfringed membrane. **Inflorescence** an open panicle; pedicels sparsely to densely hairy, longer than spikelets. **Spikelet** 15–45 × 4–8 mm (including awns), green to purple; glumes unequal, hairy, shorter than spikelet; lower glume 1–3-nerved, upper 3–5-nerved. **Florets** 3–many; lemma 10–20 mm long, villous, awn 3–12 mm long; palea ciliate on keel, sparsely to densely pilose between keels; ovary with a conspicuous hairy appendage at apex; anther 4–8 mm long. **Flowering time** Nov.–Mar. On moist grassy slopes of Drakensberg, alt high; Drakensberg Grassland, Indigenous Forests (Witteberg Mts District S to Keiskammahoek).

leptoclados Nees

Mountain brome grass

Loosely tufted perennial, (0.2–)0.5–1.5 m high; old leaf sheaths flimsy, curly, not fibrous; culm geniculate or weak and scandent. **Leaf blade** 100–300 × 5–13 mm, hairy or rarely glabrous; sheaths hispid; ligule an unfringed membrane. **Inflorescence** an open and nodding to contracted panicle; pedicels scabrid; culms glabrous below inflorescence. **Spikelet** 10–30 × 2–6 mm, narrowly oblong to wedge-shaped; glumes unequal, shorter than spikelet; awn up to 5 mm long; lower glume 1–3-nerved; upper 3–5-nerved. **Florets** 5–many; lemma entire or lobed, margins hyaline, hairy, awned below apex; awn 2–12 mm long; palea ciliate on keels, glabrous between keels; ovary with a conspicuous hairy appendage at apex; anther 2.2–3.0 mm long. **Flowering time** Oct.–Feb. Usually in moist, shady places along rivers and streams; Upper Karoo, Drakensberg Grassland, Lower Karoo, Dry Highveld Grassland, Eastern Fynbos-Renosterveld (Middelburg and Wodehouse Districts, S from Aberdeen to Somerset East).

speciosus Nees

Purple brome; *blousaadgras* (A)

Tufted perennial, 300–600 mm high; old leaf sheaths firm, erect, fibrous. **Leaf blade** 80–200 × 2–4 mm; ligule an unfringed membrane. **Inflorescence** an open panicle,

scabrid; pedicels glabrous rarely sparsely scabrid, shorter to almost as long as spikelets; culms glabrous below inflorescence. **Spikelet** 15–50 × 3–6 mm (including awns), linear, purplish; glumes unequal, shorter than spikelet; lower glume 1–3-nerved; upper glume 3–5-nerved. **Florets** 4–many; lemma lobed or entire; awn 3–6 mm long; palea ciliate on keels, minutely pilose between keels; anther 4–7 mm long. **Flowering time** Dec.–Mar. On steep, moist mountain slopes, occasionally in shade and along streams; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Eastern Fynbos-Renosterveld (Barkly East District E to Mount Fletcher District and S to Somerset East, Amatole Mts, Keiskammahoek District and Grahamstown).

CALAMAGROSTIS Adans.

Species ± 270, temperate regions of both hemispheres; 1 in sthn Afr., NW, G, EC.

epigeios (L.) Roth

Tufted, erect perennial, 0.6–1.2 m high; rhizomes creeping. **Leaf blade** up to 450 × 10 mm; ligule an unfringed membrane, sometimes erose. **Inflorescence** a narrow, contracted, dense panicle, up to 250 mm long, green or tinged with purple, becoming light brown. **Spikelet** 5.5–8.0 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, longer than spikelet. **Floret** 1, bisexual; lemma glabrous, awned from back well below apex, awn 3–4 mm long, fine and straight; callus with conspicuous, long, white hairs that are longer than lemma. **Flowering time** Jan.–May. Moist areas in upland grasslands, vleis, pans and rivers, as well as disturbed places; Mesic Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Witteberge Mts S to Tarka District and Tsitsikamma).

CAPEOCHLOA H.P.Linder & N.P.Barker

Species 3, restricted to Cape Floristic Region, WC, EC.

arundinacea (P.J.Bergius) N.P.Barker & H.P.Linder

[*Andropogon bergii* Roem & Schult., *Danthonia arundinacea* (P.J.Bergius) Schweick., *non Danthonia arundinacea* Steud., *Merxmuellera arundinacea* (P.J.Bergius) Conert.]

Densely tufted, reed-like perennial, 1.0–1.2 m high. **Leaf blade** up to 600 × 4–7 mm; ligule a fringe of hairs. **Inflorescence** a narrow, densely contracted panicle, 120–250 mm long. **Spikelets** (9.0–)13.5–16.5 × 9–11 mm, laterally compressed; glumes 10–15 mm long, 1-nerved, usually pubescent. **Florets** (2)3 or 4; lemma 6–8 mm long, completely covered with white hairs, lobes shortly awned; central awn 9–13 mm long, twisted at base. **Flowering time** Aug.–Nov. Xeric areas on N-facing slopes of the Cape fold mountains; Albany Thicket, Eastern Fynbos-Renosterveld (Willowmore to Uitenhage District).

cincta (Nees) N.P.Barker & H.P. Linder

[*Danthonia cincta* Nees, *Merxmuellera cincta* (Nees) Conert]

Densely tufted, reed-like perennial, up to 2 m high. **Leaf blade** 1 000 (or more) × 5–15 mm; ligule a fringe of hairs. **Inflorescence** a dense, contracted panicle, 200–400 mm long. **Spikelets** up to 14 mm long, laterally compressed; glumes 10–13 (–18) mm long, 1-nerved. **Florets** 3 or 4; lemma 7–8 mm long, a tufted row of white hairs 5–7(–12) mm long across middle; lobes 3.5–4.0 mm long, free from central awn, awnless; central awn 5–14 mm long, sometimes longer, twisted at base. **Flowering time**

Sept.–Feb. Moist areas such as seeps and streambanks on S-facing mountain slopes; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Kei River Mouth S to Port Elizabeth, Grahamstown, Kowie, and Humansdorp District).

CATALEPIS Stapf & Stent

Species 1, sthn Afr., M, FS, KZN, L, EC.

gracilis Stapf & Stent

Cause grass; *cause gras* (A)

Tufted, rhizomatous, creeping perennial, 100–400 mm high. **Leaf blade** 10–150 × 1–2 mm, fine, curly with age; ligule a fringe of hairs. **Inflorescence** a spike-like panicle, 15–50 mm long; spikelets solitary, sessile or subsessile, 4 or 5 grouped on short lateral branches on central axis. **Spikelet** 4–5 mm long, laterally compressed, awnless; glumes unequal, lower glume reduced to a small scale; upper glume longer than spikelet, 1-nerved. **Floret** 1, lemma 3-nerved, hairs in tufts or a line of hairs on either side of keel, entire; anther 1.5–2.0 mm long. **Flowering time** Jan.–Mar. Sometimes in shallow sandy soil, but more often on black clay in vleis; weed on roadsides; Drakensberg Grassland (Matatiele S to Dordrecht District).

***CATAPODIUM** Link

Species 2, Europe and North Africa to Iran, mainly Mediterranean region, introduced elsewhere; 1 naturalised in sthn Afr., coastal districts of WC and EC.

rigidum (L.) C.E.Hubb.

Fern grass; *steifgras* (A)

Slender, tufted annual, 100–250(–450) mm high. **Leaf blade** 30–150 × 1.0–2.0 (–3.5) mm; ligule an unfringed membrane. **Inflorescence** a narrow panicle, 50–100 mm long, branches stiff, alternate, ± secund, bearing 2–5 spikelets; pedicels trigonous. **Spikelets** 5–7(–10) mm long, laterally compressed, awnless; glumes ± equal, shorter than spikelet; lower glume 1–3-nerved; upper glume 3–5-nerved. **Florets** 6–10, widely spaced on a fragile rachilla; lemma entire, rounded on back at least at base; anther 0.3–0.5 mm long. **Flowering time** Oct.–Dec. Mostly on wasteland in parks, gardens and disturbed places, in moist shady areas, also in rock crevices amongst other Fynbos species; Albany Thicket (Port Elizabeth District).

CENCHRUS L.

Species 22, tropical and warm temperate; 4 (3 naturalised) in sthn Afr., widespread.

ciliaris L.

Foxtail grass, buffalo grass; *bloubuffelsgras*, *buffelsgras* (A); *modula-tjava* (SS)

Tufted perennial, 0.6–1.0 m high. **Leaf blade** 100–250 × 4–8 mm. **Inflorescence** a bristly false spike, 40–120 mm long, purple or straw-coloured; all bristles joined at base below spikelet cluster to form a small inconspicuous disc, bristles mostly 5–10 mm long; outer bristles slender, scabrid; inner bristles slender, plumose. **Spikelet** 4–5 × 3 mm, dorsiventrally compressed; glumes unequal; lower glume 1-nerved or nerveless; upper glume 1–3-nerved, minutely awned. **Florets** 2; lower floret male or sterile, lemma usually 5-nerved, minutely awned; upper floret bisexual, lemma similar to lower lemma, not indurated, slightly thicker in texture; anther 1.5–2.7 mm long. **Flowering time** Aug.–Apr. Common in hot dry areas, especially on sandy soils; Upper Karoo, Sub-Escarp-

ment Grassland, Albany Thicket, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Middelburg E to Cofimvaba, S to Graaff-Reinet, Uitenhage and Albany District).

*incertus M.A.Curtis

Burr grass, sandburr grass; *dubbeltjiegras*, *sandklitsgras* (A)

Tufted annual, 100–400 mm high. **Leaf blade** 60–120 × 3–4 mm. **Inflorescence** open or compact, 20–80 mm long; burrs ovoid to globose with longitudinal clefts on two sides and 8–40 spines of variable shapes and sizes; outer spines connate, spreading in all directions; inner spines have a plumose inner surface and are more regular; bristles absent. **Spikelet** 5–7 × 3–4 mm, dorsiventrally compressed; upper lemma thinly coriaceous, not indurated; anther 1.3–2.5 mm long. **Flowering time** Jan.–Mar. Weed, mainly in sandy soil; Rainshadow Valley Karoo (Steytlerville District).

CHAETOBROMUS Nees

Species 1, sthn Afr., N, NC, WC, EC.

involucratus (Schrad.) Nees

Tufted perennial, up to 600 mm high; rhizomes contracted, usually vertical. **Leaf blade** up to 270 × 4(5) mm, rolled or tightly folded, sometimes expanded; glabrous or sparsely hairy, hairs not distinctly appressed to leaf sheath. **Inflorescence** an open to contracted panicle, sometimes with only a few spikelets; spikelets solitary, pedicelled; pedicels articulated some distance below spikelet, long-hairy at articulation. **Spikelet** 9–21 mm long (including awns), laterally compressed; glumes ± equal, as long as to longer than spikelet, 3–11-nerved. **Florets** 2–4; lemma back glabrous or sparsely to moderately hairy; lobes awned, awn 2.9–10.5 mm long; central awn 5.6–24.0 mm long, geniculate, lower part twisted; anther 3.7–4.7 mm long. **Flowering time** Sept.–Nov. Sandy areas and rocky hillsides in low rainfall areas. Mostly inland but sometimes on rocky, especially granitic outcrops along coast; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Willowmore District).

CHLORIS Sw.

Species ± 55, tropical and warm temperate regions; 8 in sthn Afr., widespread.

gayana Kunth

Rhodes grass, hunyani grass; *bruinvingergras* (A); *inyankomo* (Z)

Stoloniferous, tufted perennial, 0.5–1.2 m high; basal leaf sheaths strongly keeled. **Leaf blade** tapering to a fine point; ligule a short, fringed membrane or fringe of hairs. **Inflorescence** digitate, of 7–20 racemes, 40–150 mm long, green, greenish brown or light brown. **Spikelets** 3–5 mm long, laterally compressed; glumes unequal, membranous, keeled, 1-nerved. **Florets** 3 or 4; lowest lemma lanceolate-ovate, sparsely to densely hairy on margins and keel, hair length increasing upwards on margins, sometimes margins hairy only near apex, apical hairs 0.5–1.0 mm long, awn 3.4–7.0 mm long, callus rounded; second lemma lanceolate, glabrous or rarely hairy on margins and keel, awn 1.5–5.5 mm long; third lemma reduced to an awnless, glabrous, clavate scale, occasionally similar to second, but then with a rudimentary fourth floret; anther 1.0–1.5 mm long. **Flowering time** Nov.–May. Riverine woodland to open grasslands on moist soils, occasionally on well-drained soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Indigenous Forests, Albany Thicket (Mount Fletcher District E to Kokstad District, S from Port Edward to Alice District and Alexandria Forest Reserve).

pycnothrix Trin.

Spider web chloris, orchard grass; *spinnerakchloris* (A)

Usually annual, sometimes perennial, 150–500 mm high, tufted; basal sheaths keeled. **Leaf blade** blunt, sparsely hairy, apex rounded; ligule a short, fringed membrane or fringe of hairs. **Inflorescence** digitate to subdigitate, of 4–9 racemes, delicate, narrow, usually purple, horizontally spreading at first, straw-coloured and curving inwards later. **Spikelets** 2–3 mm long, laterally compressed; glumes unequal, membranous, keeled, 1-nerved. **Florets** 2; lowest lemma narrowly elliptic, glabrous but scabrid, apex acuminate to acute, awn 11–27 mm long, callus rounded; second lemma reduced to a scale 0.1–1.0 mm long, awnless or with awn up to 8 mm long; anther 0.4–0.5 mm long. **Flowering time** Sept.–May. In cultivated lands, weed in disturbed areas and on roadsides in shallow stony soils; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Mkambati Nature Reserve and along coast to Nqabara River).

virgata Sw.

Feathered chloris, blue grass; *klossiegras* (A); *sehabane* (SS); *umadolwana* (X)

Usually a tufted annual or sometimes perennial, 300–750 mm high; erect or geniculate and rooting at nodes; lower sheaths strongly keeled, mostly flabellate. **Leaf blade** tapering to a fine point at apex, sparsely hairy; upper leaf sheath inflated; ligule a short, fringed membrane or fringe of hairs. **Inflorescence** digitate, of 7–15 racemes, contracted, erect, green to straw-coloured, silky feathery. **Spikelet** 3.0–4.5 mm long, laterally compressed; glumes unequal, membranous, keeled, 1-nerved. **Florets** (2)3; lowest lemma obliquely obovate, hairs along margins, keel and flanks, apex with a crown of spreading hairs 1.5–4.0 mm long, awn 5–15 mm long; second lemma, oblong, glabrous, awn 5–12 mm long; third lemma an awnless, clavate scale 0.5–1.2 mm long; anther 0.4–0.5 mm long. **Flowering time** Dec.–June. Weed, in disturbed places on a variety of soil types, often moist places; common in all bioregions, except Rainshadow Valley Karoo, Lower Karoo, Eastern Fynbos-Renosterveld and Indigenous Forests (Oviston Nature Reserve E to Matatiele District, S to Nqabara River and Uitenhage District).

COELORACHIS Brongn.

Species ± 21, mainly tropical; 1 in sthn Afr., KZN, EC.

capensis Stapf

Tufted perennial, up to 700 mm high. **Leaf blade** 3–8 mm wide; ligule a fringed membrane. **Inflorescence** a narrowly cylindrical, spike-like raceme, culm-like, with sunken spikelets; spikelets paired: one sessile, the other pedicelled; pedicels free, distinct. **Sessile spikelet** 4.5–5.0 mm long, dorsiventrally compressed, awnless; glumes ± equal; lower glume rounded on back, winged, sculptured. **Florets** 2; lower floret sterile; upper floret bisexual. **Pedicellate spikelet** smaller, sometimes much reduced, awnless. **Flowering time** Sept.–Mar. Grassveld; Drakensberg Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Mkambati Nature Reserve, Amatole Mts, Stutterheim District and King William's Town).

***COIX** L.

Species ± 5, tropical Asia; 1 sporadically in sthn Afr., M, KZN, EC, as an escape from cultivation.

Cultivated for the beads, which are strung into necklaces.

lacryma-jobi L.

Job's tears; *jobskrale* (A)

Annual, 0.9–1.2 m high. **Leaf blade** 100–500 × 2–7 mm. **Inflorescence** a leafy false panicle, branches each subtended by a smooth hard, whitish to ivory-like bead or cupule enclosing female spikelet; male spikelet on a tassel exserted from bead. **Spikelets** unisexual; female spikelet up to 5 mm long; male spikelet 7–10 mm long; anther of male spikelet up to 4.5 mm long. **Flowering time** Aug.–Apr. Damp places. Ruderal weed and as an escape from cultivation; Albany Thicket (East London District).

*CORTADERIA Stapf

Species 24, mainly South America, also in New Zealand and New Guinea; 2 cultivated and as escapes in sthn Afr., G, M, KZN, WC, EC.

selloana (Schult. & Schult.f.) Asch. & Graebn.

Pampas grass; *pampasgras*, *silwergras* (A)

Robust, densely tufted perennial, up to 4 m high; leaves mainly basal, up to $^{2}/_{3}$ culm height. **Leaf blade** 800–1 800 × 8–10 mm, apex setaceous, with margins and midrib cutting edges, usually markedly V-shaped in cross section, glaucous; ligule a fringe of hairs. **Inflorescence** a panicle, 400–600(–700) mm long, not or hardly extending above leaves, silvery-white to pink or mauve, branches stiff; spikelets either female or bisexual (but then functionally male). **Spikelets** 15–17 mm long, laterally compressed, disarticulating above glumes; glumes ± equal, as long as spikelet, glabrous, 1-nerved, nerves colourless; lemma entire, acuminate and awn-like or awned, 3–7-nerved, nerves colourless. **Female spikelet** on pedicel (0.4–)0.8(–1.0) mm long. **Florets** (5)6(7), densely hairy, hairs 7–12 mm long; palea 2.5–3.8 mm long, glabrous; anther minute, < 0.2 mm long. **Bisexual spikelet** on pedicel (0.8–)1.0(–1.3) mm long. **Florets** (1–)3(4); lemma glabrous or sparsely hairy; palea 3.5–5.5 mm long, glabrous; anther (1.5–)3.0–5.0 mm long. **Flowering time** Feb., Apr. Seasonally wet habitats and disturbed areas; origin South America, declared weed (Category 1); Upper Karoo, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Middelburg E to Port St Johns, from Humansdorp to East London).

CTENIUM Panz.

Species ± 20, tropical and subtropical America and Africa, Madagascar; 1 in sthn Afr., LIM, G, M, S, KZN, EC.

concinnum Nees

Sickle grass; *borseltjiegras*, *sekelgras* (A)

Tufted perennial, 400–700 mm high; culms wiry. **Leaf blade** 100–300 × 2–5 mm; ligule a fringed membrane, fringe sometimes minute. **Inflorescence** a secund, spike-like raceme, 50–170 mm long, sickle-shaped to corkscrew-like at maturity, beard of silky hairs at base of raceme; spikelets solitary. **Spikelet** 5–7 mm long, laterally compressed; glumes unequal; lower glume membranous, 1-nerved, tubercles on nerve; upper glume 2-nerved, median nerve with tubercles, with oblique dorsal awn halfway up central nerve, spreading at right angles to glume. **Florets** 3–5, lower 2 florets male or sterile; third floret bisexual, lemma 4.0–4.5 mm long, 3-nerved, densely pubescent on marginal nerves to pilose between nerves, awned from just below apex on median nerve, awn straight, 4.5–5.5 mm long; uppermost floret rudimentary or male; anther up to 2 mm long. **Flowering time**

Dec.–Apr. Open grassland and bushveld on sandy or sometimes moist soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (Paddock District S to Mthatha, Ntsubane Forest and Mkambati River Mouth).

CYMBOPOGON Spreng.

Species ± 40, tropical and subtropical Africa, Asia, Australia; 6 in sthn Afr., widespread.

caesius (Hook. & Arn.) Stapf
[*C. excavatus* (Hochst.) Stapf ex Burtt Davy]

Common turpentine grass; *lemoengras*, *buchugras* (A)

Densely tufted perennial, up to 1.5 m high; lowest culm nodes exposed; fresh shoots aromatic. **Leaf blade** rounded or cordate at base; ligule an unfringed membrane. **Inflorescence** of paired, short racemes ± enclosed by spatheoles, these crowded into a large, complex, leafy, false panicle; raceme bases subequal, flattened; lowermost internode and pedicel swollen and fused together; rachis and pedicel internodes pilose along margins only; spikelets paired: one sessile, the other pedicelled; callus tip inserted into apex of internode and not visible. **Sessile spikelets** 3.5–5.0 mm long; lower glume with a deep narrow groove in lower half, 2-nerved, winged, wing scaberulous on margins. **Florets** 2; lower floret sterile, reduced to a lemma, hyaline, awnless, 1-nerved; upper floret bisexual, lemma awn 10–14(20) mm long, glabrous. **Pedicellate spikelets** 3–5 mm long, lower glume narrowly winged in upper part. **Flowering time** mostly Nov.–May. Open veld and hillsides; Mesic Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Lady Grey District E to Kokstad District, S from Mkambati Nature Reserve, Fincham's Nek, Queenstown and Komga).

dieterleniae Stapf ex E.Phillips

Tufted perennial, 450–850 mm high; lowest node of old culms clothed by leaf sheaths; fresh shoots aromatic. **Leaf blade** usually filiform, setaceous, parallel-sided at base; ligule an unfringed membrane, 5–12 mm long, papery. **Inflorescence** of paired, short racemes, ± enclosed by spatheoles, these crowded into a large, complex, leafy, false panicle; raceme bases subequal, not swollen; rachis internodes and pedicels pilose along margins, glabrous on back; spikelets paired: one sessile, the other pedicelled; callus tip inserted into apex of internode and not visible. **Sessile spikelets** 5–6 mm long; lower glume < 6.5 mm long, nerveless or 2-nerved, winged, shallowly concave to flat. **Florets** 2; lower floret sterile, reduced to a lemma, hyaline, awnless, 1-nerved; upper floret bisexual; awn 11 mm long, glabrous. **Pedicellate spikelets** 5.0–5.5 mm long, lower glume winged in upper part. **Flowering time** Nov.–Apr. Open veld and rocky hillsides; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland (Rhodes District E to Matatiele District southwards to Mountain Zebra National Park).

nardus (L.) Rendle
[*C. validus* (Stapf) Stapf ex Burtt Davy]

Giant turpentine grass; *reuseterpentyngras* (A)

Robust, tufted perennial, 1.2–2.4 m high; fresh shoots aromatic. **Leaf blade**: margins scabrid; ligule an unfringed membrane, (2.5–)3.5–7.5 mm long, erose. **Inflorescence** dense, usually reddish, of paired, short racemes, ± enclosed by spatheoles, these crowded into a large, complex, leafy, false panicle; raceme bases subequal, lowermost internode

and pedicel of raceme filiform and not fused together; internodes and pedicels pilose along margins only, glabrous on back; spikelets paired: one sessile, the other pedicelled; callus tip inserted into apex of internode and not visible. **Sessile spikelet** 4.5–6.0 mm long; lower glume winged, shallowly concave to flat; nerveless or 3-nerved. **Florets** 2; lower floret sterile, reduced to a lemma, hyaline, 1-nerved, awnless; upper floret bisexual, lemma awn 6.5–10.0 mm long, glabrous. **Pedicellate spikelets** 4.0–5.5 mm long, awnless; anther 1.2–3.0 mm long. **Flowering time** all year, but usually in autumn. Rocky hillsides and scrub vegetation, often in damp places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East District E to Kokstad District, S to Mkambati Nature Reserve, Port Elizabeth, Greater Addo Elephant National Park and Uitenhage District).

pospischilli (K.Schum) C.E.Hubb.
[*C. plurinodis* (Stapf) Stapf ex Burtt Davy]

Bitter turpentine grass

Tufted perennial, 0.3–1.0 m high; fresh shoots aromatic. **Leaf blade** often folded, appearing setaceous, mostly confined to base, margins scabrid; ligule an unfringed membrane, 0.5–1.5 mm long. **Inflorescence** reddish, of paired, short racemes, ± enclosed by spatheoles, these crowded into a large, complex, leafy, false panicle; raceme bases subequal; lowermost raceme and internode of raceme filiform and not fused together; internode and pedicel pilose, long-hairy on sides only; spikelets paired: one sessile, the other pedicelled; callus tip inserted into apex of internode and not visible. **Sessile spikelets** 4.5–7.0 mm long; lower glume 2–4-nerved, wingless or with a narrow wing, usually deeply concave on back. **Florets** 2; lower floret sterile, reduced to a lemma, hyaline, 1-nerved, awnless; upper floret bisexual, lemma awn 14–20 mm long, glabrous. **Pedicellate spikelets** 5.5–6.5 mm long, lower glume wingless; anther 3.8–4.2 mm long. **Flowering time** Oct.–May. Grassveld; in all bioregions, except Indigenous Forests (common in EC).

prolixus (Stapf) E.Phillips

Tamboekiegras (A)

Tufted perennial, 0.9–1.2 m high; lowest node of old culms clothed by leaf sheaths; fresh shoots aromatic. **Leaf blade** usually flat; ligule an unfringed membrane 3.0–8.5 mm long. **Inflorescence** of paired, short racemes, ± enclosed by spatheoles, these crowded into a large, complex, leafy, false panicle; raceme bases subequal, flattened, reddish; lowermost racemes and internode of raceme filiform and not fused together, nearly glabrous; internode and pedicel linear, pilose along margins, glabrous on back; spikelets paired: one sessile, the other pedicelled; callus tip inserted into apex of internode and not visible. **Sessile spikelets** 5.0–7.5 mm long; lower glume 3-nerved, shallowly concave to flat, broadly winged, wing 0.3–0.4 mm long. **Florets** 2; lower floret sterile, reduced to a lemma, hyaline, 1-nerved, awnless; upper floret bisexual, lemma less firm than glumes, hyaline, glabrous, rarely entire, incised, 2-lobed, awn 17–18 mm long, glabrous. **Pedicellate spikelets** 5.5–7.0 mm long, awnless; lower glume usually with a narrow wing in upper part. **Flowering time** Oct.–Apr. Rocky hillsides; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Rhodes and Kokstad Districts S to Bedford, Joubertina District, Uitenhage and East London).

CYNODON Rich.

Species ± 10, warm climates of both hemispheres; 8 in sthn Afr., widespread.

Several selected strains used for lawns and sports grounds.

Lemma keel winged

hirsutus Stent

Red quick grass; *kwaggakweek*, *Transvaalkweek* (A)

Perennial, 50–250 mm high; stoloniferous. **Leaf blade** densely hairy; ligule an unfringed to fringed membrane. **Inflorescence** digitate or subdigitate, of 3–5 closely spaced, secund racemes; rachis flattened. **Spikelets** 2.0–2.5 mm long, broadly ovate, strongly laterally compressed; glumes > $^1/_2$ as long as spikelet, ovate-obtuse; lower glume 1-nerved; upper glume usually 3-nerved. **Floret** 1, bisexual, rachilla not produced; lemma keel winged, glabrous or shortly ciliate; palea scabrid on keel; anther 1.0–1.5 mm long. **Flowering time** Oct.–Apr. Well-drained loam soils; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Barkly East to Matatiele District).

incompletus Nees

Karroo quick grass; *soetkweek* (A)

Perennial, 50–300 mm high; stoloniferous. **Leaf blade** glabrous or sparsely hairy; ligule an unfringed membrane. **Inflorescence** digitate or subdigitate, of 3(–6) secund racemes; rachis flattened. **Spikelets** 2.5–3.0 mm long, narrowly ovate, strongly laterally compressed; glumes less than $^1/_2$ as long as spikelet. **Floret** 1, bisexual, rachilla not produced; lemma keel winged, rigidly pubescent; palea glabrous, keel scabrid; anther 1.6–2.0 mm long. **Flowering time** Nov.–May. Sandy loam to turf soils; common in all bioregions, except Dry Highveld Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Eastern Fynbos-Renosterveld (Oviston E to Singisi, S from Kamdeboo to Kei River, Toorwater and Grahamstown).

Lemma keel not winged

*__aethiopicus__ Clayton & Harlan

Star grass; *reuse kweekgras* (A)

Robust perennial, 350–900 mm high; stoloniferous; culm robust, often woody, hard or coarse. **Leaf blade** 50–200 × 3–7 mm; ligule a fringe of hairs to a fringed membrane. **Inflorescence** digitate or subdigitate, of 2–5 stiff and tardily spreading racemes, usually red or purple; rachis flattened. **Spikelets** 2.5–3.0 mm long, strongly laterally compressed; glumes narrowly lanceolate in side view, 1-nerved, awnless; upper glume $^3/_4$ to ± as long as spikelet. **Floret** 1, bisexual, rachilla usually produced; lemma glabrous or with a few scattered hairs, keel sometimes hairy, wingless, awnless; palea glabrous; anther 1.3–1.6 mm long. **Flowering time** Jan.–June. Rich soils, particularly old cattle kraals and abandoned cultivation, also at moist streamsides; Albany Thicket (Addo District).

dactylon (L.) Pers.

Couch grass; *kweekgras* (A); *mohloa* (SS); *uqaqaqa* (X); *uqethu* (Z)

Sward-forming perennial, 50–350 mm high; rhizomatous and stoloniferous. **Leaf blade** 25–120 × 1–3 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** digitate or subdigitate, of (3)4 or 5(6) secund racemes in a single whorl; rachis flattened. **Spikelets** 2.0–2.5 mm long, strongly laterally compressed; glumes lanceolate

in side view, 1-nerved; upper glume $^{1}/_{2}$–$1^{1}/_{2}$ as long as spikelet. **Floret** 1, bisexual, rachilla produced; lemma keel wingless, silky-pubescent; palea glabrous; anther 0.8–1.2 mm long. **Flowering time** Sept.–May. In most soils in disturbed areas such as along roadsides and overgrazed, trampled areas and nitrogen rich areas; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Albert District S to Queenstown District, Lusikisiki, Winterberge Mts, East London and Tsitsikamma).

transvaalensis Burtt Davy

Transvaal quick grass; *Floridagras*, *rooikweek* (A)

Perennial, 50–300 mm high; rhizomatous; culm delicate. **Leaf blade** delicate, very fine, involute and filiform; ligule a fringed membrane. **Inflorescence** digitate or subdigitate, usually 2, secund, these reflexed at maturity; rachis flattened. **Spikelets** 2.0–2.5 mm long, strongly laterally compressed; glumes lanceolate in side view, 1-nerved; upper glume $^{1}/_{4}$–$^{1}/_{3}$ as long as spikelet. **Floret** 1, bisexual, rachilla produced, often longer than lower glume; lemma keel wingless, sparsely pubescent; palea glabrous; anther 1.4–1.7 mm long. **Flowering time** Nov.–May. Roadsides and weedy places; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo (Rhodes and Matatiele Districts S to Middelburg).

*CYNOSURUS L.

Species 8, Europe, Middle East and North and sthn Afr.; ± 2 naturalised (1 possibly indigenous) in sthn Afr., NC, WC, EC.

echinatus L.

Dog's tail

Tufted annual, 200–600 mm high; culm erect or decumbent at base. **Leaf blade** 50–150 × 3–10 mm; ligule an unfringed membrane. **Inflorescence** a bristly, ovoid, secund panicle; spikelets paired, dissimilar, bisexual spikelets mixed and ± concealed by sterile ones; fertile spikelets subsessile or shortly pedicelled. **Fertile spikelet** 8–14 mm long, laterally compressed; glumes ± equal, 7–12 mm long, very finely pointed, 1-nerved. **Florets** 1–5; lemma 5–7 mm long, rounded on back, awn straight, untwisted; anther 3–4 mm long. **Sterile spikelet** 7–13 mm long; glumes and lemmas with pale awns up to 15 mm long. **Flowering time** July–Jan. Weed, on rocky well-drained soils and disturbed places like roadsides, often in shade; Drakensberg Grassland (Hogsback).

*DACTYLIS L.

Species 1–5, temperate Eurasia; 1 cultivated and sometimes occurring as an escape in sthn Afr., M, FS, KZN, L, WC, EC.

glomerata L.

Cocksfoot, orchard grass; *kropaargras* (A)

Densely, coarsely tufted, rhizomatous perennial, 0.15–0.80(–1.40) m high; rhizome oblique. **Leaf blade** 100–450 × 2–14 mm, flat or folded, or involute; ligule an unfringed membrane, 2–10 mm long. **Inflorescence** a panicle, 50–300 mm long, lowest branches usually solitary, remote and bare at base, spikelets almost sessile in dense, secund clusters on panicle branches. **Spikelets** 5–9 mm long, laterally compressed; glumes acuminate, mucronate or shortly awned, awn up to 1.5 mm long, strongly keeled, keels finely or coarsely ciliate. **Florets** 2–7; lemma strongly keeled, entire, awn

0.5–1.5 mm long, not twisted below, shorter than body of lemma; anther 3.0–4.0 mm long. **Flowering time** July, Aug., Nov.–Feb. Mostly in cultivation but also in other disturbed places like roadsides at high altitudes; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Barkly East and Rhodes Districts S to Maclear and Humansdorp Districts).

DACTYLOCTENIUM Willd.

Species 13, warm regions of the world; 4 in sthn Afr., widespread, except WC.

aegyptium (L.) Willd.

Crowfoot, duck grass; *hoenderspoorgras* (A); *ungwengwe* (Z)

Mat-forming or tufted annual, 70–750 mm high; culms geniculate and rooting at nodes. **Leaf blade** 30–250 × 2.5–12.0 mm, flat. **Inflorescence** digitate or subdigitate, of 4–8 secund racemes on a flattened rachis, apex of rachis a barren, rigid, pointed extension; spikelets solitary, sessile. **Spikelets** 3.5–4.5 mm long; glumes ± equal, shorter than spikelet, membranous, strongly keeled, 1-nerved; upper glume awned, awn 0.5–2.0× as long as body. **Florets** 3 or 4; lemma 1–3-nerved, keel scabrid above middle, ending in a mucro or awn up to 1 mm long; anther 0.25–0.80 mm long. **Flowering time** Jan.–Apr. **Caryopsis** broadly obovate to obtriangular, transversely rugose, apex truncate to concave. Disturbed areas near water; Albany Thicket (Addo E to East London).

australe Steud.

Durban grass, Natal crowfoot; *Natal-hoenderspoor* (A)

Stoloniferous perennial, 130–810 mm high. **Leaf blade** 50–270 × 2.0–4.5 mm. **Inflorescence** digitate or subdigitate, of 2 or 3 secund racemes, 30–50 mm long, apex of rachis a barren, rigid, pointed extension. **Spikelets** 3–4 mm long; glumes strongly keeled, 1-nerved, upper glume awn $1^1/_3$–$1^3/_4$ as long as glume. **Florets** 4–6; lemma keel scabrid above middle, awn 0.5–0.7 mm long; anther 1.3–1.7 mm long. **Flowering time** Jan.–May. **Caryopsis** obovate, apex rounded to convex. Sandy soils on seashores, dunes and along forest roads, often in light shade; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (along coast from Mkambati Nature Reserve to Alexandria District).

***DESCHAMPSIA** P.Beauv.

Species ± 40, temperate regions throughout the world and high altitude tropics; 2 naturalised in sthn Afr., FS, L, WC, EC.

cespitosa (L.) P.Beauv.

Densely tufted perennial, 250–850 mm high. **Leaf blade** 70–200 × 2–4 mm, expanded, scabrid, pale green to light brown when dry; ligule an unfringed membrane. **Inflorescence** a lax, open panicle; spikelets pedicelled. **Spikelets** 3–4 mm long, laterally compressed; glumes ± equal, ± as long as spikelet; rachilla pilose, rarely glabrous, distinctly elongated between florets. **Florets** usually 2, bisexual; lemma shiny, toothed or lobed, truncate, awned from back near base; awn straight, almost equalling spikelet; anther 1.0–2.0 mm long. **Flowering time** Jan.–Mar. Typical grassland habitat; usually damp or black nutrient-rich soil; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East District and Naude's Neck).

DIANDROCHLOA De Winter

Species ± 7, Americas, Australia, Asia and Africa; 2 in sthn Afr., widespread, except FS and WC.

namaquensis (Nees) De Winter

[Alternate name: *Eragrostis japonica* (Thunb.) Trin.]

Tufted, robust annual, 0.25–1.50 m high. **Leaf blade** 60–300 × 2–6 mm; ligule an unfringed membrane. **Inflorescence** a longer than broad panicle, branches somewhat contracted, young branches often wavy. **Spikelets** delicate, 2–3 mm long, laterally compressed, awnless; glumes ± equal, shorter than spikelet, 1-nerved. **Florets** 4–8; lemma ± 1.0 mm long, entire, 3-nerved; anther 0.2–0.4 mm long. **Flowering time** Jan.–Dec., peaking from Mar.–May. **Caryopsis** 0.3–0.5 mm long, obovate-oblong. Always near water on sandy or clayey soil; Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Mount Frere SE to Port St Johns).

DIGITARIA Haller

Species ± 230, cosmopolitan, mainly tropical and warm temperate; ± 35 in sthn Afr., widespread.

1a Annual

*ciliaris (Retz.) Koeler

Tropical finger grass; *tropiese vingergras* (A)

Loosely tufted or solitary growing annual, 200–550 mm high; decumbent to erect. **Leaf blade** 30–130 × 3–10 mm; ligule an unfringed membrane. **Inflorescence** digitate to subdigitate, of 3–7 racemes; rachis triquetrous, broadly winged, glabrous with scabrous margins; pedicels triangular, scabrous; spikelets abaxial, paired. **Spikelets** 2.3–3.4 × 1 mm, dorsiventrally compressed; lower glume a triangular scale 0.25–0.50 mm long; upper glume shorter than spikelet, 3-nerved, pubescent; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, usually as long as spikelet, pubescent, 7-nerved, nerves smooth; upper floret bisexual, lemma ± as long as spikelet, yellow to brown, margins flat and covering most of palea. **Flowering time** Jan.–Apr. Weed, mainly disturbed sandy soil; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indigenous Forests (Maclear District S to Alice and Dwesa Forest).

debilis (Desf.) Willd.

Finger grass

Tufted annual, sometimes perennial, 100–500 mm high; culms decumbent at base and rooting from lower nodes. **Leaf blade** 30–130 × 2–6 mm; ligule an unfringed membrane. **Inflorescence** subdigitate, on a short central axis up to 60 mm long, of 4–12 racemes; rachis triquetrous, unwinged, scabrous on margins; pedicels scabrous; spikelets paired. **Spikelets** 2.0–3.5 × 1 mm, dorsiventrally compressed; lower glume a minute truncate scale, separated from upper glume by an internode 0.1–0.3 mm long; upper glume as long as to longer than spikelet, 5-nerved, pubescent between nerves. **Florets** 2; lower floret sterile, lemma shorter than spikelet, 7-nerved, pubescent; palea reduced to a minute scale or absent; upper floret bisexual, shorter than spikelet, lemma margins flat and covering most of palea, yellow to bluish green. **Flowering time** Nov.–June. Mainly damp places and sandy soil; Sub-Escarpment Grassland (KZN Border, Port Shepstone).

*nuda Schumach.

Tufted annual, 200–500 mm high; culms decumbent or creeping, sometimes mat-forming, geniculate or ascending, rooting at lower nodes. **Leaf blade** 20–135 × 2–10 mm; ligule an unfringed membrane. **Inflorescence** digitate or subdigitate, of 3–8 racemes; rachis triquetrous, winged, glabrous with scaberulous margins; pedicels triangular, scaberulous; spikelets abaxial, paired. **Spikelets** 1.6–2.3 mm long, dorsiventrally compressed; lower glume absent, if present, then a minute obscure scale < 0.2 mm long; upper glume shorter to as long as spikelet, 3-nerved; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, nerves usually smooth, pubescent; upper floret bisexual, lemma ± as long as spikelet, yellow, brown to greyish, margins flat and covering most of palea. **Flowering time** Nov.–Apr. Weed in open disturbed areas; Albany Thicket (East London District).

*sanguinalis (L.) Scop.

Crab finger grass; *kopersaadgras* (A)

Tufted annual, 200–600 mm high; culms branched, decumbent and rooting from lower nodes, nodes dark, glabrous. **Leaf blade** 27–170 × 3–10 mm; ligule an unfringed membrane. **Inflorescence** digitate or subdigitate, of 3–12 racemes; rachis triquetrous, broadly winged, glabrous to scaberulous; pedicels triangular, scaberulous; spikelets abaxial, paired. **Spikelets** 2.3–3.5 mm long, acute, dorsiventrally compressed; lower glume a small ovate-triangular scale 0.2–0.3 mm long; upper glume shorter to as long as spikelet, 3-nerved, pubescent, hairs fine; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, equalling or shorter than spikelet, 7-nerved, scaberulous along nerves (may need a strong lens); upper floret bisexual, lemma ± as long as spikelet, pale yellow to pale brown, margins flat and covering most of palea. **Flowering time** Nov.–May. Weed in disturbed areas; common in all bioregions, except in Dry Highveld Grassland, Lower Karoo and Rainshadow Valley Karoo (Albert District E to Griqualand East southwards, from Middelburg District to Port Edward, Stutterheim, East London and Humansdorp District).

ternata (A.Rich.) Stapf

Blackseed finger grass; *soetgras* (A); *moeane* (SS)

Loosely tufted annual, 200–600 mm high. **Leaf blade** 20–200 × 1–7 mm; ligule an unfringed membrane. **Inflorescence** in pairs or subdigitate on a short central axis, of 2–6 racemes; rachis triquetrous, broadly winged, glabrous, margins glabrous or scaberulous; pedicels with a corona of short hairs at apex; spikelets abaxial, in clusters of 2 or 3. **Spikelets** 2.5–2.7 mm long, oblong, dorsiventrally compressed; lower glume reduced to small cuff, obscure; upper glume $^{3}/_{4}$ as long as spikelet, 3-nerved, clavate hairs between nerves; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, not deeply grooved, 5-nerved, covered with white clavate hairs; upper floret bisexual, lemma ± as long as spikelet, light to dark brown or purplish black margins flat and covering most of palea. **Flowering time** Nov.–May. Damp and disturbed areas such as roadsides; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (from Lady Grey to Qacha's Neck southwards, from Queenstown to Port St Johns, Somerset East, Komga and Grahamstown District).

thouaresiana (Flüggé) A.Camus

Tufted annual, 0.2–1.0 m high. **Leaf blade** 3–20 × 2–8 mm; ligule an unfringed membrane. **Inflorescence** subdigitate, of 2–14 racemes; rachis triquetrous, broadly winged, margins scabrous; pedicels without a corona of hairs, only a few hairs at apex; spikelets abaxial, in clusters of 3 or 4. **Spikelets** 1.5–1.7 mm long, dorsiventrally compressed; lower glume absent; upper glume shorter to as long as spikelet, 3-nerved; internode absent; upper glume and lower lemma rarely glabrous, usually covered with white clavate hairs. **Florets** 2; lower floret sterile, lemma lanceolate, 5-nerved, 3 around central nerve close together, nerves thickened, not deeply grooved; upper floret bisexual, lemma dark brown to black, margins flat and covering most of palea. **Flowering time** Feb.–May. Marshy places and disturbed sites; Indigenous Forests (Ntsubane Forest).

velutina (Forssk.) P.Beauv.

Long-plumed finger grass; *langpluim-vingergras* (A)

Very loosely tufted annual, 150–800 mm high; culms decumbent at base, rooting from lower nodes. **Leaf blade** 40–150 × 3–10 mm; ligule an unfringed membrane. **Inflorescence** subdigitate on a relatively long central axis, of 5–15 racemes; rachis triquetrous, broadly winged, glabrous to scaberulous; pedicels triangular, scaberulous; spikelets paired. **Spikelets** 1.5–2.0 mm long, dorsiventrally compressed; lower glume obscure or an ovate scale up to 0.2 mm long; upper glume shorter to as long as spikelet, 3-nerved, pubescent; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, pubescent; upper floret bisexual, lemma light to dark brown tinged purple, margins flat and covering most of palea. **Flowering time** Dec.–May. Weed, in open disturbed areas; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Thembuland S to Kentani and Komga Districts).

1b Perennial
2a Inflorescence a solitary raceme

monodactyla (Nees) Stapf

One finger grass; *eenvingergras* (A)

Densely tufted perennial, 200–550 mm high; hairy cataphylls present. **Leaf blade** 0–60 × 1.8–2.2 mm, often rolled; ligule an unfringed membrane. **Inflorescence** a solitary raceme; rachis triquetrous, broadly winged, undulating, scaberulous on margins; pedicels pubescent; spikelets paired. **Spikelets** 2.8–3.2 mm long, dorsiventrally compressed; glumes unequal; lower glume reduced to a small scale up to 0.2 mm long or suppressed; upper glume $^1/_2$ as long as spikelet, 3-nerved, pubescent; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 5-nerved, densely covered with yellowish hairs 1 mm long; upper floret bisexual, lemma ± as long as spikelet, light brown, exposed, margins flat and covering most of palea. **Flowering time** Nov.–Feb. Open grassland, usually highland sourveld; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Griqualand East S to Maclear District, Port St Johns, Stutterheim and Alexandria District).

2b Inflorescence paired, digitate, subdigitate to panicle-like
3a Pedicel apex with hairs as long as to longer than spikelet

diagonalis (Nees) Stapf

Brown seed finger grass

Tufted perennial. 0.4–1.5 m high; basal leaf sheaths silky hairy, breaking up into fibres; culms swollen and bulbous at base. **Leaf blade** 100–600 × 1–12 mm; ligule an unfringed

membrane. **Inflorescence** of 10–30 racemes, few together or solitary along a well-developed elongated axis; rhachis triquetrous, narrowly winged, glabrous to scaberulous with scabrous margins; pedicels unequal, triangular, apex with stiff, 10–15 mm long hairs which are as long as or longer than spikelet; spikelets in clusters of 3(–6). **Spikelets** 1.4–2.4 mm long, dorsiventrally compressed; lower glume absent or reduced to small rim up to 0.6 mm long, truncate; upper glume a minute scale 0.1–0.7 mm long, glabrous, membranous, nerveless; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, flat on back, glabrous, 3-nerved, nerves smooth; upper floret bisexual, lemma ± as long as spikelet, entire, light to dark brown or black, exposed, margins flat and covering most of palea. **Flowering time** Jan.–Apr. Open, usually sourveld grassland, often hillsides and in damp places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Griqualand East S to Queenstown District, Mkambati Nature Reserve, Amatole Mts, Komga District and East London District).

3b Pedicel apex glabrous or hairs shorter than spikelet
4a Rhizomes present and obvious

argyrographa (Nees) Stapf

Silver finger grass

Tufted perennial, 200–600 mm high; rhizomes short and knotty; culms profusely branched from lower nodes. **Leaf blade** 30–50 × 1–3 mm; ligule an unfringed membrane. **Inflorescence** digitate or subdigitate, racemes stiffly erect, usually in pairs, often adhering to each other because hairs on spikelets become entangled; rachis triquetrous, scarcely winged, scaberulous with scabrous margins; pedicels trigonous, glabrous, scabrous; spikelets abaxial, paired. **Spikelets** 3.0–3.7 mm long, dorsiventrally compressed; lower glume ± 0.5 mm long, ovate or triangular, nerveless; upper glume $^{2}/_{3}$–$^{4}/_{5}$ as long as spikelet, partly exposing upper floret, 3-nerved, hairy. **Florets** 2; lower floret sterile, lemma 7-nerved, 3 nerves are close together in middle, thus with narrow interspaces adjacent to central nerve, appressed-hairy; upper floret bisexual, lemma pale yellow, margins flat and covering most of palea; anther 2.0–2.2 mm long. **Flowering time** Nov.–Mar. Wide range of habitats; Indian Ocean Coastal Belt, Drakensberg Grassland, Rainshadow Valley Karoo, Albany Thicket (Willowmore E to Steytlerville and Addo).

flaccida Stapf

Densely tufted perennial, 250–400(–600) mm high; knotty rhizomes present; base densely long-hairy. **Leaf blade** 40–100 × 1.5–3.0 mm; ligule an unfringed membrane. **Inflorescence** panicle-like, with 6–17 racemes; rachis triquetrous, glabrous; pedicel apex with long hairs not exceeding spikelet; spikelets abaxial, paired. **Spikelets** 1–3 × 1 mm, dorsiventrally compressed; lower glume a minute membranous cuff; upper glume shorter to as long as spikelet, 3-nerved, silky purplish hairs between nerves; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, silky purplish hairy on and between nerves, hairs up to 2 mm long, forming tufts at ± middle; upper floret bisexual, lemma ± as long as spikelet, entire, pallid, margins flat and covering most of palea. **Flowering time** Nov.–Jan. Mainly on rocky ground, mountain sourveld; Sub-Escarpment Grassland (Mount Fletcher District).

natalensis Stent

Coast finger grass; *kruipkusvingergras* (A)

Loosely to densely tufted, rhizomatous perennial, 0.6–1.5 m high; rhizomes knotty; culm lower nodes dark, glabrous; basal sheaths sometimes persistent and rusty brown.

Leaf blade 80–250 × 2–6 mm; ligule an unfringed membrane. **Inflorescence** digitate, of 4–12 racemes; rachis triquetrous, winged, scaberulous; pedicels triangular, scaberulous; spikelets abaxial, paired. **Spikelets** 2.8–3.5 mm long, dorsiventrally compressed; lower glume ovate triangular; upper glume shorter than spikelet, partly exposing upper lemma, 3-nerved; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, nerves scaberulous or sometimes nearly smooth, hairy, bristle hairs sometimes present; upper floret bisexual, lemma ± as long as spikelet, slightly shorter than spikelet, pale yellow to pale brown, margins flat and covering most of palea; anther 1.6–1.8 mm long. **Flowering time** Dec.–June. Mainly sandy ground; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (along coast from Mkambati Nature Reserve to Alexandria Forest).

scalarum (Schweinf.) Chiov.

Perennial, 200–350 mm high; rhizomes long, wiry, mat-forming; culms branched at nodes; nodes dark, glabrous or hairy. **Leaf blade** 40–70 × 3–6 mm; ligule an unfringed membrane. **Inflorescence** panicle-like, of 3–11 racemes on a long central axis; rachis triquetrous, smooth or scaberulous; pedicels scaberulous on margins; spikelets abaxial, paired, rarely solitary. **Spikelets** 1.8–2.2 mm long, dorsiventrally compressed; lower glume short, scale-like, distinctly heteromorphic, outer edges hyaline, except on apex, often erose or truncate, glabrous, sometimes tinged purplish; upper glume ± as long and as wide as spikelet, glabrous and often tinged with purple, 5(–7)-nerved, internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, glabrous or sometimes minutely pubescent on margins; upper floret bisexual, lemma ± as long as spikelet, light brown, grey and purple, mostly concealed, margins flat and covering most of palea. **Flowering time** Nov.–June. Mainly disturbed ground; Eastern Fynbos-Renosterveld, Albany Thicket (Tsitsikamma National Park E to Alexandria Forest).

tricholaenoides Stapf

Purple finger grass; *persvingergras* (A)

Tufted perennial, 200–550 mm high; rhizome oblique, up to 100 mm long; base sparsely to moderately hairy, covered with persistent, overlapping bases of old leaf sheaths; culm nodes hairy. **Leaf blade** 40–200 × 2–7 mm; ligule an unfringed membrane. **Inflorescence** subdigitate, of 2 or 3(–7) racemes; rachis triquetrous, glabrous with scaberulous margins; pedicels scaberulous; spikelets abaxial, in clusters of 2–5. **Spikelets** 3–5 mm long, dorsiventrally compressed; lower glume 0.5–1.8 mm long, truncate, membranous; upper glume $^{1}/_{2}$–$^{2}/_{3}$ length of spikelet, 3-nerved, covered with silvery or purplish hairs 1–2 mm long; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 5-nerved, covered, except for central interspace, with silvery or purplish hairs 2–4 mm long; upper floret bisexual, lemma pale yellow, margins flat and covering most of palea. **Flowering time** Nov.–Mar. In open, sourveld grassland mainly on stony soil; Drakensberg Grassland, Sub-Escarpment Grassland (Mount Fletcher to Maclear District).

4b Rhizomes absent or not obvious

debilis (Desf.) Willd. (see 1a above)

eriantha Steud.

Common finger grass; *bloukruisgras* (A); *mmoyane* (SS); *isikhonko* (Z)

Tufted perennial, 0.35–1.40 m high; sometimes stoloniferous; basal sheaths silky hairy; culms simple or branched. **Leaf blade** 50–400 × 2–14 mm; ligule an unfringed mem-

brane. **Inflorescence** digitate, of 3–15 racemes; rachis triquetrous, narrowly to broadly winged, glabrous to scaberulous with scabrous margins; pedicels scabrous without long hairs at apex; spikelets abaxial, paired. **Spikelets** 2.2–4.0 mm long, dorsiventrally compressed; lower glume a membranous scale, ovate to triangular; upper glume $^{1}/_{3}$–$^{2}/_{3}$ as long as spikelet, partly exposing upper lemma, 3-nerved; pubescent; internode absent; upper glume and lower lemma covered with purple and silvery hairs 1 mm long. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, nerves evenly spaced or with broader central interspaces, smooth or sometimes scaberulous; upper floret bisexual, lemma ± as long as spikelet, greenish to brown, margins flat and covering most of palea. **Flowering time** Jan.–Apr. Occurs in a wide range of habitats; widespread in all bioregions, except Rainshadow Valley Karoo (common in EC).

maitlandii Stapf & C.E.Hubb.

Densely tufted perennial, 220–410 mm high; without rhizomes; base with cataphylls and light- coloured leaf sheaths. **Leaf blade** 40–130 × 2–4 mm; ligule an unfringed membrane. **Inflorescence** subdigitate, on a short central axis, 3–6 racemes; rachis triquetrous, narrowly winged, glabrous with scaberulous margins; pedicels scabrous; spikelets abaxial, in groups of 3. **Spikelets** 1–2 mm long, glabrous, sometimes hairy, dorsiventrally compressed; lower glume a small scale 0.2–0.3 mm long; upper glume up to 0.7 mm long, shorter to as long as spikelet, 3-nerved, pubescent or rarely glabrous, hairs club-shaped; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, pubescent or rarely glabrous, hairs club-shaped; upper floret bisexual, lemma ± as long as spikelet, purplish to dark brown or black, exposed, margins flat and covering most of palea. **Flowering time** Nov.–May. Mountain grassland; Drakensberg Grassland (Penhoek Pass).

setifolia Stapf

Fine-leaved finger grass; *suurvingergras* (A)

Densely tufted perennial, 200–500 mm high; old leaf sheaths break up into brown fibres at base; culm nodes glabrous to villous. **Leaf blade** 50–140 × 1.5–3.0 mm, usually rolled; ligule an unfringed membrane. **Inflorescence** subdigitate on a short central axis, of (2)3 or 4(5) racemes; rachis triquetrous, scarcely winged or not, glabrous to slightly scaberulous; pedicels triangular, scaberulous; spikelets abaxial, in pairs or threes. **Spikelets** 3–4 mm long, dorsiventrally compressed; lower glume short 0.3–0.5 mm long, truncate; upper glume shorter to almost equalling spikelet, 3-nerved, pubescent, hairs sometimes clavate; internode absent. **Florets** 2; lower floret sterile, lemma lanceolate, as long as spikelet, 7-nerved, with conspicuous rows of bright brown, clavate hairs; upper floret bisexual, lemma ± as long as spikelet, light to dark brown, margins flat and covering most of palea. **Flowering time** Sept.–Jan. Mountain sourveld areas, usually in damp places or vleis; Sub-Escarpment Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt, Albany Thicket (Matatiele SE to Port Edward District southwards, from Amatole Mts to Port Elizabeth and Port Alfred).

DIHETEROPOGON Stapf

Species 5, tropical Africa; 2 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, NC, EC.

amplectens (Nees) Clayton

Broad-leaved blue stem; *breëblaar andropogon* (A)

Rhizomatous perennial, 0.3–2.0 m high. **Leaf blade** expanded, usually > 3 mm wide, rarely densely pilose, base rounded or amplexicaul, clasping culm; young growth waxy;

ligule an unfringed membrane. **Inflorescence** of paired racemes; internodes and pedicels linear; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 7–9 mm long, dorsiventrally compressed; lower glume rounded on either side of deep median groove, apex lobed, 2-keeled; upper glume acute, not 2-keeled, mucronate. **Florets** 2; lower floret sterile, hairy; upper floret bisexual (except at base of raceme), glabrous, lemma 2-lobed, awn 30–60 mm long, stout, geniculate, column hairy; callus 1–5 mm long, pungent. **Pedicellate spikelet** 9–13 mm; lower glume with or without awn, awn up to 11.5 mm long, keels rounded, not winged; upper glume acuminate, awnless. **Flowering time** Nov.–Apr. Shallow soils on stony slopes and in woodland; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket (Umtamvuna River, Maclear District, Ntsubane Forest and along coast from Port Edward to Kidd's Beach).

filifolius (Nees) Clayton

Thread-leaved andropogon, wire bluestem; *draadbloustam* (A)

Rhizomatous, tufted perennial, 150–600 mm high. **Leaf blade** filiform, thread-like, usually < 3 mm wide (unrolled), bluish green, mostly basal, base not rounded, apex acute; ligule an unfringed membrane. **Inflorescence** of paired racemes; internodes and pedicels linear; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 6–8 mm long, dorsiventrally compressed; lower glume with a deep, median, longitudinal groove, apex obtuse, 2-keeled; upper glume boat-shaped, awn 1.3–1.5 mm long. **Florets** 2; lower floret sterile, hairy; upper floret bisexual (except at base of raceme), glabrous, lemma 2-lobed, awn 75–110 mm long; callus 1–5 mm long, acute to pungent. **Pedicellate spikelet** 9–20 mm long; lower glume flat or rounded on back, acutely 2-keeled, keels narrowly winged, mucro 1–2 mm long; upper glume apex finely acuminate. **Flowering time** Oct.–Apr. Sour open grassveld, often on rocky hillsides; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Qacha's Neck and Matatiele S to Maclear District, Port Edward, Komga, Uitenhage and Grahamstown).

DINEBRA Jacq.

Species 3, Africa to India and Madagascar; 1 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, EC.

retroflexa (Vahl) Panz.

Cats tail vlei grass; *kattestertgras* (A)

Loosely tufted annual, 130–820 mm high. **Leaf blade** 45–280 × 4–8 mm; ligule a fringed membrane. **Inflorescence** up to 240 mm long, of many dense, very compact racemes on a central axis; racemes up to 50 mm long; rachis flattened, deflexed at maturity; lower spikelets of each raceme often replaced by small deciduous branchlets. **Spikelets** 5.7–9.0 mm long, laterally compressed; glumes ± equal, 6.0–8.2 mm long, as long as to longer than spikelet, 1-nerved, keeled, acuminate, awn straight, scabrid. **Florets** 1–3, bisexual; lemma membranous, less firm in texture than glumes, acute to emarginate, 3-nerved, keeled, mucronate, minutely awned or not; anther 0.4–0.5 mm long, light brown. **Flowering time** Dec.–May. Usually on disturbed clay soil in moist weedy places, often in shade and on black turf or waterlogged soils; Upper Karoo (Middelburg District).

ECHINOCHLOA P.Beauv.

Species 30–40, tropical and warm temperate regions of the world; 9 in sthn Afr., widespread.

Ligule absent in all leaves

colona (L.) Link

Jungle rice, marsh grass; *kleinwatergras* (A)

Tufted annual, 0.1–1.0 m high; stoloniferous; hygrophyte. **Leaf blade** 50–300 × 2–8 mm; ligule absent. **Inflorescence** elongated, 10–150 mm long; racemes scattered up central axis, 10–25 mm long, usually secund, dense, neatly 4-rowed; rachis triquetrous. **Spikelets** 1.5–3.0 × 1.0–1.5 mm, dorsiventrally compressed, subglobose to ovate-elliptic, pubescent, awnless; glumes unequal; upper glume as long as spikelet; glumes and lower lemma minutely hairy on surface, nerves with or without long, rigid hairs. **Florets** 2; lower floret male or sterile, lower lemma awnless; upper floret bisexual, lemma 2–3 mm long, firmer than glumes, coriaceous, smooth and shiny, glabrous, convex, entire, margins inrolled and clasping only edges of palea; anther 0.6–1.4 mm long. **Flowering time** Jan.–Apr. Weed in muddy or swampy places; Lower Karoo, Sub-Escarpment Grassland, Albany Thicket (Cradock E to Bedford, southwards from Uitenhage to East London).

crus-galli (L.) P.Beauv.

Barnyard millet; *blousaadgras* (A); *joang-ba-masimo* (SS)

Tufted annual, 0.25–1.00 m high; stoloniferous; hygrophyte. **Leaf blade** 70–350 × 4–20 mm; ligule absent. **Inflorescence** elongated, 60–220 mm long, of many racemes scattered up central axis, usually with short secondary branchlets at base; raceme 20–100 mm long, spikelets untidily 2–several-rowed. **Spikelets** 3–4(–7) × 1–2 mm, ovate-elliptic, dorsiventrally compressed, hispid; glumes unequal; upper glume as long as spikelet; glumes and lower lemma minutely hairy, nerves with long, rigid hairs. **Florets** 2; lower floret sterile, lower lemma usually awnless or sometimes with awn 5–35 mm long; upper floret bisexual, lemma 2–3 mm long, hard, entire, margins inrolled and clasping only edges of palea; anther 0.7–1.1 mm long. **Flowering time** Jan.–Apr. Swampy areas, wet places of cultivation; common in all bioregions, except Dry Highveld Grassland, Rainshadow Valley Karoo, Mesic Highveld Grassland and Indigenous Forests (Oviston Nature Reserve E to Griqualand East, S from Middelburg to Port St Johns, Somerset East, Komga, Grahamstown and Tsitsikamma).

crus-pavonis (Kunth) Schult.

Gulf barnyard grass; *hanekamgras* (A)

Tufted annual, rarely perennial, 0.5–2.0 m high; stoloniferous; hygrophyte. **Leaf blade** 150–600 × 5–25 mm; ligule absent. **Inflorescence** 100–300 mm long, of many racemes scattered up central axis, distinctly compound with many short secondary branchlets, untidily ovate; raceme 30–150 mm long, spikelets in dense clusters. **Spikelets** 2.0–3.5 × 1.0–1.5 mm, elliptic, dorsiventrally compressed, hispid; glumes unequal; upper glume as long as spikelet; glumes and lower lemma minutely hairy, nerves with long, rigid hairs. **Florets** 2; lower floret male or sterile, lower lemma acute or with a short curved awn 1–3(–7) mm long; upper floret bisexual, lemma 2.0–2.5(–3.0) mm long, hard, entire, margins inrolled and clasping only edges of palea; anther 0.5–1.3 mm long. **Flowering time** Feb., Mar. Along streambanks and swamps; Indian Ocean Coastal Belt (Port St Johns District).

Ligule present, may be absent in upper leaves

holubii (Stapf) Stapf

Kalahari water grass; *vleigras* (A)

Tufted perennial, 500–900 mm high; plant not reed-like; rhizome slender; hygrophyte; culm erect or geniculate. **Leaf blade** 180–220 × (2–)4(–8) mm; ligule a fringe of hairs, may be absent in upper leaves. **Inflorescence** (80–)120(–180) mm long, of many racemes scattered up central axis; raceme 15–40 mm long, spikelets not neatly 4-rowed, distant, often reduced to small clusters towards apex of central axis. **Spikelets** 2.5–3.5 × 1.0–1.5 mm, elliptic to elongated, dorsiventrally compressed, pubescent; glumes unequal, upper glume as long as spikelet; glumes and lower lemma shortly hairy sometimes mixed with a few longer rigid hairs, nerves with rigid hairs. **Florets** 2; lower floret male or sterile, lower lemma awnless, acute to acuminate; upper floret bisexual, lemma 2.4–3.5 mm long, hard, entire, margins inrolled and clasping only edges of palea; anther 0.8–2.0 mm long. **Flowering time** Dec.–Apr. Swampy areas, pans and vleis; Albany Thicket (King William's Town and Uitenhage District).

jubata Stapf

Perennial or rarely annual, 0.5–2.0 m high; hygrophyte; rhizomatous and stoloniferous. **Leaf blade** 100–250 × 3–15 mm; ligule a fringe of hairs, may be absent from upper leaves. **Inflorescence** dense, 80–200 mm long, linear to lanceolate, of many racemes scattered up central axis; raceme 20–40 mm long, simple, not clearly secund; spikelets closely packed, not neatly 4-rowed. **Spikelets** 3.0–3.5(–4.0) × 1 mm, narrowly elliptic, dorsiventrally compressed, hispid. **Florets** 2; lower floret male or sterile, glumes and lower lemma minutely hairy, nerves with long, rigid hairs, lower lemma awn 3–25 mm long; upper floret bisexual, lemma 2.5–3.0 mm long, hard, entire, margins inrolled and clasping only edges of palea; anther 0.8–1.1 mm long. **Flowering time** Nov.–May. In water and streamsides, often floating in water; Sub-Escarpment Grassland, Albany Thicket (Matatiele District S to Komga District).

pyramidalis (Lam.) Hitchc. & Chase

Limpopo grass, antelope grass; *olifantsgras* (A)

Reed-like, tufted perennial, 1–4 m high; rhizomatous and stoloniferous; hygrophyte; culm robust. **Leaf blade** 80–600 × 5–20 mm; ligule a fringe of hairs, may be absent in upper leaves. **Inflorescence** (150–)200(–400) mm long, ovate to narrowly lanceolate, of many racemes scattered up central axis; racemes 25–35 mm long, not neatly 4-rowed, simple or compound. **Spikelets** 2.5–4.0 × 1.0–1.8 mm, narrowly ovate to broadly elliptic, dorsiventrally compressed, glabrous to hispid; glumes unequal; glumes and lower lemma minutely hispid at least near margins, nerves usually with long, rigid hispid hairs. **Florets** 2; lower floret male, lower lemma acute to acuminate or awn 2 mm long; upper florets bisexual, lemma 2–3 mm long, hard, entire, margins inrolled and clasping only edges of palea; anther 0.6–2.1 mm long. **Flowering time** Dec.–May. Swamps and riversides, usually standing in water and may be floating; Upper Karoo, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Hofmeyr E to Port Edward, S from Dweza Forest to Uitenhage District).

EHRHARTA Thunb.

Species ± 35, sthn Afr. to Ethiopia, Indonesia to New Zealand; 22 in sthn Afr., mainly southern and western areas of the Cape region, a few widespread.

1a Lowest culm node bulbous

bulbosa Sm.

Tufted perennial, ± 700 mm high; rhizome long and thin; lowest culm bulb spherical, whitish, not polished/shining, well separated on rhizome. **Leaf blade** up to 60–350 × 8 mm, rolled, sometimes expanded, marginal vein usually not prominent or undulate, ascending; ligule a fringe of hairs. **Inflorescence** a contracted, secund panicle, almost reduced to a raceme. **Spikelets** 7–10 mm long; glumes ± equal, shorter than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, awned, lemmas similar in texture, equal in length, first sterile lemma transversely ribbed throughout, second sterile lemma broadest at middle, inrolled below; uppermost floret bisexual, lemma firmer than glumes; anther 2.5–4.0 mm long. **Flowering time** Oct., Nov. Hillsides and flats, alt. 50–250 m; Rainshadow Valley Karoo, Albany Thicket [Swartberg (Kolberg) E to Port Elizabeth District].

capensis Thunb.

Olifantgras (A)

Tufted perennial, 0.4–1.0 m high; long-rhizomatous; lowest culm bulb cylindrical, orange, polished/shining. **Leaf blade** up to 50–220 × 10 mm, expanded, spreading, with thickened, undulate, marginal veins; ligule an unfringed membrane. **Inflorescence** a scantily branched panicle. **Spikelets** 8–12 mm long; glumes ± equal, shorter than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, minutely awned, mucronate or awnless, lemmas similar in texture, first sterile lemma transversely ribbed in lower $^1/_2$ or $^1/_3$ only, as long as second sterile lemma; second sterile lemma broadest at middle, inrolled below; uppermost floret bisexual, lemma firmer than glumes; anther 3.2–5.5 mm long. **Flowering time** Sept.–Nov. Mountains and hillsides, on a variety of soils; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Steytlerville E to Grahamstown District).

ottonis Kunth ex Nees

Tufted perennial, up to 1.2 m high; rhizomatous; lowest culm node bulbous; bulb cylindrical, orange, shining. **Leaf blade** up to 600 × 5 mm, rolled, erect; ligule a fringe of hairs or a fringed membrane. **Inflorescence** a narrow panicle or raceme. **Spikelet** 8–10 mm long; glumes ± equal, $^2/_3$ as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, minutely awned, mucronate or awnless, lemmas similar, margins straight from base to apex, hairs tufted at base, second sterile lemma without an ear-like appendage at base; uppermost floret bisexual, lemma firmer than glumes; anther 4.0–5.5 mm long. **Flowering time** Sept.–Nov. Hills and mountains, and on flats in disturbed places, alt. 50–800 m; Albany Thicket, Eastern Fynbos-Renosterveld (Greater Addo Elephant National Park E to Albany District).

thunbergii Gibbs Russ.

Tufted, erect perennial, up to 1.5 m high; long-rhizomatous, subbulbous, with overlapping hairy cataphylls. **Leaf blade** 30–100 mm long, up to 5 mm wide, rolled, often deciduous; ligule a fringe of hairs to a fringed membrane. **Inflorescence** a panicle. **Spikelet** 8–10 × 2–3 mm; glumes almost equal, $^1/_2$–$^3/_4$ as long as spikelet, translucent, 5-nerved. **Florets** 3; lower 2 florets sterile, lemmas similar, profusely hairy, awned, second sterile

lemma without an ear-like appendage at base; uppermost floret bisexual, lemma firmer than glumes; anther 4.0–5.1 mm long. **Flowering time** Sept.–Dec. Hill slopes in sandy or gravelly soil; occasionally in coastal sand; Albany Thicket (Uitenhage and Port Elizabeth Districts).

1b Lowest culm nodes not bulbous
2a Annual

calycina Sm.

Perennial veld grass; *rooisaadgras*, *polgras* (A)

Very variable perennial, rarely annual, 0.3–0.7(–1.8) m high; often rhizomatous. **Leaf blade** up to 7 mm wide, expanded or rolled and filiform; ligule a fringed or unfringed membrane. **Inflorescence** an open or contracted panicle. **Spikelets** 4.0–8.5 mm long; glumes ± equal, shorter than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, lemmas similar in texture, sides long-hairy, first sterile lemma > $^{2}/_{3}$ as long as second sterile lemma, second sterile lemma apex acute to truncate, commonly with a mucro or minute awn arising abruptly from central nerve, ear-like appendages at base; uppermost floret bisexual, lemma firmer than glumes; anther 2.8–6.0 mm long. **Flowering time** all year, but usually in spring. Many habitats and soil types; common in all biomes except Rainshadow Valley Karoo and Mesic Highveld Grassland (Middelburg E to Port Edward, southwards to Graaff-Reinet, Cradock District, Uitenhage District and Willowmore District).

longiflora Sm.

Annual veld grass; *hawersaadgras* (A)

Leafy annual, 150–600 mm high. **Leaf blade** up to 200 × 5–15 mm, expanded, collar often dark; ligule a fringed or unfringed membrane. **Inflorescence** a sparingly branched narrow panicle. **Spikelet** 10–25(–35) mm long (including awns); glumes unequal, $^{1}/_{3}$ as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, lemmas similar, subglabrous, tufted hairs always at base, sides with 6–12 weak transverse ribs, apex long-awned, second sterile lemma without an ear-like appendage at base; uppermost floret bisexual, lemma firmer than glumes; anther 1.0–2.1 mm long. **Flowering time** July–Nov. Hill slopes, in shade of rocks and shrubs, wet places and often in disturbed areas such as roadsides and gardens; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore District E to Kowie District).

2b Perennial
3a Lemmas long-hairy on sides, keel or margins

calycina Sm. (see 2a above)

thunbergii Gibbs Russ. (see 1a above)

villosa Schult.f.

Tufted robust, erect perennial, up to 1.5 m high; long naked rhizomes; culm up to 5 mm wide. **Leaf blade** up to 15–130 × 8 mm, rolled, often deciduous; ligule a fringe of hairs to a fringed membrane. **Inflorescence** a panicle, subtended by an inflated leaf sheath or exserted from uppermost leaf sheath. **Spikelet** up to 10–18 × 4 mm; glumes almost equal, $^{3}/_{4}$ to as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, awned, lemmas similar, profusely hairy, second sterile lemma without an ear-like appendage at base; uppermost floret bisexual, lemma firmer than glumes; anther 5.0–8.9 mm long. **Flowering time** Sept.–Mar. (sporadically). Sea dunes and up to 1 km inland; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Port Edward S to Albany District and Humansdorp District).

3b Lemmas without long hairs on sides, keels or margins, tuft of hairs may be present at base

dura Nees ex Trin.

Brandgras (A)

Tufted, erect perennial, up to 800 mm high; rarely long-rhizomatous; basal sheaths flattened, reddish brown. **Leaf blade** 90–320 × 4–10 mm, expanded. **Inflorescence** an open or contracted, erect or nodding panicle. **Spikelets** 12–27 × 3 mm (including awn); glumes unequal, much shorter than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, lemmas similar, subglabrous, scabrous, awn 2–12 mm long, second sterile lemma with tufted hairs at base; uppermost floret bisexual, lemma firmer than glumes; anther 3.3–6.5 mm long. **Flowering time** Sept.–Dec. Mountain Fynbos in seasonally moist, open habitats; on sandstone or granite-derived soils, alt. 430–1 300 m; Eastern Fynbos-Renosterveld (Cockscomb Peak, Otterford Forest Reserve).

erecta Lam.

Shade ehrharta

Loosely tufted perennial, up to 900 mm high. **Leaf blade** 30–270 × 3–16 mm, soft; ligule an unfringed membrane. **Inflorescence** an erect or nodding, narrow panicle, sometimes reduced to a raceme. **Spikelet** 3.0–5.0 mm long; glumes unequal, $^{1}/_{2}$–$^{3}/_{4}$ as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, awnless, lemmas similar in texture, sides not long-hairy, usually deeply transversely ribbed especially on upper $^{1}/_{2}$, apex abruptly rounded, tufted hairs present or absent at base, second sterile lemma without an ear-like appendage at base; uppermost floret bisexual, lemma firmer than glumes; anther 0.7–1.6 mm long. **Flowering time** all year. Shady moist places, often at forest margins, coastal sand, disturbed areas such as roadsides, gardens; in all bioregions, except Upper Karoo, Lower Karoo, Rainshadow Valley Karroo and Mesic Highveld Grassland (widespread in EC, from Mount Frere S to Ugie District, Port Edward, Cradock District, Greater Addo Elephant National Park and Bloukrans Pass).

longigluma C.E.Hubb.

Tufted perennial, 300–600 mm high, erect; rhizomes long and slender. **Leaf blade** 25–120 × 2–4 mm, expanded; ligule an unfringed membrane. **Inflorescence** a narrow panicle. **Spikelet** 4.0–7.5 mm long; glumes equal, 0.5–2.0 mm longer than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, awnless, lemmas similar, glabrous, second sterile lemma with a pair of ear-like appendages at base; uppermost floret bisexual, lemma firmer than glumes; anther 1.8–2.2 mm long. **Flowering time** Nov.–Mar. Mountain grassland,often in peaty soil, alt. 2 300–3 300 m; Drakensberg Grassland (Naude's Neck Pass).

ramosa (Thunb.) Thunb.

Perennial, shrub or dwarf shrub, 0.3–1.0 m high; rhizomes woody, branched; culm up to 5 mm wide, woody. **Leaf blade** up to 30 × 1 mm or absent, but reduced blades sometimes present; ligule an unfringed membrane. **Inflorescence** a panicle, open or contracted; pedicels erect to ascending or spreading to reflexed. **Spikelet** (5.5–)6.0–7.5(–9.0) × 2–3 mm; glumes ± equal, shorter to longer than spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, apex usually mucronate, lemmas similar, sides hairless, second sterile lemma with a pair of ear-like appendages at base; uppermost floret bisexual, lemma firmer than glumes; anther 2.6–4.0 mm long. **Flowering time** Sept.–Jan. Mountain or grassy Fynbos, on sandy or stony TMS or lateritic soils, often in rocky places and in dry microhabitats; Eastern Fynbos-Renosterveld, Indigenous Forests, Albany Thicket (Kouga Mts E to Greater Addo Elephant National Park, Uitenhage and Port Elizabeth).

rehmannii Stapf

Perennial, 0.12–1.00 m high, tufted, sometimes delicate, erect or straggling, often growing in dense masses. **Leaf blade** up to 15–300 × 8.5 mm; ligule a fringed membrane. **Inflorescence** an open raceme or verticillate panicle with up to 24 spikelets, or a narrow raceme of 12–36 erect, appressed spikelets. **Spikelet** ± 4.0–8.5 × 2 mm; glumes ± equal, ± as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, lemmas similar, glabrous to shortly hairy to scabrous, apex usually muticous and awnless, second sterile lemma with a pair of ear-like appendages at base; uppermost floret bisexual, lemma firmer than glumes; anther 1.5–3.9 mm long. **Flowering time** Aug.–Feb. Mountain slopes to near sea level, on streambanks and rocky places, sometimes under trees; sandy (TMS) and humic soils; Indian Ocean Coastal Belt, Indigenous Forests, Eastern Fynbos-Renosterveld (Mkambati Nature Reserve S to Grahamstown and Bloukrans Pass).

rupestris Nees ex Trin.

Delicate to suffrutescent perennial, up to 450 mm high; plant thin and wiry or robust; long rhizomatous; culm internodes very short, nodes not noticeable; leaves distinctly distichous, leaf sheaths overlapping. **Leaf blade** 20–30 × 2–4 mm, rolled, setaceous, rarely expanded, distichous, apex hooded; ligule a fringed membrane. **Inflorescence** a raceme of 1–9 spikelets. **Spikelet** up to 4.5–6.3 × 2.5 mm, nearly square; glumes ± equal, $^{1}/_{3}$ as long as spikelet, 5-nerved. **Florets** 3; lower 2 florets sterile, awnless, first sterile lemma short, glume-like, second sterile lemma without an ear-like appendage at base, apex canoe-shaped; uppermost floret bisexual, lemma firmer than glumes; anther 1.3–3.2 mm long. **Flowering time** Oct.–Feb. Mountain slopes among rocks and at cliff bases, wet places; Eastern Fynbos-Renosterveld, Indigenous Forests (Bloukrans Pass SE to Humansdorp District).

ELEUSINE Gaertn.

Species 9, mainly Africa; 4 in sthn Afr., widespread.

coracana (L.) Gaertn.

African finger millet; *osgras* (A)

Tufted annual, 210–620 mm high; culm moderately robust, geniculately ascending, frequently rooting at lower nodes. **Leaf blade** 220–500 × 6–10 mm; ligule a fringed membrane. **Inflorescence** subdigitate; 3–13 racemes, 60–170 × 4–10 mm, slender. **Spikelet** 5–8 × 3–4 mm, awnless; lower glume acute, 2- or 3-nerved; upper glume 3.0–4.7 mm long, acute. **Florets** 2–6; lemma 3.5–5.0 mm long, apex acute to subacute, keel scabrid; palea keels scabrid along wings; anther 0.5–1.0 mm long. **Flowering time** Oct.–May. **Caryopsis** oblong, uniformly glandular, obliquely ridged. Ruderal, on many soil types; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket (Albert District E to Kokstad, southwards from Queenstown to Port St Johns and Tsitsikamma).

indica (L.) Gaertn.

Goose grass; *osgras* (A); *lia-ngoetsi* (SS); *umnyalakhobe* (Z)

Tufted annual, 230–400 mm high; culm slender, often branching at lower nodes. **Leaf blade** 50–350 × 2.5–6.0 mm; ligule a fringed membrane. **Inflorescence** subdigitate; 1–14 racemes, 20–120 × 3.0–5.5 mm, slender. **Spikelet** 4–5 × 2–3 mm, awnless; lower glume lanceolate to narrowly lanceolate-oblong, acute, 1-nerved; upper glume 1.8–2.9 mm long, acute. **Florets** 4–9; lemma 2.1–3.6 mm long, apex acute to subacute,

keel scabrid; palea keels scabrid along wings; anther 0.6–1.1 mm long. **Flowering time** Nov.–Feb. **Caryopsis** elliptic or lanceolate-elliptic, obliquely striate, with fine close lines perpendicular to striae. Ruderal; on rocky or turf soils; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Port St Johns S to Grahamstown District).

ELIONURUS Kunth ex Willd.

Species 15, cosmopolitan, tropical and subtropical; 2 in sthn Afr., widespread.

muticus (Spreng.) Kuntze

Silky grass, wire grass; *koperdraad*, *suurpol* (A); *hlooko* (SS); *isinama* (Z)

Densely tufted perennial, 0.2–1.2 m high; leaves mainly basal. **Leaf blade** 10–150 × 1–2 mm, setaceous; bitter tasting, sometimes aromatic when fresh; green, becoming copper-coloured late in season. **Inflorescence** a solitary, spike-like raceme typically curled like a sickle at maturity; spikelets in pairs: one sessile, the other pedicelled; rachis internodes densely hairy with spreading hairs. **Sessile spikelet** 6–14 mm long; lower glume lobed or entire, hairs long, dense, silky, white to grey. **Florets** 2; lower floret sterile, awnless; upper floret bisexual; anther 2.6–3.8 mm long. **Pedicellate spikelet** 4–7 mm long, well developed, lanceolate, pubescent to villous, acuminate or with a short awn-point. **Flowering time** Sept.–May. In open grassland, especially sourveld; common in all bioregions, except Lower Karoo, Rainshadow Valley Karoo (Albert District E to Matatiele District, southwards from Molteno District to Port Edward, Albany District, Greater Addo Elephant National Park and Tsitsikamma).

ELLISOCHLOA P.M.Peterson & N.P.Barker

Species 2, 1 endemic to N, 1 possibly occurs near George; WC?, EC.

Peterson et al. (2011).

papposa (Nees) P.M.Peterson & N.P.Barker
[*Merxmuellera papposa* (Nees) Conert]

Tufted perennial; culms 30–1 200 mm high. **Leaf blade** 7–300 × 1–8 mm, not deciduous at ligule; ligule a fringe of hairs or a ciliate membrane. **Inflorescence** a dense panicle, contracted, 25–300 × 5–30 mm. **Spikelets** 7–24 mm long, lanceolate or cuneate, laterally compressed; glumes ± equal, 13–18 mm long, 3-nerved. **Florets** 2–6; breaking up at maturity and disarticulating below each fertile floret; rachilla internodes not elongated between glumes; callus pubescent, pungent; glumes 7–22 mm long; paleas as long as lemmas, shorter or longer than spikelet, elliptic to lanceolate, chartaceous or membranous, persistent, 1–11-veined. **Lemmas** 4–11 mm long, oblong chartaceous, 9-veined, with a transverse row of hair tufts, bearing 2–8 tufts in all, apex bilobed and awned between lobes at sinus; awn 3–18 mm long, either geniculate or with a straight column. **Paleas** as long as or shorter than lemma, 2-veined. **Stamens** 3; anthers 1–5 mm long; lodiculae 2. **Flowering time** Dec., Jan. **Caryopsis** with adherent pericarp. Coarse alluvial sands; Albany Thicket, Eastern Fynbos-Renosterveld [Patensie E to Uitenhage (upper catchment of Gamtoos River), Port Elizabeth and Grahamstown].

*__ELYTRIGIA__ Desv.

Species ± 8, north and south temperate regions; 1 naturalised in sthn Afr., WC, EC.

repens (L.) Nevski

Rhizomatous, tufted perennial, 0.5–1.0(–1.2) m high. **Leaf blade** 150–240 × 6–12 mm; ligule an unfringed membrane. **Inflorescence** a single, erect spike, 100–200(–300) mm

long; rachis not breaking up; spikelets alternately arranged, usually overlapping. **Spikelet** 10–20 mm long; glumes shorter than spikelet; both glumes and lemmas sharp pointed or shortly awned, awn straight. **Florets** 3–8(–10), bisexual; lemma 8–13 mm long, blunt, 5-nerved; anther 2.0–2.2 mm long. **Flowering time** Dec., Mar. In waste places, gardens and cultivated lands; Drakensberg Grassland (Barkly East S to Jamestown).

ENNEAPOGON Desv. ex P.Beauv.

Species ± 30, warm, dry regions of the world, especially Australia and Africa; ± 7 in sthn Afr., widespread.

cenchroides (Roem. & Schult.) C.E.Hubb.

Nine-awned grass, fur grass; *gewone negenaaldgras*, *suurgras* (A); *letsoa* (SS)

Tufted, robust annual or short-lived perennial, up to 1 m high, densely hairy with short gland-tipped hairs, feels wet to touch when young and fresh; culms often geniculate. **Leaf blade** 30–250 × 3–8 mm; ligule a fringe of hairs. **Inflorescence** a contracted panicle, often dense, spike-like. **Spikelet** 3–5 mm long (including awns); glumes usually grey only in upper part especially apices, if wholly grey, then apex darker. **Florets** 3; third floret tiny, represented by only a tuft of awns; lemma not keeled, 9-lobed, lobes awned, awns plumose-hairy for up to $^{2}/_{3}$ their length; anther 1.0–1.5 mm long. **Flowering time** Jan.–Dec., usually in summer, but occasionally in winter in the north. Sandy soils, in disturbed places and overgrazed veld; Upper Karoo (Albert District).

desvauxii P.Beauv.

Eight day grass; *kalkgras*, *wondergras* (A)

Densely tufted annual or possibly perennial, 30–300 mm high, usually densely hairy with gland-tipped hairs; leaf sheaths persistent, fibrous; culms often branched, geniculate or decumbent. **Leaf blade** 25–250 × 7 mm or filiform; ligule a fringe of hairs. **Inflorescence** a dense, spike-like panicle. **Spikelet** 3.5–5.5 mm long (including awns); glumes light to dark grey. **Florets** 3; lemma not keeled, 9-lobed, lobes awned; awns plumose for up to $^{2}/_{3}$ their length; anther 0.2–0.7(–1.4) mm long. **Flowering time** Jan.–Dec., usually in summer but rarely in winter in the north. Many habitats and soil types, often in overgrazed veld, often in calcrete areas; Upper Karoo, Sub-Escarpment Grassland (Burgersdorp S to Middelburg, Hofmeyr District and Queenstown).

scaber Lehm.

Rock nine-awned grass; *klipgras*, *suurgras* (A)

Densely tufted perennial or annual, 70–350 mm high, densely hairy with short and gland-tipped hairs; culms often geniculate. **Leaf blade** 50–170 × 2–5 mm, sheaths persistent; ligule a fringe of hairs. **Inflorescence** usually an open panicle. **Spikelet** 3.0–6.5 mm long (including awns); glumes light to dark grey or pale green often tinged with purple. **Florets** 3; lemma not keeled, 9-lobed; lobes awned, awns glabrous or scabrous; anther 0.8–2.0 mm long; usually strong smelling when fresh. **Flowering time** Jan.–Dec., in summer rainfall areas, but during winter in winter rainfall areas. Hillsides among rocks, rock crevices, gravel plains and dry sandy riverbeds; Eastern Fynbos-Renosterveld (Willowmore District SE to Uitenhage District).

scoparius Stapf

Densely tufted, wiry perennial, 300–650 mm high, sparsely hairy; base usually bulbous, culms erect, unbranched from base to a few centimeters above base, then branching profusely and very leafy, basal internodes long and sheaths tight. **Leaf blade** 50–200(–250)

× 3 mm or filiform, persistent; ligule a fringe of hairs. **Inflorescence** a dense, spike-like panicle. **Spikelet** 4.0–7.0 mm long (including awns); glume pallid or grey only in lower part. **Florets** 3; third floret tiny, reduced to a tuft of awns; lemma not keeled, 9-lobed; lobes awned, awns plumose for $^{2}/_{3}$ of their length; anther 1.0–1.5 mm long. **Flowering time** Jan.–Dec. in summer, but in winter in northern Namibia. Dry grassland and among rocks on hillsides, often in areas with calcrete; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Lower Karoo, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (widespread from Oviston Nature Reserve S to Sundays River, Queenstown, Somerset East and East London).

ERAGROSTIS Wolf

Species ± 350, cosmopolitan, mainly subtropical; ± 90 in sthn. Afr., widespread.

1a Perennial
2a Spikelet up to 2 mm wide

acraea De Winter

Densely tufted, robust perennial, up to 2 m high; basal sheaths glabrous or obscurely hairy. **Leaf blade** 200–300(–600) × 5–10 mm; ligule a fringe of hairs. **Inflorescence** a moderately branched panicle, spreading or contracted; spikelets condensed on branches, most pedicels shorter than spikelets. **Spikelets** 5–7 × 1.5–2.5 mm, oblong to oblong-elliptic, laterally compressed, rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, usually rough, opaque, 1-nerved. **Florets** 5–7; lemma entire, acute to subacute, strongly keeled, keel prominent for entire length of lemma, 3-nerved, lateral nerves prominent; palea long and narrow, keels a thin line, entire, scabrid to smooth, margins touching along entire length and overlapping at apex; anthers 3, 1.2–1.7 mm long. **Flowering time** Nov.–Apr. **Caryopsis** oblong-elliptic. Mountainous areas, often between rocks and in disturbed places; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

bergiana (Kunth) Trin.

Kalkkweek, *kwaggakweek* (A)

Tufted, mat-forming perennial, up to 400 mm high; long rhizomatous; basal sheaths densely, long, woolly-hairy. **Leaf blade** 4–8 × 1.0–1.5 mm; ligule a fringe of hairs. **Inflorescence** a panicle, sparsely branched; spikelets densely clustered on side branches, which are slightly spreading from main axis. **Spikelets** 4–8 × 2.2–3.8 mm wide, laterally compressed, completely pallid or flushed with dark purple; rachilla fragile, lemmas and/or paleas breaking up from apex downwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lowest lemma broadly obtuse, entire, 3-nerved, lateral nerves conspicuous; palea scaberulous; anthers 3, 1.5 mm long. **Flowering time** Sept., Dec., Feb. Limestone soils, especially in pans and eroded places; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Albany Thicket, Rainshadow Valley Karoo (Lady Grey S to Middelburg, Graaff-Reinet and Willowmore Districts).

bicolor Nees

Vlei love grass; *fyn vleigras*, *blousaadgras* (A)

Densely tufted perennial, up to 600 mm high; usually hygrophyte; rhizome oblique; leaves mainly basal. **Leaf blade** up to 200 × 1.5 mm, flat, usually glaucous; ligule a fringe of hairs. **Inflorescence** an open, lax panicle, branches with spikelets spreading, lowest branches 2 or 3 or solitary, not whorled. **Spikelets** up to 8 × 1–2 mm, linear to narrowly

oblong, laterally compressed; rachilla persistent or upper part fragile, florets breaking off in groups; glumes shorter than spikelet, 1-nerved. **Florets** many; lemmas deep purple or violet with yellowish apices, always bicoloured, entire, 3-nerved; palea margins very close for entire length, just touching to overlapping at apex, keels a thin line, entire, smooth or scaberulous; anthers 3, 0.8–1.2 mm long. **Flowering time** Oct.–May. Often in brack areas, in water or on wet soil around seasonal pans, and in dry riverbeds; Upper Karoo, Lower Karoo (Oviston Nature Reserve S to Middelburg and Jansenville Districts).

caesia Stapf

Pangras (A)

Densely tufted perennial, 450–600 mm high. **Leaf blade** up to 200 × 3 mm; ligule a fringe of hairs. **Inflorescence** a dense, contracted panicle, branches usually appressed to main axis, occasionally spreading. **Spikelets** 4–7 × 1.5–2.4 mm, laterally compressed; spikelets tardily breaking up between florets; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved, distinct elongated black patches along lateral nerves; palea keels with hairs < 0.1 mm long; anthers 3, 1.0–1.3 mm long. **Flowering time** Nov.–June. Moist areas on shallow soil, cave sandstone, and seepage areas in mountainous grassland; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Indigenous Forests (Aliwal North E to Kokstad southwards, from Aberdeen to Winterberg Mts and Keiskammahoek District).

chloromelas Steud.

Blue love grass, *blouvleigras* (A)

Tufted perennial, ± 800 mm high; basal sheaths glabrous or obscurely hairy at very base. **Leaf blade** up to 300 mm long, tapering to very long filiform apex, setaceous, very curly especially when older; ligule a fringe of hairs. **Inflorescence** an open, much-branched panicle, branches and pedicels spreading, long hairs in axils, lowest branches usually solitary, never whorled. **Spikelets** 4–6 × 1.0–1.5 mm, narrowly obovate to oblong, laterally compressed, pale greenish grey to dark green; rachilla persistent in lower part, usually becoming fragile in upper part, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved; palea margins nearly touching to touching along entire length of palea; anthers 3, 0.6–0.8 mm long. **Flowering time** Dec.–May. **Caryopsis** ellipsoid. On hill slopes, rocky ridges or in disturbed areas on sandy soil, loam and often dolomite; in all bioregions, except Indian Ocean Coastal Belt, Lower Karoo, Upper Karoo, Rainshadow Valley Karoo (widespread from Aliwal North E to Kokstad District southwards, from Middelburg to Jansenville, King William's Town and Humansdorp District).

congesta Oliv.

Weak, tufted perennial, up to 800 mm high, erect or geniculate. **Leaf blade** 100–200 × 3–4 mm; ligule a fringe of hairs. **Inflorescences** consisting of 2–8 dense, distant clusters. **Spikelets** 3–10 × 1.2–2.0 mm, elliptic to narrowly oblong, laterally compressed; breaking up from base upwards, rachilla breaking off above glumes soon after lemmas begin to fall; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved; palea keels scaberulous; anthers 3, 0.3–0.4 mm long. **Flowering time** May–July. Moist areas or disturbed places like roadsides; Sub-Escarpment Savanna (KZN border).

curvula (Schrad.) Nees

Weeping love grass; *oulandsgras* (A)

Erect, densely tufted, wiry perennial, up to 1.2 m high; basal sheaths densely hairy with long hairs in deep furrows between prominent, squarish ridges formed by closely packed nerves. **Leaf blade** up to 500 × 3 mm, flat or rolled, appearing setaceous, apex long tapering, filiform; ligule a fringe of hairs. **Inflorescence** a much-branched panicle, variable, open and spreading, or contracted with branches appressed to main axis, lowest branches whorled or not whorled; pedicels smooth or with prickles distant from one another; spikelets appressed to branches. **Spikelets** 4–10 × 1.0–1.5 mm, laterally compressed; rachilla persistent or upper part often fragile, lemmas and/or paleas breaking up from base upwards; glumes translucent, shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved, pale green to dark green to greyish; palea margins meeting or overlapping for entire length, keels a thin narrow line or palea apparently only folded; anthers 3, 0.6–1.0 mm long. **Flowering time** Aug.–June. **Caryopsis** ellipsoid. In high rainfall areas on sandy or acid to loamy soils, often in disturbed or badly managed areas; widespread in all bioregions, except Rainshadow Valley Karoo (common in EC).

gummiflua Nees

Gum grass; *gomgras* (A)

Densely tufted perennial, up to 900 mm high; culms with sticky glandular patches below nodes and on leaf sheaths below collar, noticeable because soil particles adhere to patches. **Leaf blade** up to 500 × 4.5 mm; ligule a fringe of hairs. **Inflorescence** a dense panicle; spikelets clustered on secondary branches; pedicels stout. **Spikelets** 2.5–4.0 × 1.0–1.8 mm, laterally compressed; rachilla fragile, lemmas and/or paleas breaking up from apex downwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved; palea keels scaberulous; anthers 3, 0.5–0.8 mm long. **Flowering time** Sept.–Apr. **Caryopsis** oblong-elliptic. Habitat? Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Aliwal North E to Mount Fletcher S from Dordrecht to Maclear District, Queenstown and Stutterheim).

heteromera Stapf

Moderately slender, erect, tufted perennial, up to 1 m high. **Leaf blade** up to 150 × 2–4 mm, apex long-tapering. **Inflorescence** an open, moderately branched panicle, lowest branches 1–8, whorled or not whorled; spikelets appressed to branches; pedicels (except terminal ones) shorter than or as long as spikelets. **Spikelets** up to 4–9 × 1.5 mm, linear to oblong, laterally compressed; rachilla persistent, lemmas and paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved, translucent, smooth or scaberulous on keels and apices. **Florets** many; lemma entire, purple to violet to green, often with yellow especially near apex, 3-nerved, nerves usually prominent, strongly keeled, keel prominent along entire length; palea margins meeting or overlapping along entire length, keels distinct but a narrow line; anthers 3, 0.8–1.0 mm long. **Flowering time** Dec.–May. **Caryopsis** narrowly oblong. On moist sand or black clay in depressions, seasonal pan margins and in disturbed areas; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Port Edward S to Victoria East and Alice).

inamoena K.Schum.

Loosely tufted perennial, up to 1 m high; rhizome short and oblique to long and branched; basal sheaths glabrous; leaves mainly cauline. **Leaf blade** 40–250 × 2–4 mm; ligule a fringe of hairs. **Inflorescence** a variable panicle, 50–200 mm long, grading from

open with spreading branches to contracted with branches overlapping one another and appressed to main axis; pedicels (except terminal ones) shorter than, or as long as spikelets. **Spikelets** 5–20 × 2.0–3.5 mm, laterally compressed, dull, greyish green to dark green, frequently flushed purple; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved; upper glume acute. **Florets** 7–40; lemma entire, 3-nerved; lowest lemma 1.6–2.5 mm long, acute, lateral nerves distinct; palea narrowly obovate, membranous except for keel, apex truncate to obtuse, margins nearly touching to touching along entire length, keels narrow, flat, but distinct, entire, scaberulous; anthers 3, 0.6–1.3 mm long. **Flowering time** Nov.–May. **Caryopsis** narrowly elliptic. Sandy to organically rich soils on seasonally flooded areas and marshy places; Indian Ocean Coastal Belt, Indigenous Forests (Mkambati Nature Reserve and Port Edward).

lehmanniana Nees

Lehmanns love grass; *knietjiesgras* (A)

Tufted erect perennial, up to 600 mm high; geniculate, sometimes rooting at lower nodes; basal sheaths papery, nerves round, not close together or forming prominent ridges, glabrous or slightly hairy. **Leaf blade** up to 250 × 1.5–2.8 mm; ligule a fringe of hairs. **Inflorescence** an open, lax panicle, branches 1 or 2 at base, not whorled. **Spikelets** 4–8 × 1.0–1.5 mm, linear to oblong, laterally compressed, dark green, grey-green to red with yellow; rachilla subpersistent, fragile in upper portion; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma entire, 3-nerved; palea margins wide apart, keels thin, narrow, glabrous or scaberulous; anthers 3, 1.0 mm long. **Flowering time** Nov.–June. **Caryopsis** oblong. Sand or sandy loam usually over limestone, in disturbed areas; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Rainshadow Valley Karoo, Albany Thicket (Aliwal North E to Lady Grey District, S from Middelburg to Queenstown, Graaff-Reinet, Cradock, Steytlerville, Uitenhage District and Grahamstown).

nindensis Ficalho & Hiern

Agtdaepluimgras (A)

Densely tufted, slender perennial, up to 900 mm high; leaves mainly basal. **Leaf blade** 50–300 × 2–3 mm; ligule a fringe of hairs. **Inflorescence** a sparsely branched panicle; spikelets solitary or in clusters, subsessile on main axis or side branches. **Spikelets** 4–20 × 1.5–4.0 mm, yellowish green with a serrated outline, laterally compressed; rachilla fragile, breaking up from apex downwards; glumes shorter than spikelet, 1-nerved; lower glume ovate. **Florets** many; lowest lemma 2–3 mm long, acute to acuminate, 3-nerved, lateral nerves indistinct and not reaching margins; palea keels entire, flat, winged and scabrid; anthers 3, 1.0–1.4 mm long. **Flowering time** Oct.–June. **Caryopsis** ellipsoid. Prefers bare exposed areas and stony, sandy soils; Indian Ocean Coastal Belt (Port St Johns).

pallens Hack.

Besemgras, *gemsbokgras* (A)

Densely tufted, robust perennial, up to 2 m high; leaves mainly basal. **Leaf blade** up to 1 000 × 8 mm; ligule a fringe of hairs. **Inflorescence** a variable panicle; branches spreading to contracted with branches appressed to main axis. **Spikelets** 5–15(–25) × 1.5–2.0 mm, glossy, greenish grey to yellowish, laterally compressed; rachilla fragile,

breaking up from apex downwards, upper portion sometimes breaking off as a whole; glumes shorter than spikelet, 1-nerved. **Florets** many; lowest lemma 1.4–2.0 mm long, broadly obtuse, entire, 3-nerved, lateral nerves obscure; palea obovate, usually protruding from lemma, keels broad, flat, scabrid; anthers 3, 1.2 mm long. **Flowering time** Dec.–May. Sandy soils, especially with a high moisture content such as around seasonal pans; Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East S to Grahamstown District).

patentissima Hack.

Losgras (A)

Perennial, 500–700 mm high; rhizomes stout. **Leaf blade** up to 250 × 4 mm; ligule a fringe of hairs. **Inflorescence** an ovate to orbicular panicle, branches fairly rigid, spreading; pedicels 3× length of spikelets, spreading. **Spikelets** 6–8(–15) × 1.5–3.0 mm, grey-green, laterally compressed; rachilla persistent, becoming fragile in upper portion; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma acuminate, entire, 3-nerved, lateral nerves distinct; palea oblanceolate, thick-textured, apex acute to subacute, keels entire, forming a prominent ridge, shortly ciliolate; anthers 3, 0.8–1.0 mm long. **Flowering time** Nov.–Mar. **Caryopsis** elliptic. Sandy to loamy soils of open areas in damp places and disturbed areas; Drakensberg Grassland, Sub-Escarpment Savanna, Indigenous Forests (Maclear District S to Keiskammahoek District).

plana Nees

Fan love grass; *taaipol eragrostis* (A); *umvithi* (Z)

Densely tufted perennial, up to 1 m high; basal sheaths strongly compressed, smooth and shiny. **Leaf blade** up to 800 × 4 mm; ligule a fringe of hairs. **Inflorescence** branches usually spreading, spikelets appressed to branches. **Spikelets** 6–10 × 0.5–2.0 mm, linear-oblong, laterally compressed; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemmas entire, 3-nerved, lateral nerves prominent and with glandular dots; palea keels entire, glabrous to scabrid, glandular dots present or absent; anthers 3, 1.6–2.0 mm long. **Flowering time** Nov.–May. **Caryopsis** oblong. In high rainfall regions in waterlogged, overgrazed, burnt or disturbed areas. In dry areas it favours wet soils around vleis and rivers; common in all bioregions, except Lower Karoo and Rainshadow Valley Karoo (Albert District E to Kokstad District, S from Mkambati Nature Reserve to Dordrecht, Cathcart, Greater Addo Elephant National Park and Humansdorp District).

planiculmis Nees

Broom love grass; *besemgras* (A); *masapo-lokane* (SS)

Tufted, erect perennial, up to 1.2 m high; culms densely and strongly compacted at base, not easily separated, nodes glabrous; basal sheaths glabrous, inner sheaths often yellow; leaves mainly in a dense basal tuft. **Leaf blade** up to 900 × 1.5 mm, setaceous, long-tapering at apex, straight or drooping. **Inflorescence** an open, much-branched panicle, 100–700 mm long, lowest branches whorled or not whorled; pedicels long. **Spikelets** up to 8 × 0.5–2.0 mm, linear, laterally compressed; rachilla persistent in lower portion, upper part fragile, lemmas and paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** 5–11; lemma entire, dark green to greenish grey, not strongly keeled, keel obscure in lower part, 3-nerved; palea margins nearly touching to touching along entire length, overlapping at apex, keel a narrow line; anthers 3,

0.6–1.2 mm long. **Flowering time** Nov.–Apr. Clay or dolerite soils in depressions, vlei margins and disturbed areas; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Naude's Neck S to Molteno, Maclear District, Alice, Komga, Greater Addo Elephant National Park and Port Alfred).

racemosa (Thunb.) Steud.

Narrow heart love grass; *smalhartjie-eragrostis* (A)

Densely tufted perennial, up to 800 mm high; leaves mainly basal; basal sheaths glabrous or thinly silky hairy. **Leaf blade** 60–100 × 2–5 mm; ligule a fringe of hairs. **Inflorescence** an open or contracted panicle, sparsely branched, secondary branches present or absent, primary branches stiff; 2–4 spikelets on short stout pedicels. **Spikelets** 3–10 × 1.5–4.5 mm, dark greenish grey, olive or brownish grey, outline usually smooth, laterally compressed; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, cartilaginous, ovate, boat-shaped, 1-nerved. **Florets** many; lemma entire, 3-nerved, lateral nerves indistinct; palea keels a narrow ridge, entire, scaberulous; anthers 3, 1.0–1.6 mm long. **Flowering time** Aug.–May. **Caryopsis** almost square. On shallow sandy, stony or clayey soils; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Mount Fletcher S to Mkambati Nature Reserve, Molteno District, Winterberg Mts, Greater Addo Elephant National Park, Grahamstown District).

remotiflora De Winter

Tufted, weak perennial or annual, up to 600 mm high; erect or with some culms geniculate. **Leaf blade** up to 250 × 2.5 mm; ligule a fringe of hairs. **Inflorescence** an open panicle, branches spreading; pedicels slender. **Spikelets** up to 5 × 1 mm, oblong to linear, laterally compressed; lemmas on same side of rachilla either not or just overlapping the one above, rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, weakly keeled, 1-nerved. **Florets** many; lemma 1.0–1.8 mm long, entire, 3-nerved; palea keels scabrid to glabrous; anthers 3, 0.2–0.3 mm long. **Flowering time** Jan.–Apr. **Caryopsis** oblong. Wet and damp areas in pans, vleis and river floodplains, also disturbed areas in semi-arid regions; Upper Karoo, Mesic Highveld Grassland, Sub-Escarpment Grassland, Lower Karoo, Sub-Escarpment Savanna (Oviston Nature Reserve E to Lady Grey S from Middelburg to Cradock and Alice Districts).

sarmentosa (Thunb.) Trin.

Mat-forming perennial, up to 400 mm high; shortly rhizomatous; leaves mainly cauline; culms occasionally geniculate, decumbent, rooting at nodes. **Leaf blade** up to 100 × 4.5 mm; ligule a fringe of hairs. **Inflorescence** a narrow, contracted panicle; branches appressed to main axis; pedicels thick; spikelet groups often distant on main axis, spikelets appressed to branches. **Spikelets** 3–7 × 1.5–1.7 mm, greyish green to purple; rachilla persistent, upper part often becoming fragile, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved; upper glume acute. **Florets** many; lowest lemma 1.5 mm long, entire, 3-nerved, lateral veins distant, usually not reaching margins; palea keels scaberulous; anthers 3, 1.2 mm long. **Flowering time** July–May. **Caryopsis** ellipsoid to ovoid. Moist, sandy areas such as edges of riverine vegetation, along floodplains and dams, also in disturbed overgrazed areas; Eastern Fynbos-Renosterveld (Keurbooms River).

stapfii De Winter

Densely tufted, erect perennial, 500–900 mm high; basal sheaths glabrous; leaves forming a dense basal tuft. **Leaf blade** up to 200 × 2 mm; usually tightly rolled and curling; ligule a fringe of hairs. **Inflorescence** an open panicle, delicate, lowest branches whorled. **Spikelets** up to 4 × 0.5–1.0 mm, laterally compressed; rachilla subpersistent, upper part fragile, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** 2 or 3(–5); lemma pale yellowish grey-green, entire, not strongly keeled, more rounded at back, keel obscure at base, 3-nerved; palea margins almost touching along entire length, overlapping at apex, keels an obscure line, smooth or scaberulous; anthers 3, 0.8 mm long. **Flowering time** Nov.–Apr. Shallow sand or coarse sandy soils, sometimes in wet disturbed areas; Sub-Escarpment Grassland (Elliot District).

tenuifolia (A.Rich.) Steud.

Loosely tufted, weak perennial or annual, up to 400 mm high. **Leaf blade** 40–300 × 1–3 mm; ligule a fringe of hairs. **Inflorescence** an open panicle; pedicels slender. **Spikelets** 4–16 × 1–3 mm, outline coarsely serrate, laterally compressed; lemmas on same side of rachilla distinctly overlapping lemma above; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lowest lemma 1.2–2.5 mm long, entire, 3-nerved; palea keels scaberulous; anthers 3, 0.4–0.5 mm long. **Flowering time** Jan. (rarely Apr.). **Caryopsis** oblong, strongly laterally flattened. Habitat? Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (Umtamvuna Nature Reserve S to East London and Humansdorp District).

trichophora Coss. & Durieu

Atherstone's grass; *blousaadgras*, *soetgras* (A)

Slender, wiry, tufted perennial, up to 600 mm high; stoloniferous, rooting at nodes; basal sheaths glabrous or hairy, papery, nerves rounded and well apart; culms usually branched above; round glandular dots, usually flushed purple often present around culm nodes and below collar of leaf sheaths. **Leaf blade** up to 150 × 3 mm; ligule a fringe of hairs. **Inflorescence** an open panicle; branches spreading, purplish yellow, with large prickles, whorled at base, axils with long hairs. **Spikelets** 3.5–5.0 × 1.0–1.2 mm, oblong to narrowly oblong, laterally compressed; rachilla subpersistent, fragile in upper part, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved; lower glume wide and covering most of lemma above. **Florets** 3–5; lemma pale greenish grey to dark grey, apex usually membranous, whitish, entire, 3-nerved; palea margins apart for most of its length, nearly touching to touching at apex, keels a narrow line, smooth to scaberulous; anthers 3, 0.8 mm long. **Flowering time** Nov.–May. On sand and loam, often on shallow soils and dolomite in moist places, road verges and other disturbed or overgrazed areas; Dry Highveld Grassland, Drakensberg Grassland, Albany Thicket (Aliwal North S to Sterkstroom and Waterford).

truncata Hack.

Bloupolgras (A)

Mat-forming, tufted perennial, up to 400 mm high; forming raised cushions and characteristic rings; rhizome short and branched; basal sheaths with dense, long woolly hairs. **Leaf blade** (lower) 10–40 × 1.0–1.5 mm (upper blades up to 100 mm long); ligule a fringe of hairs. **Inflorescence** a panicle. **Spikelets** 5–7 × 2.5–3.0 mm, completely pallid to flushed with dark purple, laterally compressed; rachilla very fragile, breaking

up from apex downwards, florets shed with rachilla internode; glumes shorter than spikelet, 1-nerved. **Florets** many; lowest lemma truncate, entire, 3-nerved; palea keels scaberulous; anthers 3, 0.8–1.2 mm long. **Flowering time** Oct.–May. Mainly in limestone soils, especially in and around pans; Upper Karoo (Oviston Nature Reserve S to Middelburg District).

2b Spikelet 2.6 mm and wider

bergiana (Kunth) Trin. (see 2a above)

capensis (Thunb.) Trin.

Cape love grass; *hartjie-eragrostis*, *bosluisgras* (A)

Tufted perennial, up to 900 mm high; basal sheaths glabrous to hairy but base not woolly-hairy; leaves mainly basal. **Leaf blade** 70–350 × 2–5 mm; ligule a fringe of hairs. **Inflorescence** a sparsely branched or unbranched panicle; spikelets appressed to main axis or branches. **Spikelets** 3.5–15.0 mm × 3–7 mm, plump, opposite row of florets overlapping and closely packed, rachilla not visible; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma obtuse to subobtuse, entire, dull, granular, greenish to greenish brown, strongly flushed with purple, 3-nerved, lateral nerves distinct; palea narrowly obovate, keels entire, membranous to subcartilaginous between keel and margins, margins nearly touching to touching in lower parts to widely separated in upper parts; anthers 3, 1–2 mm long. **Flowering time** Sept.–Apr. **Caryopsis** elliptic. Sandy to clayey soils in moist areas on slopes, rocky and disturbed places; common in all bioregions, except Lower Karoo, Upper Karoo and Rainshadow Valley Karoo (Lady Grey E to Kokstad District southwards, from Mkambati Nature Reserve to Queenstown District, Kentani, Albany District, East London and Uniondale District).

inamoena K.Schum. (see 2a above)

nindensis Ficalho & Hiern. (see 2a above)

obtusa Munro ex Ficalho & Hiern

Bewergras, *douvatgras* (A)

Tufted perennial, up to 400 mm high, geniculate; basal sheaths if hairy, then not woolly-hairy. **Leaf blade** up to 150 × 4.5 mm; ligule a fringe of hairs. **Inflorescence** an open, lax to somewhat contracted panicle. **Spikelets** 3–5 × 3–4 mm, broadly ovate to oblong, laterally compressed, pallid, green to dark grey; rachilla extremely fragile, breaking up from apex downwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma obtuse to rounded, entire, 3-nerved, lateral nerves distinct; palea broadly elliptic to round, keels entire, shortly ciliolate; anthers 3, 0.8–1.3 mm long. **Flowering time** July–May. **Caryopsis** broadly elliptic. Sandy or limestone soils in disturbed places such as roadsides and overgrazed areas; common in all bioregions, except Indian Ocean Coastal Belt and Indigenous Forests (Oviston Nature Reserve E to Lady Grey District southwards, from Aberdeen, Hankey and Alexandria districts to East London).

patentissima Hack. (see 2a above)

racemosa (Thunb.) Steud. (see 2a above)

sclerantha Nees

Densely tufted perennial, up to 700 mm high; basal sheaths densely woolly-hairy, sometimes this only visible on inner sheaths. **Leaf blade** up to 200 × 6.5 mm; ligule a fringe

of hairs. **Inflorescence** a panicle, branches many and spreading or narrow and sparsely branched; spikelets many, either appressed to branches or spreading. **Spikelets** 1.5–5.0 × 1.5–3.0 mm, dark olive-green, laterally compressed; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet. **Florets** many; lemma acute, entire, 3-nerved, lateral nerves conspicuous or indistinct and not reaching margins; palea keels a narrow line, entire, scabrid; anthers 3, 0.7–1.0 mm long. **Flowering time** Jan.–May. **Caryopsis** ellipsoid. Wooded grassland; sands and sandy loams between rocks (often quartzite); Sub-Escarpment Grassland (KZN border, Palm Beach Area).

tenuifolia (A.Rich.) Steud. (see 2a above)

truncata Hack. (see 2a above)

1b Annual

aspera (Jacq.) Nees

Rough love grass; *grootpluim-eragrostis* (A); *jatsa* (SS)

Erect, tufted annual, up to 800 mm high. **Leaf blade** up to 300 × 10 mm; ligule a fringe of hairs. **Inflorescence** an open panicle, branches ascending at 45 degree angles, bearded in axils; pedicels long and slender. **Spikelets** 3–10 × 1.0–1.5 mm, laterally compressed; rachilla fragile; lemmas and/or paleas breaking up from apex downwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma obtuse to truncate, entire, 3-nerved; palea keels scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Feb.–June. **Caryopsis** subglobose. On sandy soil in dolomite areas and in disturbed places and old cultivated areas; Sub-Escarpment Grassland (KZN border, St Michaels).

***barrelieri** Daveau

Erect to geniculate, laxly tufted, annual, up to 300 mm high. **Leaf blade** up to 100 × 3.5 mm; ligule a fringe of hairs. **Inflorescence** an open panicle, primary branches usually not longer than 40 mm, spreading; pedicels stout. **Spikelets** 5–15 × 1.5–1.8 mm, laterally compressed; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes unequal, shorter than spikelet, 1-nerved. **Florets** many; lemma obtuse, entire, 3-nerved; palea keels scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Dec., Jan. **Caryopsis** oblong-elliptic. On sand in disturbed areas such as road verges and in gardens; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna, Albany Thicket (Middelburg S to Mountain Zebra National Park, Alice and Uitenhage District).

cilianensis (All.) Vignolo ex Janch.

Grey love grass, stink grass; *stinkgras* (A)

Loosely tufted, often geniculate annual, up to 900 mm high; basal sheaths glabrous, if hairy, then not densely woolly-hairy. **Leaf blade** up to 250 × 10 mm; ligule a fringe of hairs. **Inflorescence** a panicle, side branches usually 40 mm or shorter, spreading to appressed near apex of inflorescence, branches and pedicels stout. **Spikelets** 3–20 × 1.5–4.0 mm, narrowly ovate to narrowly oblong, laterally compressed; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma narrowly to broadly obtuse in profile, 1.7–2.8 mm long, entire, 3-nerved; palea keels entire, scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Oct.–June. Sandy soils, often in moist places, also disturbed areas such as cultivated lands, pathsides and overgrazed places; Upper Karoo, Dry Highveld Grassland,

Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Oviston Nature Reserve E to Aliwal North southwards, from Middelburg District to Queenstown, Dordrecht, Msikaba River Valley and Grahamstown).

ciliaris (L.) R.Br.

Woolly love grass, mutema love grass

Erect tufted annual, up to 600 mm high. **Leaf blade** up to 120 × 5 mm; ligule a fringe of hairs. **Inflorescence** a contracted panicle, often interrupted, spikelets densely clustered. **Spikelets** 2.0–4.5 × 1.5–2.2 mm wide, usually flushed purple, laterally compressed; rachilla fragile, breaking up from apex downwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma 3-nerved, keels (at least upper ones in spikelets) with stiff hairs 0.2–0.4 mm long, especially towards base; palea keels with hairs 0.5–0.7 mm long, which are exserted from lemma; anthers 2, 0.20–0.25 mm long. **Flowering time** Jan., Dec. Moist sandy soils in disturbed places such as human habitation, beaches, coastal dunes; Indian Ocean Coastal Belt (Port St Johns).

cylindriflora Hochst.

Blousaadgras (A)

Loosely tufted annual, up to 800 mm high, usually erect. **Leaf blade** 30–150 × 2–4 mm; sheaths nearly always dotted with oblong glands; ligule a fringe of hairs. **Inflorescence** a panicle, lowest branches whorled. **Spikelets** 3–8 × 0.5–1.5 mm, laterally compressed; rachilla persistent in lower part, fragile above, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lowest lemma 1.5–1.7 mm long, chartaceous to membranous, broadly elliptic, obtuse to subacute, entire, 3-nerved, lateral nerves obscure; palea keels minutely scaberulous; anthers 3, 0.8–1.0 mm long. **Flowering time** Jan.–Aug. **Caryopsis** ellipsoid. Sand, clayey loam or black turf in riverbeds, depressions and disturbed areas such as overgrazed places; Lower Karoo, Albany Thicket (Jansenville District).

homomalla Nees

Reëngrassie (A)

Tufted annual, up to 500 mm high, erect to decumbent. **Leaf blade** 20–100 × 1–4 mm; ligule a fringe of hairs. **Inflorescence** a panicle, branches spreading or appressed to main axis, rigid; spikelets irregularly and densely condensed along primary branches; pedicels stout. **Spikelets** 2–7 × 0.7–1.0 mm, linear to oblong, laterally compressed, lemmas on same side of rachilla distinctly overlapping lemma above; rachilla subpersistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma ovate-elliptic, entire, 1.0–1.5 mm long, 3-nerved; palea keels smooth to scabrid; anthers 3, 0.3 mm long. **Flowering time** Jan.–May. **Caryopsis** ellipsoid. Moist, sandy loam or clay in brackish depressions or seasonally wet pans; Upper Karoo, Lower Karoo, Albany Thicket (Middelburg E to Steynsburg District, S to Pearston District).

***mexicana** (Hornem.) Link

Chilean love grass

Tufted annual, up to 700 mm high; erect or geniculate. **Leaf blade** up to 250 × 3.5–7.0 mm, margins eglandular, scabrid; ligule a fringe of hairs. **Inflorescence** an open panicle, side branches spreading; pedicels long and slender; spikelets tending to be condensed to branches. **Spikelets** 3.0–4.5 × 1.0–1.2 mm, oblong, laterally compressed;

rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved. **Florets** many; lemma 1.3–1.7 mm long, entire, 3-nerved; palea keels scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Dec.–Mar. **Caryopsis** oblong. Sandy soils in cultivated and disturbed areas; Upper Karoo, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg SE to Alice and S to Uitenhage District).

pilosa (L.) P.Beauv.

Indian love grass; *fynsaadgras* (A)

Loosely tufted, up to 700 mm high, erect, occasionally geniculate annual. **Leaf blade** 20–200 × 1–4 mm; ligule a fringe of hairs. **Inflorescence** a delicate, open panicle, branches and pedicels slender, usually flexible, spikelets distant, axils of branches bearded. **Spikelets** 3–7 × 0.7–1.2 mm, linear to oblong, laterally compressed; lemmas on same side of rachilla distinctly overlapping lemma above and becoming conspicuously shorter towards apex of spikelet; rachilla persistent, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, 1-nerved, weakly keeled. **Florets** many; lemma broadly ovate, entire, 3-nerved, lateral veins visible, lowest lemma 1.0–1.6 mm long; palea keels glabrous to scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Oct.–May. **Caryopsis** ellipsoid. Sandy soils in wet areas such as pan edges, vleis and riverbanks, disturbed places, often in shade; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Port St Johns S to Victoria East District).

procumbens Nees

Tufted annual, up to 500 mm high; geniculate or procumbent. **Leaf blade** up to 200 × 3.5 mm; ligule a fringe of hairs. **Inflorescence** a panicle; side branches usually appressed to main axis, lower branches sometimes spreading; many spikelets densely congested and appressed to branches. **Spikelets** ± 7 × (1.7–)2.0–2.5 mm, oblong to elliptic, laterally compressed; rachilla persistent, sometimes becoming fragile in upper part, lemmas and/or paleas breaking up from base upwards; glumes shorter than spikelet, entire. **Florets** many; lemmas acute (1.7–)2.0–2.5 mm long, entire, 3-nerved, a minute mucro present or absent; palea keels entire, scabrid; anthers 3, 0.2–0.3 mm long. **Flowering time** Oct.–June. **Caryopsis** oblong. Moist gravel or sandy soils in depressions, along watercourses and disturbed areas; Upper Karoo (NC border, Middelburg District).

remotiflora De Winter (see 2a above)

***tef** (Zucc.) Trotter

Teff grass; *tefgras* (A)

Loosely tufted, erect annual, up to 600 mm high. **Leaf blade** up to 300 × 4 mm; ligule a fringe of hairs. **Inflorescence** an open or contracted panicle; branches usually > 40 mm long, flexible, slender; pedicels slender. **Spikelets** 5.5–9.0 × 1.5–2.0 mm, laterally compressed; rachilla persistent, lemmas and paleas remaining intact at maturity; glumes shorter than spikelet; 1-nerved. **Florets** many; lemmas 2.0–2.7 mm long, entire, 3-nerved; palea keels scaberulous; anthers 3, 0.3–0.5 mm long. **Flowering time** Nov.–May (July, Sept.). **Caryopsis** oblong. Sub-Escarpment Grassland, Upper Karoo, Sub-Escarpment Savanna (Kokstad District, Middelburg, Flagstaff and Alice District).

tenuifolia (A.Rich.) Steud. (see 2a above)

ERIOCHLOA Kunth

Species 30, tropics; 5 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, NC, EC?

meyeriana (Nees) Pilg.

Robust perennial, 0.3–1.5 m high; sometimes almost woody; culms geniculate, often rambling, rooting at lower nodes. **Leaf blade** 50–250 × 3–15 mm. **Inflorescence** a panicle, bearing spikelets on branchlets appressed to primary branches; rachis scabrid; spikelets paired or densely clustered on short secondary branchlets. **Spikelets** 2.5–3.5 mm long, dorsiventrally compressed, glabrous or occasionally sparsely pubescent, supported on a bead-like swelling; lower glume up to 2 mm long, $^1/_4$–$^1/_2$ spikelet length, acute; upper glume acute, not mucronate or awned. **Florets** 2; lower floret male, palea present, almost as long as lemma; upper floret bisexual, lemma hard, entire, obscurely mucronate; anther 1.0–1.7 mm long. **Flowering time** Oct.–June. Riverbanks and floodplains, wet places; on sandy or clay soils; Indian Ocean Coastal Belt (Umtamvuna Nature Reserve).

ERIOCHRYSIS P.Beauv.

Species 7, Africa and tropical America, 1 in India; 2 in sthn Afr., N, B, LIM, G, M, S, KZN, NC, EC.

pallida Munro

Tufted perennial, 400–900 mm high. **Leaf blade** 100–240 × 1–4 mm. **Inflorescence** contracted, of several short, spike-like racemes, ± appressed along central axis, fulvous or rufous; rachis fragile; internodes and pedicels linear to clavate; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 3.5–5.0 mm long, dorsiventrally compressed, awnless; glumes ± equal, dissimilar. **Florets** 2; lower floret reduced to a hyaline, lanceolate lemma, awnless; upper floret bisexual; lemma less firm than glumes, entire, hyaline, mucronate; golden callus hairs longer than spikelet; anther 1.5–2.0 mm long. **Pedicelled spikelet** similar but slightly smaller than sessile one. **Flowering time** all year. Vleis and riverbanks; Indian Ocean Coastal Belt, Indigenous Forests (Mkambati Nature Reserve and Port Edward).

EULALIA Kunth

Species ± 30, tropical and subtropical regions of Africa, Asia and Australia; 2 in sthn Afr., LIM?, M, S, KZN, EC.

villosa (Thunb.) Nees

Golden velvet grass; *geel fluweelgras* (A)

Tufted perennial, 0.3–1.4 m high. **Leaf blade** 50–250 × 3–8 mm, linear, convolute at first, becoming expanded; sheath hairy; ligule a fringed membrane. **Inflorescence** digitate or subdigitate, of (2)3–5(–10) racemes, hairs white; spikelets paired: one sessile, the other pedicelled, similar; pedicels free. **Spikelets** 5–7 mm long, dorsiventrally compressed, falling with glumes; glumes ± equal; lower glume concave to ± flat on back, only keels conspicuously hairy. **Florets** 2; lower floret reduced to lemma; upper floret bisexual, lemma 2-lobed; central awn 15–20 mm long, robust, geniculate and twisted, glabrous; anther 2.3–3.3 mm long. **Flowering time** Sept.–May. Open grassland on hillsides; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad S to Port Edward District, Baziya Mts, Kentani, Amatole Mts, Uniondale and Humansdorp districts).

EUSTACHYS Desv.

Species 10, tropics, mostly America; 1 in sthn Afr., widespread.

paspaloides (Vahl) Lanza & Mattei

Red Rhodes grass; *bruinhoenderspoor* (A)

Tufted perennial, 200–950 mm high, erect or geniculately ascending; rhizomatous; basal sheath strongly compressed. **Leaf blade** 20–180 × 2–5 mm; ligule a fringe of hairs. **Inflorescence** digitate, of 2–many, secund, spike-like racemes; spikelets solitary, sessile, densely packed in 2 rows on rachis. **Spikelets** 1.5–2.5 mm long, laterally compressed, golden-brown to dark brown; glumes unequal, 1-nerved; lower glume broad, ovate, boat-shaped; upper glume oblong-elliptic, awn 0.5–1.5 mm long. **Florets** 2 or 3; lower floret bisexual, lemma 1.5–2.4 mm long, keeled, long-hairy on margins and nerves, shortly 2-lobed, with or without a mucro up to 1 mm long or awn up to 0.8 mm long; upper floret sterile; anther 1.0–1.5 mm long. **Flowering time** Oct.–May. Sandy and stony soils, occasionally on clay; undisturbed open grassland and mixed but seldom sweet bushveld; Upper Karoo, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North S to Middelburg, Tsolo District, Mountain Zebra National Park, Seekoei River Nature Reserve and Port Elizabeth District).

FESTUCA L.

Species ± 450, temperate areas throughout the world, extending through tropics on mountain tops; 9 in sthn Afr., mainly high eastern regions, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

africana (Hack.) Clayton

Rhizomatous perennial, 0.5–1.2(–1.6) m high. **Leaf blade** 250–500 × 8–15 mm, cauline; auricles absent or poorly developed, < 1 mm wide; ligule an unfringed membrane, 3–8 mm long. **Inflorescence** an open panicle, branches slender and flexuous, spikelets solitary at apex. **Spikelets** 7–9 mm long, laterally compressed; disarticulating above glumes; glumes ± equal, 1–3-nerved. **Floret** 1, rachilla extension prominent sometimes with a rudimentary floret; lemma entire, glabrous, scaberulous, rounded on back, at least at base, extending into a long straight awn 10–20 mm long; anther 3.2–4.0 mm long. **Flowering time** Jan.–Apr. (occasionally other months). Open patches in forests, usually in shade; Sub-Escarpment Grassland, Drakensberg Grassland, Indigenous Forests (Ntsikeni S to Thembuland and Kubusi Forest Reserve).

***arundinacea** Schreb.

Meadow fescue, English blue grass; *serakoe* (SS)

Tufted perennial, 0.8–2.0 m high, rhizomatous; sheaths glabrous, not breaking into fibres. **Leaf blade** 100–600 × 3–12 mm; auricles (best seen in young leaves) well developed, up to 5 mm wide, minutely hairy; ligule an unfringed membrane up to 2 mm long. **Inflorescence** an open to contracted panicle, 100–500 mm long, lanceolate to ovate, nodding or erect. **Spikelets** 10–18 mm long, laterally compressed; glumes ± equal, 1-nerved. **Florets** 3–10; lemma entire, acute or awned, rounded on back, at least at base, awn 0.5–4.0(–6.0) mm long; anther 3–5 mm long. **Flowering time** Sept.–Apr. Disturbed places near streams, reservoirs and on roadsides; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Lady Grey District and Barkly East S to Molteno and Elliot Districts).

caprina Nees

Goat-beard grass; *bokbaardgras* (A)

Weakly to densely tufted perennial, 0.25–1.00 m high, rhizomatous; old leaf sheaths brown with distinct midribs, persistent and splitting into fine fibres. **Leaf blade** up to 40–250 × 1.5 mm, involute, filiform, rarely expanded and folded, usually not more than half culm length; auricles absent or poorly developed (< 1 mm wide); ligule an unfringed membrane, < 1 mm long. **Inflorescence** an open, lax panicle, 50–200 mm long; branches bare in lower third. **Spikelets** 7–15 mm long, laterally compressed; glumes unequal, shorter than spikelet, 1-nerved, glabrous, scabrid on margins. **Florets** 4–6(–9); lemma entire, glabrous to rarely hairy, scabrid, rounded on back, at least at base, awn 1–4 mm long; anther 1–4 mm long. **Flowering time** Sept.–Mar. Moist or wet areas near vleis in high altitude mountain grassveld; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Indigenous Forests, Albany Thicket (Barkly District S to Graaff-Reinet District, Baziya Mts, Tarka District and Amatole Mts).

costata Nees

Tussock fescue; *polswenkgras* (A)

Tufted, erect, coarse, perennial, 0.6–1.7 m high; rhizome short and stout or long and deeply burrowed; mostly with burnt-off traces of basal sheaths, basal sheaths persistent, splitting into coarse fibres that form a protective layer around young shoots. **Leaf blade** 700–1 000 × 3.5–6.0 mm; auricles absent or poorly developed, < 1 mm wide; ligule an unfringed membrane, 3–12 mm long. **Inflorescence** an open panicle, 120–240 mm long; branches usually long, bare on lower half. **Spikelets** 10–20 mm long, laterally compressed; glumes ± equal, shorter than spikelet, 3-nerved, glabrous. **Florets** 3–7; lemma entire, scaberulous, acute or with a minute awn up to 2 mm long, rounded on back, at least at base; anther 3.5–5.0 mm long. **Flowering time** Sept.–Jan. Moist places in high altitude mountain grassland, encouraged by frequent burning; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket (Kokstad S to Maclear, Port Edward, Queenstown, Stutterheim and Grahamstown districts).

longipes Stapf

Perennial, 300–750 mm high; rhizome long, slender. **Leaf blade** 100–300 × 2–6 mm; auricles absent or poorly developed, < 1 mm wide; ligule an unfringed membrane, 2–3 mm long. **Inflorescence** a panicle, 150–330 mm long, almost candelabrum-shaped, branches rigid, flattened on inner side, borne in remote pairs, unbranched, bare for most of their length, lower branches almost as long as central axis, bearing 1–6 spikelets at apex. **Spikelets** 8–12 mm long, laterally compressed, without rachilla extension; glumes unequal to ± equal, shorter than spikelet, 1–3-nerved. **Florets** 3–6; lemma entire, acute, rounded on back, at least at base, awnless; anther 2.5–3.0 mm long. **Flowering time** Nov.–Apr. Moderate to steep grassy slopes and sandstone ridges, often on edges of forests in partial shade, alt. > 1 500 m; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Kokstad District S to Dordrecht District, Mbashe, Somerset East, Kentani, Grahamstown and Uitenhage).

scabra Vahl

Munnik fescue; *munnik swenkgras* (A)

Perennial, 0.3–1.0 m high, dioecious; rhizome long or oblique; culm base bulbous at maturity; sheaths velvet-hairy at base, old sheaths splitting into fine fibres. **Leaf blade**

50–300 × 10 mm, inrolled or expanded; auricles absent or poorly developed, < 1 mm wide; ligule an unfringed to a fringed membrane, 2–7 mm long. **Inflorescence** a panicle, 50–300 × 10–30 mm, narrow, contracted, sometimes spike-like or interrupted. **Spikelets** 7–15 mm long, laterally compressed; glumes unequal to ± equal, shorter than spikelet, 1–3-nerved. **Florets** 3–7; lemma entire, 7-nerved (3 ± distinct), rounded on back at least at base, awnless or minutely awned; anther 1.8–2.0 mm long. **Flowering time** Sept.–Feb. Sandy soils in undisturbed, high altitude mountain grassveld and extending into Valley Bushveld, often in moist places and partial shade; stimulated by fire; in all bioregions (widespread from Zastron District E to Oribi Gorge southwards, from Molteno to Queenstown, Port Edward, Cradock, Uniondale, Komga and Humansdorp District).

[E]**vulpioides** Steud.

Tufted or sprawling perennial, 0.5–1.0 m high. **Leaf blade** 100–250 × 3–7 mm, cauline, expanded; auricles absent or poorly developed, < 1 mm wide; ligule an unfringed membrane, < 1 mm long. **Inflorescence** a narrow panicle, up to 300 mm long; spikelets borne either solitary on long pedicels or on short branches with up to 5 widely spaced spikelets. **Spikelets** (8–)15–20 mm long, laterally compressed; glumes unequal, shorter than spikelet, 1–3-nerved. **Florets** 5–8; lemma entire, acute or minutely awned; anther 2–3 mm long. **Flowering time** Jan. Scattered tufts at high altitudes in the Dohne Sourveld; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East District S to Keiskammahoek District).

FINGERHUTHIA Nees

Species 2, Afghanistan, Arabian Peninsula, sthn Afr., widespread.

africana Lehm.

Thimble grass; *vingerhoedgras* (A)

Rhizomatous perennial or sometimes annual, 100–910 mm high; basal sheaths dull. **Leaf blade** 25–400 × 2–4 mm; ligule a fringe of hairs. **Inflorescence** a spike-like panicle, 15–50 mm long; pedicels short and thick. **Spikelets** 4.0–5.5 mm long, strongly laterally compressed, disarticulating with glumes; glumes ± equal, longer than spikelet, keels densely hairy with long hairs, 1-nerved. **Florets** 2–4; lowest floret bisexual, lemma entire, hairy or glabrous, apex rounded, awned; remaining florets male, sterile or reduced; anther 2.0–2.5 mm long. **Flowering time** Sept.–May. Well-drained sandy or gravelly soils, often on limestone outcrops; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Lower Karoo, Rainshadow Valley Karoo, Albany Thicket (Aliwal North S to Middelburg District, Burgersdorp District, Aberdeen District, Steytlerville and Uitenhage District).

sesleriiformis Nees

Thimble grass; *vingerhoedgras* (A)

Tufted perennial, forming large tussocks, 0.30–1.17 m high; rhizome robust, well developed; base shiny, smooth. **Leaf blade** 120–240 × 3–5 mm; ligule a fringe of hairs. **Inflorescence** a spike-like panicle, up to 80 mm long. **Spikelets** 5–6 mm long, strongly laterally compressed, disarticulating with glumes; glumes ± equal, longer than spikelet, keels sparsely hairy, hairs short, 1-nerved. **Florets** 2–4; lowest floret bisexual; lemma entire, hairy or glabrous, apex acuminate, awned; remaining florets male, sterile or reduced; anther 1.0–1.2 mm long. **Flowering time** Nov.–Apr. Black clay in vleis or clayey soils near river; in all bioregions, except Rainshadow Valley Karoo, Indian

Ocean Coastal Belt, Sub-Escarpment Savanna, Indigenous Forests (Lady Grey and Matatiele Districts S to Burgersdorp, Middelburg, Graaff-Reinet District, Amatole Mts and Humansdorp District).

GEOCHLOA H.P.Linder & N.P.Barker

Species 3, restricted to Cape Floristic Region, WC, EC.

Species included were originally classified in *Danthonia* (Stapf 1899; Chippendall 1955), they were then transferred to *Merxmuellera* by Conert (1971), a treatment also followed by Gibbs Russell et al. (1990).

decora (Nees) N.P.Barker & H.P.Linder
[*Merxmuellera decora* (Nees) Conert]

Tufted perennial, 250–700 mm high; culm bases bulbous, surrounded by old, woolly, persistent leaf sheaths. **Leaf blade** up to 200 × 1.5 mm; ligule a fringe of hairs. **Inflorescence** a loosely contracted panicle, 50–130 mm long, interrupted, panicle branches visible. **Spikelets** up to 18–25 × 12 mm, laterally compressed; glumes ± equal, 15–22(–25) mm long, 5–7-nerved, sometimes densely pubescent. **Florets** 4–7; lemma 9–15 mm long, back covered from base to middle in short, dense white hairs, glabrous above this; lobes 5–8 mm long, adnate to central awn for $^1/_3$–$^1/_2$ their length, ending in a short awn or awnless; central awn 12–20 mm long, twisted at base. **Flowering time** Aug.–Dec. Sandy soils of mountain slopes of southwestern Cape; Eastern Fynbos-Renosterveld (Baviaanskloof).

***HAINARDIA** Greuter

Species 1, Mediterranean region, naturalised in coastal districts of WC, EC.

cylindrica (Willd.) Greuter

Erect annual, 50–350 mm high. **Leaf blade** up to 7.0 × 2.5 mm; ligule an unfringed membrane. **Inflorescence** a cylindrical spike, solitary; spikelets edgeways on and sunk in rachis. **Spikelet** 5–8 mm long, dorsiventrally compressed, awnless; lower glume suppressed except in terminal spikelets which has both glumes present. **Floret** 1; lemma glabrous, 3-nerved; anther 1.0–1.5 mm long. **Flowering time** Nov., Dec. Weed in moist places; salt tolerant; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Komga S to Uitenhage and Humansdorp).

HARPOCHLOA Kunth

Species ± 2; 1 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, WC, EC.

falx (L.f.) Kuntze

Caterpillar grass; *ruspergras* (A); *lefokolodi* (SS)

Tufted perennial, 400–900 mm high, distinctly rhizomatous. **Leaf blade** 100–250 × 2–4(–6) mm, often inrolled; ligule a fringed membrane. **Inflorescence** a solitary, secund, toothbrush-like spike, up to 80 × 10 mm, sickle-shaped at maturity; spikelets sessile, in 2 rows. **Spikelet** 6–9 mm long, laterally compressed, awnless; glumes unequal, dissimilar in appearance and texture; lower glume < $^1/_2$ as long as upper glume; upper glume ± as long as spikelet. **Florets** 3 or 4; lowest floret bisexual; second and third male, fourth floret, if present, sterile; lemmas dissimilar, decreasing in size and shape upwards, 3-nerved; lowest lemma hairy on nerves; anther 2.0–2.5 mm long. **Flowering time** Sept.–Apr. Stony, well-drained to compacted soils on moist slopes, usually in

undisturbed mountain grassland, one of first grasses to flower in spring and after a burn; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Rhodes and Kokstad Districts S to Molteno, Port Edward, Adelaide, King William's Town, Uitenhage and Alexandria District).

HELICTOTRICHON Besser ex Schult. & Schult.f.

Mashau et al. (2010).

Species ± 100, mainly temperate Eurasia, but extending across the tropical mountains to temperate regions throughout the world; ± 12 in sthn Afr., LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

capense Schweick.

Tufted perennial, up to 1 m high. **Leaf blade** up to 250 × 1–2 mm, filiform, expanded; ligule an unfringed membrane. **Inflorescence** an open panicle, up to 200 mm long. **Spikelets** 10–15 mm long (excluding awns), laterally compressed; rachilla internodes 2 mm long, with hairs 3 mm long; glumes unequal, narrowly lanceolate, acuminate, ± keeled; lower glume glabrous, 1-nerved, scaberulous along nerve; upper glume $^{2}/_{3}$ as long as spikelet, 3-nerved. **Florets** 2–6; lemma linear-lanceolate, rounded on back, 2-lobed, lobes awned, scabrous below central awn insertion; central awn from between lobes, basal part twisted; anther 2.5–3.0 mm long. **Flowering time** Nov., Dec., May. Sandy soils, occasionally in disturbed places; Dry Highveld Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Tarka District E to King William's Town District and S to Port Elizabeth).

dodii (Stapf) Schweick.

Tufted perennial, 0.50–1.00(–1.25) m high. **Leaf blade** 300–500 × 3–5 mm, expanded; ligule an unfringed membrane. **Inflorescence** a panicle, 120–300 mm long, narrow, contracted, usually dense. **Spikelets** 12–15 mm long (excluding awns), laterally compressed, rachilla internode 2 mm long, with hairs 3.0–3.5 mm long; glumes subequal, lanceolate, acuminate, ± keeled; lower glume glabrous, 1-nerved, scaberulous along nerve; upper glume $^{2}/_{3}$ as long as spikelet, 3-nerved. **Florets** 2–6; lemma lanceolate, glabrous, linear in outline, rounded on back, 2-lobed, lobe 6–8 mm long, awn slender, delicate; central awn from between lobes, basal part twisted; lowest lemma > 7 mm long from base to where lobes start; anther 1.3–2.5 mm long. **Flowering time** sporadically, but mainly Oct.–Dec. On coastal sandflats, disturbed places and vlei margins; Eastern Fynbos-Renosterveld (Humansdorp District).

galpinii Schweick.

Tufted perennial, up to 600 mm high. **Leaf blade** 120–160 × 2.5–3.0 mm, expanded, woolly-hairy; ligule an unfringed membrane. **Inflorescence** a contracted panicle, 100–160 mm long. **Spikelets** 8–10 mm long (excluding awns), laterally compressed, rachilla internode 1.25 mm long, with hairs 3 mm long; glumes almost equal, broadly lanceolate, acuminate, ± keeled; lower glume glabrous, 1-nerved, minutely scaberulous along nerve; upper glume as long as spikelet, 3-nerved. **Florets** 2–6; lemma lanceolate, rounded on back, covered with papillae and prickles, 2-lobed, lobes awned; central awn from between lobes, basal part twisted; anther 1.3–2.5 mm long. **Flowering time** Jan.–Mar. On humic soils in wet places; Drakensberg Grassland, Dry Highveld Grassland (Barkly East District S to Tarka District).

hirtulum (Steud.) Schweick.

Loosely tufted slender, weak perennial, up to 1 m high. **Leaf blade** up to 250 × 2 mm, filiform; ligule an unfringed membrane. **Inflorescence** a panicle up to 200 mm long, contracted, almost spike-like. **Spikelets** 8–11 mm long (excluding awns), laterally compressed; rachilla internode 1.5–2.0 mm long, with hairs up to 2 mm long; glumes unequal, narrowly lanceolate, acute, ± keeled; lower glume glabrous 1-nerved, minutely scaberulous along nerve; upper glume up to $^{2}/_{3}$ as long as spikelet, 3-nerved. **Florets** 2–6; lemma lanceolate, rounded on back, 2-lobed, lobes awned, scabrid below central awn insertion; central awn from between lobes, basal part of awn twisted; anther 0.6–1.6 mm long. **Flowering time** Nov.–Mar. On mountain slopes, often in shady, wet places and also in disturbed areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (Naude's Neck Pass S to Mkambati Nature Reserve, Amatole Mts, Stutterheim, Alexandria and Uitenhage Districts).

longifolium (Nees) Schweick.

Brandgras (A)

Tufted perennial, 300–900 mm high. **Leaf blade** 200–400 mm long, up to 1.5 mm wide, setaceous; ligule an unfringed membrane. **Inflorescence** a usually open panicle, up to 200 mm long. **Spikelet** 8–10(–12) mm long (excluding awns), laterally compressed, rachilla internode ± 2 mm long, with hairs 3–4 mm long; glumes unequal, very narrowly lanceolate, acuminate, ± keeled; lower glume glabrous, 1-nerved, scaberulous along nerve; upper glume ± $^{3}/_{4}$ as long as spikelet, 3-nerved. **Florets** 2–6; lemma linear-lanceolate, rounded on back, smooth or finely papillate, 2-lobed, lobe < 7 mm from above central awn insertion, lobes awned; central awn from between lobes, basal part twisted; lowest lemma > 7 mm long from base to where lobes start; anther 0.6–3.3 mm long. **Flowering time** Dec.–Apr. On moist and rocky mountain slopes; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Dry Highveld Grassland (Rhodes and Kokstad Districts S to Middelburg, Wodehouse and Tarka districts).

turgidulum (Stapf) Schweick.

Small oats grass; *hawergras* (A)

Tufted perennial, 0.3–1.0 m high. **Leaf blade** 60–150(–250) × 1.5–6.0 mm, expanded; ligule an unfringed membrane. **Inflorescence** a panicle, 70–300 mm long, open or contracted, often interrupted. **Spikelets** 10–12 mm long (excluding awns), laterally compressed, rachilla internode 2 mm long, with hairs up to 2 mm long; glumes broadly lanceolate, acuminate, ± keeled; lower glume glabrous, 1-nerved, scaberulous along nerve; upper glume $^{2}/_{3}$ as long as spikelet, 3-nerved. **Florets** 2–6; lemma oblong-lanceolate, glabrous, rounded on back, smooth or papillate, very often variegated with purple, 2-lobed, lobes 3–5 mm long (including awn) from above central awn insertion; central awn from between lobes, basal part twisted; lowest lemma > 7 mm long from base to where lobes start; anther 0.5–2.7 mm long. **Flowering time** Oct.–Apr. Usually in wet places on mountain slopes and in vleis, occasionally at roadsides; common in all bioregions, except Rainshadow Valley Karoo, Lower Karoo, Sub-Escarpment Savanna (widespread from Albert District E to Kokstad southwards, from Port Edward to Graaff-Reinet, Somerset East, Uitenhage and Bathurst District).

HEMARTHRIA R.Br.

Species 12, tropical and subtropical regions of Old World, also in America; 1 in sthn Afr., widespread.

altissima (Poir.) Stapf & C.E.Hubb.

Batavian quick grass, red swamp grass; *perdegras*, *rooikweek* (A); *marotlo-a-ma-fubelu* (SS)

Rust-red perennial, 0.3–1.5 m high, mat-forming with rhizome and stolons. **Leaf blade** 50–150 × 6 mm, becoming twisted like a corkscrew when old; ligule a fringed membrane. **Inflorescence** of solitary, spike-like racemes in a spatheate, leafy, false panicle; very narrow cylindrical and culm-like; rachis dorsally compressed, tough; internodes clavate, usually disarticulating obliquely; spikelets secund, in pairs, one sessile, the other pedicelled but appearing sessile owing to pedicel being fused with adjacent internode of rachis, spikelets sunk in a concave hollow on inner surface of rachis. **Sessile spikelet** 5–7 mm long, dorsiventrally compressed; glumes ± equal to unequal, 2-keeled; upper glume long acuminate to awned. **Florets** 2; lower floret sterile; upper floret bisexual; callus triangular; anther 2.4–3.0 mm long. **Pedicelled spikelet** similar to sessile spikelet, bisexual; base truncate; callus absent. **Flowering time** Oct.–June. Wet places, in vleis and river margins, regarded as a ruderal weed in some places; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Lower Karoo, Drakensberg Grassland, Albany Thicket (Maclear S to Queenstown, Graaff-Reinet, Komga, Uitenhage and Grahamstown).

HETEROPOGON Pers.

Species ± 6, tropical and subtropical regions; 2 in sthn Afr., widespread.

contortus (L.) Roem. & Schult.

Tanglehead, spear grass; *pylgras*, *assegaaigras* (A); *makurwane* (T); *isitupe* (Z)

Rhizomatous perennial, 0.2–1.0 m high. **Leaf blade** 30–300 × 3–8 mm, usually folded, apex rounded, often hooded; ligule a fringed membrane. **Inflorescence** a single, spike-like raceme with velvety awns in upper half only; racemes linear with spikelet pairs in lower $^1/_4$ or $^3/_4$ homogamous (alike in sex and shape), spikelet pairs in upper portion heterogamous (differing in sex and shape); internodes linear; spikelets paired: one sessile, the other pedicelled but pedicel reduced to a short stump and spikelets are supported on a long callus. **Sessile spikelet** 5.5–7.0 mm long; glumes ± equal. **Florets** 2; lower floret reduced to a lemma, hyaline, awnless; upper floret bisexual or female in heterogamous pair, or sterile in homogamous pair; lemma stipiform, passing into a stout, hairy, geniculate awn, awn 50–80 mm long. **Pedicelled spikelet** 8–13 mm long, dorsally flattened, somewhat asymmetrical, larger than sessile spikelet, male or sterile, awnless, with long slender callus functioning as a pedicel, true pedicel reduced to a stump; anther 3.0–3.5 mm long. **Flowering time** Oct.–June. Hillsides and rocky places on well-drained soils, hardy grass growing in poor soil, resistant to veld fires; common in all bioregions, except Rainshadow Valley Karoo, Indian Ocean Coastal Belt, Indigenous Forests (widespread from Albert District E to Kokstad southwards, from Middelburg to Thembuland, Graaff-Reinet, Komga, Grahamstown and Humansdorp Districts).

HOLCUS L.

Species 6, Europe, North Africa and Middle East; ± 2 (1 endemic, 1 naturalised) in sthn Afr., LIM, G, M, KZN, NC, WC, EC.

*lanatus L.

Velvet grass, yorkshire fog, soft grass

Loosely tufted perennial, 0.3–1.0 m high; culm nodes pubescent. **Leaf blade** 1.5–8.0 mm wide; conspicuously woolly-hairy, greyish to blue-green; ligule an unfringed to a fringed membrane. **Inflorescence** a contracted, often dense panicle. **Spikelets** 3–4 mm long, laterally compressed; glumes ± equal, ± as long as spikelet, keeled, 1–3-nerved; lower glume awn up to 0.5 mm long, rarely up to 1 mm; upper glume awn up to 1 mm long. **Florets** 2; lower floret bisexual, firmer than glumes, awnless; upper floret male, lemma awned from back near apex; awn short, stout, hooked, geniculate, twisted or straight, barely projecting beyond apices of glumes; anther 1.0–1.5 mm long. **Flowering time** Nov.–Jan. Weed, in vleis, damp sheltered places, on sandy to nutrient-rich soils; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Indigenous Forests, Albany Thicket (Rhodes S to Queenstown, Tarka, Hogsback, Amatole Mts, Cathcart District, and Port Elizabeth).

HORDEUM L.

Species ± 40, temperate regions throughout the world; 5 (4 naturalised) in sthn Afr., NW, FS, KZN, L, NC, WC, EC.

capense Thunb.

Cape wild barley; *Kaapse wildegars* (A); *litse-ba-ntjie* (SS)

Tufted perennial, 200–600 mm high; basal sheaths fibrous with age. **Leaf blade** 60–170(–240) × 3–6 mm, rigid; auricles absent or small and rounded; ligule an unfringed membrane. **Inflorescence** spike-like, 8–17 mm wide (including awns); rachis fragile, readily disarticulating at maturity; spikelets in groups of 3, triads falling together as unit. **Central spikelet** sessile to subsessile; pedicels < 0.5 mm long; glumes 35–80 mm long, awn-like, scabrid, not widened or flattened at base. **Floret** 1, bisexual; lemma glabrous, awn up to 20 mm long; palea glabrous; anther 0.6–1.5 mm long, yellow. **Lateral spikelets** awn-like; lemma shorter than glumes, awn 10–12 mm long; anther 0.8–1.5 mm long. **Flowering time** Oct.–Apr. Usually in moist areas such as streamsides, riverbanks and around dams, occasionally in disturbed areas; Upper Karoo, Dry Highveld Grassland, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Rhodes District S to Middelburg, Molteno and Humansdorp Districts).

*geniculatum All.

Mediterranean barley

Loosely tufted annual, 150–400 mm high; culms solitary or several, erect or geniculate. **Leaf blade** 20–80 × 2–4 mm, linear, flat, soft, margins scabrid; auricles present; ligule an unfringed membrane. **Inflorescence** dense, spike-like, 20–40 × 15–25 mm; rachis fragile, readily disarticulating at maturity; spikelets in groups of 3, triads falling together as unit. **Central spikelet**: pedicel 1.8–2.0 mm long; glumes scabrid, awn up to 20 mm long, rarely widened at base. **Floret** 1, bisexual, lemma elliptical, glabrous, awn 15–30 mm long; palea hairy on back; anther 0.6–1.0 mm long. **Lateral spikelets** sterile, reduced to a series of unequal awn-like narrow scales, glumes unequal; lower glumes may be flattened basally; prolonged rachilla extension stout and yellowish green. **Flowering time** Sept.–Nov. Usually on roadsides or in moist waste and disturbed places; Upper Karoo, Dry Highveld Grassland, Eastern Fynbos-Renosterveld (Molteno District S to Willowmore District).

*jubatum L.

Densely tufted, short-lived perennial or possibly annual, 200–600 mm high; culms geniculate to erect, nodes glabrous. **Leaf blade** up to 150 × 2–5 mm, linear, often flat, scabrid; auricles absent; ligule an unfringed membrane. **Inflorescence** spike-like, 30–150 mm long, usually nodding, whitish to light purplish tinged; rachis fragile, readily disarticulating at maturity; spikelets in groups of 3, triads falling together as unit. **Central spikelet** sessile; glumes 15–80 mm long, awn-like, setaceous. **Floret** 1, bisexual; lemma glabrous, awn 11–90 mm long; palea glabrous; anther 0.6–1.5 mm long, yellow. **Lateral spikelets** very reduced; glumes setaceous, awn-like, > 30 mm long; lemmas 4.0–6.5 mm long, awns 2–15 mm long. **Flowering time** Dec.–Feb. Weed in drier, as well as moister habitats; Drakensberg Grassland (L Border, Sehlabathebe District).

*murinum L.

False barley; *muiswildegars* (A)

Loosely tufted annual, 0.05–1.10 m; culms erect to prostrate. **Leaf blade** 20–250 × 2–8 mm, soft, usually glaucous; auricles present; ligule an unfringed membrane. **Inflorescence** spike-like, maybe glaucous to brownish or green becoming purple at maturity; rachis fragile, readily disarticulating at maturity; spikelets in groups of 3, triads falling together as unit. **Central spikelet**: pedicel shorter than 0.6–1.5 mm long or sessile; glumes flattened, margins hairy, awns up to 30 mm long. **Floret** 1, bisexual; lemma awn 18–50 mm long; anther 0.2–1.4 mm long, usually with purple spots. **Lateral spikelets**: rachilla extension yellow; glumes slightly unequal, setaceous, awn 16–30 mm long; upper glume wider at base and hairy on margins; lemma awn 10–50 mm long; palea densely hairy; anther (0.8–)1.2–3.2 mm long. **Flowering time** Aug.–Dec. Weed, on sandy soils, usually in disturbed areas; Upper Karoo, Lower Karoo, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Oviston and Albert Districts S to Molteno, Cathcart, Grahamstown, Willowmore, Uitenhage and Jeffreys Bay).

*stenostachys Godr.

Tufted perennial, (0.28–)0.35–1.20(–1.50) m high. **Leaf blade** 25–90(–102) × 1.5–5.0(–7.0) mm, flat; auricles absent; ligule an unfringed membrane. **Inflorescence** spike-like, 3–5 mm wide (including awns), often partly enclosed in uppermost leaf sheath, green; rachis fragile, readily disarticulating at maturity; spikelets in groups of 3, triads falling together as unit. **Central spikelet** sessile, rachilla extension usually absent; glumes 4–11 × 0.3–0.5 mm, distinctly widened or flattened at base. **Floret** 1, bisexual; lemma scabrid, shortly awned, awn 2.5–8.0 mm long; palea scabrid; anther 2.2–4.4 mm long, yellow. **Lateral spikelet** rudimentary; glumes setaceous or distinctly widened or flattened at base, 0.3–0.5 mm wide; lemma awnless; rachilla extension stout and yellowish green. **Flowering time** Oct.–Mar. In moist or seasonally moist areas, vleis and also in disturbed places; Upper Karoo, Lower Karoo (Middelburg District S to Graaff-Reinet and Cradock Districts).

HYPARRHENIA E.Fourn.

Species ± 55, mostly in Africa, few species in other tropical regions and the Mediterranean; 20 in sthn Afr., widespread.

Raceme bases unequal, terete

anamesa Clayton

Sesigo (T)

Densely tufted perennial, 0.6–1.2 m high; rhizomatous; fresh shoots not aromatic. **Leaf blade** up to 400 × 4 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes, 15–25 mm long, enclosed by a spatheole, crowded into large, leafy, false panicle; raceme pairs with 4–7 awns, raceme bases terete, unequal; spikelets in pairs, one sessile, the other pedicelled; 2 homogamous pairs at base of upper raceme. **Sessile spikelets** 5.0–6.5 mm long, dorsiventrally compressed, white-villous. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awned; awn 25–40 mm long, stout, column twisted, with hairs up to 0.6 mm long; callus 1.0–1.8 mm long, tip visible on apex of internode. **Pedicellate spikelets** awnless or with an awn-point up to 2 mm long. **Flowering time** Oct.–May. Dry soils, open places; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Qacha's Neck S to Elliot District, Mzamba River, Somerset East District, East London and Humansdorp District).

filipendula (Hochst.) Stapf

Fine thatching grass; *fyntamboekiegras* (A)

Tufted, delicate, graceful perennial, 0.6–2.0 m high; rhizomatous; fresh shoots not aromatic. **Leaf blade** up to 300 × 4 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes, 10–12 mm long, enclosed by spatheoles, crowded into large, leafy, false panicle; raceme pairs with 2(–4) awns; raceme bases terete, unequal, with 2 pairs of homogamous spikelets at base of upper raceme. **Sessile spikelet**s 5.5–7.0 mm long, dorsiventrally compressed, glabrous or white-villous. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awns 30–55 mm long, with hairs up to 1.2 mm long; callus 1.8–3.0 mm long, tip visible on apex of internode. **Pedicellate spikelets** with an awn 1–5 mm long. **Flowering time** Nov.–Apr. Woodlands, higher rainfall areas, open veld; Indian Ocean Coastal Belt, Albany Thicket (Mkambati Nature Reserve and East London District).

hirta (L.) Stapf

Common thatching grass, blue grass; *dektamboekiegras* (A); *intunga* (Z)

Wiry, tufted perennial, 300–800 mm high; rhizomatous; culms slender; fresh shoots not aromatic. **Leaf blade** 20–150 × 1–2(–4)mm; ligule an unfringed membrane. **Inflorescence** of 2–10 raceme pairs, racemes enclosed by spatheoles, crowded into large, leafy, false panicle, panicle scanty; raceme pairs with 8–14 awns; raceme bases terete, unequal; racemes never deflexed; spikelets in pairs, one sessile, the other pedicelled, with 1 homogamous pair at base of upper racemes or absent. **Sessile spikelets** 4.0–6.5 mm long, dorsiventrally compressed, yellowish green to violet, white-villous. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awns 10–35 mm long, with hairs up to 0.3 mm long; callus acute, tip visible on apex of internode. **Pedicellate spikelets** 3–7 mm long, awnless. **Flowering time** Sept.–June. Stony soils; common in all bioregions, except in Rainshadow Valley Karoo (widespread from Oviston and Kokstad Districts S to Middelburg, Maclear, Graaff-Reinet, Kentani, Uitenhage, Grahamstown and Humansdorp Districts).

quarrei Robyns

Thatching grass

Tufted perennial, 1–2 m high; short rhizomatous; fresh shoots not aromatic. **Leaf blade** up to 400 × 5 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes enclosed by spatheoles, crowded into large, leafy, false panicle; raceme pairs with 6–10 awns; raceme bases unequal, terete, with 1 homogamous pair at base of upper racemes or absent; racemes deflexed at maturity. **Sessile spikelets** 4.5–5.5 mm long, dorsiventrally compressed, white-pubescent to villous. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed; awns 18–36 mm long; callus slender, 0.7–1.2 mm long, tip visible on apex of internode. **Pedicellate spikelets** 5–7 mm long, awnless. **Flowering time** Jan.–June. Forest margins; Indian Ocean Coastal Belt, Indigenous Forests (Elliotdale and Victoria East Districts).

Raceme bases subequal, flattened

cymbaria (L.) Stapf

Boat thatching grass, popo grass; *bootjietamboekiegras* (A)

Coarsely tufted, robust perennial, 2–4 m high; rhizomatous; with stilt roots; fresh shoots not aromatic. **Leaf blade** up to 450 × 6–20 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes, enclosed by an ovate, bright reddish brown spatheole, crowded into large, leafy, false panicle; raceme pairs with 3–5(6) awns up to 16 mm long; raceme bases subequal, flattened. **Sessile spikelets** 3.8–4.5 mm long, dorsiventrally compressed, glabrescent to shortly pubescent, often purplish. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awn hairy; callus square, 0.2–0.3 mm long, tip visible on apex of internode. **Pedicellate spikelets** glabrous to puberulous, margins ciliate. **Flowering time** Nov.–June. Forest margins, open hillsides; Indian Ocean Coastal Belt, Indigenous Forests, Sub-Escarpment Savanna, Albany Thicket (along coast from Port Edward District S to East London District).

dregeana (Nees) Stapf ex Stent

Hairy blue thatching grass; *harige bloutamboekiegras* (A)

Densely tufted, robust perennial, 1.5–2.0 m high; rhizomatous; basal sheaths hairy; fresh shoots not aromatic. **Leaf blade** up to 600 × 3–8 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes; enclosed by spatheoles 20–25 mm long, crowded into large, leafy, false panicle; peduncles 15–50 mm long; raceme pairs with 10–25 awns; raceme bases subequal, flattened, short-appendaged. **Sessile spikelets** 4–5 mm long, dorsiventrally compressed, densely long-hairy to shortly hairy, rarely glabrous. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awns 8–20 mm long, hairy; callus cuneate, 1 mm long, tip visible on apex of internode. **Pedicellate spikelets** villous to hispidulous, rarely glabrous. **Flowering time** Nov.–May. Stony hillsides, streamsides, dry soils around vleis; Mesic Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Lady Grey E to Griqualand East, southwards, from Queenstown to Bedford District, Butterworth District and Zwartkops River).

tamba (Steud.) Stapf

Blue thatching grass; *bloutamboekiegras*, *berggras* (A)

Stout, densely tufted, robust perennial, 1–3 m high; rhizomatous; sometimes with small stilt roots; basal sheaths hairy; fresh shoots not aromatic. **Leaf blade** up to 800 × 3–7 mm; ligule an unfringed membrane. **Inflorescence** of paired racemes enclosed by spatheoles 26–40 mm long, crowded into large, leafy, false panicle; peduncles 20–30 mm long; raceme pairs with 5–8 awns; raceme bases subequal, flattened, short-appendaged. **Sessile spikelets** 5 mm long, dorsiventrally compressed, becoming dark purplish grey, with long white hairs. **Florets** 2; lower floret sterile, reduced to a lemma, awnless; upper floret bisexual, lemma less firm than glumes towards base, hyaline, 2-lobed, awns 16–25 mm long; callus cuneate, tip visible on apex of internode. **Pedicellate spikelets** 7–8 mm long, villous, awnless or awn up to 2 mm long. **Flowering time** Dec.–June. Streamsides and roadsides; Sub-Escarpment Savanna (KZN Border, Alfred District).

IMPERATA Cirillo

Species 8, cosmopolitan in tropical and subtropical regions; 1 in sthn Afr., widespread.

cylindrica (L.) Raeusch.

Cotton wool grass, silver-spike; *sygras*, *donsgras* (A); *mohlorumo* (SS); *umthente* (Z)

Strongly rhizomatous perennial, 0.1–1.2 m high. **Leaf blade** up to 1 500 × 2–12 mm, broad in middle, narrowed at apex and base, reddish in winter; ligule a fringed membrane. **Inflorescence** a dense, cylindrical, spike-like panicle, white to silvery due to long silky hairs from callus, spikelets paired, similar, unequally pedicelled. **Spikelets** 3–6 mm long, awnless, enveloped in long silky hairs from callus and glumes; glumes equal, similar, as long as spikelet. **Florets** 2; lower floret sterile, rarely male; upper floret bisexual; lemma less firm than glumes, hyaline; anther 3.0–3.5 mm long. **Flowering time** Aug.–June. Weed, forming dense stands in poorly drained soils such as along riverbank sand in vleis and seasonally wet places; Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Matatiele S to Molteno, Mkambati Nature Reserve, King William's Town, Kentani, Grahamstown, East London and Alexandria).

ISCHAEMUM L.

Species ± 60, throughout the tropics, but mainly in Asia; 2 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, EC.

fasciculatum Brongn.

Hippo grass, border grass; *rooivleigras* (A); *shangwe* (Venda)

Rhizomatous perennial, 300–900 mm high. **Leaf blade** green, becoming reddish brown, narrowing shortly to a sharp apex; ligule an unfringed membrane. **Inflorescence** paired or digitate, spike-like racemes; internodes and pedicels often stout and clavate, usually exposed on back as U- or V-shaped segments; spikelets paired: one sessile and other pedicelled, dissimilar. **Sessile spikelets** 4–6 mm long, dorsiventrally compressed; lower glume convex or flat, keels usually winged on upper half. **Florets** 2; lower floret male or sterile, lemma awnless; upper floret bisexual; lemma 2-lobed, awn 5–15 mm long, geniculate, twisted, glabrous; callus oblong, 1.0–1.5 mm long, inserted in concave top of internode. **Pedicelled spikelets** as long as sessile spikelets but laterally compressed; upper lemma 2-lobed, awn 5–15 mm long, geniculate. **Flowering time** Oct.–May.

Wet places, vleis and riverbanks, in standing or flowing water where it can form dense stands; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (along coast from Mkambati Nature Reserve to Kentani and East London).

KARROOCHLOA Conert & Türpe = **TRIBOLIUM** Desv.

KOELERIA Pers.

Species 35–60, temperate regions throughout the world, montane regions of tropical and subtropical Africa; 1 in sthn Afr., mainly high eastern regions, LIM, G, M, S, FS, KZN, L, WC, EC.

capensis (Steud.) Nees

Crested koeleria; *koeleria polgras* (A); *boshoane* (SS)

Densely tufted perennial, 150–800 mm high. **Leaf blade** 40–200 × 1–4 mm; ligule an unfringed membrane. **Inflorescence** a spike-like, sometimes interrupted panicle. **Spikelets** 3.5–4.0 mm long, laterally compressed; glumes ± equal to longer than spikelet, lower sometimes shorter than spikelet, 1–3-nerved, keeled. **Florets** 2–4; lemma similar in texture to glumes, 3-nerved, keeled, acute to acuminate, entire, a minute mucro or straight awn present or absent; palea thinner in texture than lemma, hyaline, projecting out of florets and conspicuous in mature spikelet; anther 1.5–3.0 mm long. **Flowering time** Oct.–Jan. Common in montane areas, often among rocks and steep slopes, dry to wet areas; in all bioregions, except Rainshadow Valley Karoo and Indigenous Forests (widespread from Burgersdorp District E to Ngele Mts southwards, from Middelburg to Port St Johns, Graaff-Reinet, King William's Town, Grahamstown and Humansdorp Districts). A very variable species.

*LAGURUS L.

Species 1, Mediterranean region, naturalised in sthn Afr., mainly WC, EC, rarely G.

ovatus L.

Hare's tail grass; *haasgras* (A)

Velvety annual, 600 mm high. **Leaf blade** 100 × 10 mm; sheaths sparsely to densely hairy; ligule an unfringed membrane. **Inflorescence** a compact, oval spike-like panicle, soft due to profuse, spreading, long silky hairs on glumes, and bristly from fine awns on glumes and lemmas. **Spikelets** 7–10 mm long (excluding awns), laterally compressed, disarticulating above glumes; glumes ± equal, similar, thinly membranous, narrowly lanceolate, long-acuminate, 1-nerved, hairs long silky, awn fine, longer than glumes. **Floret** 1, bisexual; lemma membranous, hairy near base, rounded on back, 2-lobed, lobes awned, central awn 10–12 mm long, slightly geniculate and twisted; palea acuminate; anther 1.5–2.0 mm long. **Flowering time** Oct., Nov. (rarely later). Disturbed places, usually sandy soil. Rainshadow Valley Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Steytlerville, Grahamstown, Port Elizabeth and Humansdorp Districts).

LEERSIA Sw.

Species 18, throughout tropics and warm temperate regions; 4 in sthn Afr., in moist habitats, N, B, LIM, NW, G, M, S, FS, KZN, L, EC.

denudata Launert

Slender, tufted perennial, up to 700 mm high; hygrophyte; culm nodes velvety hairy. **Leaf blade** 30–140 × 1.5–6.0 mm, flat or rolled, nearly smooth; ligule an unfringed

membrane. **Inflorescence** a panicle, oblong to elliptic; branches obliquely ascending or sometimes spreading. **Spikelets** 3.5–4.5 × 1.3–1.6 mm, unconventional and hard to interpret, oblong, strongly laterally compressed; glumes absent or reduced to a very obscure rim at apex of pedicel. **Floret** 1, bisexual; lemma usually shortly caudate at apex; lemma and palea keels with stiff hairs < 0.2 mm long; anther 2.4–3.4 mm long. **Flowering time** Feb. Swampy grassland, vleis, deep parts of temporary pans; Sub-Escarpment Grassland (KZN border, Mzimkhulu District).

hexandra Sw.

Cut grass; *moerasgras* (A)

Perennial, 0.3–1.0 m high; hygrophyte; rhizome creeping; culm nodes hairy. **Leaf blade** 100–200 × 4–8 mm, flat, strongly scabrous; ligule an unfringed membrane. **Inflorescence** a panicle, narrowly elliptic to oblong, branches ascending. **Spikelets** 3.4–4.8 × 1.2–1.4 mm, unconventional and hard to interpret, oblong, strongly laterally compressed; glumes absent or reduced to a very obscure rim at apex of pedicel. **Floret** 1, bisexual; lemma conspicuously pectinate-ciliate; lemma and palea keels with stiff hairs 0.2–0.6 mm long; anther 2.0–3.2 mm long. **Flowering time** all year. Floodplains and permanently wet places such as vleis, pans and ditches, often forming extensive colonies; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Matatiele District S to Baziya, Port St Johns, Komga, East London and Uitenhage Districts).

LEPTOCHLOA P.Beauv.

Species ± 30, tropical and subtropical regions; 7 in sthn Afr., widespread.

eleusine (Nees) Cope & N.Snow

Tufted perennial, 0.52–1.27 m high, rhizomatous; culms geniculately ascending. **Leaf blade** 120–270 × 2–4 mm; ligule a fringed membrane 1.5 mm long. **Inflorescence** a panicle with a number of racemes on an elongated axis, 150–300 mm long; spikelets overlapping. **Spikelets** 4–8 mm long, laterally compressed; glumes ± equal, shorter than spikelet, 1-nerved. **Florets** 5–10; lemma 3-nerved, rounded on back, entire or lobed, hairy on nerves near base; anther 0.8–1.0 mm long; ovary glabrous. **Flowering time** Nov.–Apr. **Caryopsis** 1.7–2.0 mm long, elliptic or obovate. Sandy soils, rocky slopes or in shade of trees, occasionally on turf soils; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Kokstad District S to Msikaba River Valley, Fort Beaufort, Komga, East London and Kowie).

fusca (L.) Kunth

Hydrophytic, stoloniferous, tufted perennial, 0.22–1.55 m high; culms erect. **Leaf blade** 250–550 × 3–5 mm, linear, tapering to a filiform point; ligule an unfringed membrane up to 5 mm long. **Inflorescence** a panicle; spikelets not overlapping. **Spikelets** 6–14 mm long; glumes unequal, 2.5–3.2 mm long, acute, shorter than spikelet, 1-nerved; upper glume without mucro or awn. **Florets** 5–12; lemma 4.0–5.2 mm long, rounded on back, 3-nerved, 2- or more lobed, apex acute, mucronate or shortly awned, minutely hairy on nerves below; anther 1.0–1.5 mm long; ovary glabrous. **Flowering time** Oct.–May. **Caryopsis** 1.6–1.8 mm long, elliptic-oblong. Sandy soil, almost always near or in fresh or brackish water up to 500 mm deep; Upper Karoo, Dry Highveld Grassland, Lower Karoo, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North District S to Middelburg, Graaff-Reinet, Komga, Willowmore, Port Elizabeth, East London and Humansdorp Districts).

*LOLIUM L.

Species 8, temperate regions of Eurasia, introduced elsewhere; ± 4 naturalised in sthn Afr., N, LIM, NW, G, M, FS, KZN, L, NC, WC, EC.

multiflorum Lam.

Italian rye grass; *drabok* (A)

Loosely tufted, short-lived perennial or annual, 0.2–0.8(–1.3) m high. **Leaf blade** 110–220 × 3–8 mm, rolled along axis when young; ligule an unfringed membrane. **Inflorescence** a spike with spikelets sunk and lying edgeways in partial cavities on alternate sides of central axis. **Spikelet** 10–15 × 2–10 mm; lower glume present only in terminal spikelet, similar to upper glume; upper glume ascending or spreading, $^1/_4$–$^1/_2$(–$^3/_4$) as long as spikelet, persistent. **Florets** 8–20; lemma acute, > 3× as long as wide, not turgid at maturity, awn up to 15 mm long; palea as long as lemma, with 2 minutely rough keels; anther 2.3–4.5 mm long. **Flowering time** Oct.–Apr. **Caryopsis** when mature > 3× as long as wide. On roadsides and other disturbed areas; Drakensberg Grassland, Sub-Escarpment Savanna, Upper Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East S to Queenstown, Graaff-Reinet, Stutterheim, Willowmore, Grahamstown and Port Elizabeth).

Subjectively separated from *L. multiflorum* × *L. perenne* by numerous overlapping characters.

multiflorum Lam. × perenne L.

Loosely tufted biennial or annual, 0.15–1.00 m high. **Leaf blade** up to 300 × 10 mm, flat, folded, rolled when young; ligule an unfringed membrane. **Inflorescence** a spike with spikelets sunk and lying edgeways in partial cavities on alternate sides of central axis. **Spikelet** 6–25 × 3–10 mm; upper glume ascending or spreading, $^1/_4$ to as long as spikelet. **Florets** 5–15; lemma ± acute, > 3× as long as wide, not turgid at maturity, awn absent or up to 10 mm long; palea as long as lemma, with 2 minutely rough keels; anther 2.1–3.6 mm long. **Flowering time** Oct.–Dec. **Caryopsis** when mature > 3× as long as wide. In cultivated or fallow lands, on roadsides and in moist disturbed places; Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Queenstown S to Graaff-Reinet, Amatole Mts, Willowmore District and Port Alfred).

Subjectively separated from *L. multiflorum* and *L. perenne* by numerous overlapping characters.

perenne L.

Perennial rye grass; *meerjarige raaigras* (A)

Tufted perennial, 250–500(–900) mm high. **Leaf blade** 50–140(–300) × 2–4 mm, flat, folded along midrib when young; ligule an unfringed membrane. **Inflorescence** a spike with spikelets sunk and lying edgeways in partial cavities on alternate sides of central axis. **Spikelet** 10–15 × 3–10 mm; lower glume present only in terminal spikelet, similar to upper glume; upper glume ascending or spreading, $^1/_2$–$^3/_4$ as long as spikelet, persistent. **Florets** 6–10; lemma acute, > 3× as long as wide, not turgid at maturity, awnless; palea as long as lemma, with 2 minutely rough keels; anther 2.9–4.0 mm long. **Flowering time** Mar., Apr., Nov., Dec. **Caryopsis** when mature > 3× as long as wide. On roadsides, in moist disturbed areas and cultivated and fallow lands; Upper Karoo, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Albert Dis-

trict E to Mount Currie southwards, from Middelburg to East London and Port Elizabeth). Hybridises freely with other *Lolium* species, as well as with species of *Festuca*.

rigidum Gaudin

Tufted annual, 100–300(–500) mm high; many flowering culms or solitary; culms in young plants branching near base, sometimes rooting from lower nodes. **Leaf blade** 100–170 × 5–8 mm; ligule an unfringed membrane. **Inflorescence** a spike with spikelets sunk and lying edgeways in partial cavities on alternate sides of central axis. **Spikelet** 7–20 × 1–3 mm; upper glume appressed to rachis, slightly gaping at maturity, $^{3}/_{4}$ to slightly longer than spikelet, concealing or partly concealing spikelet. **Florets** 2; lemma obtuse to acute, not turgid at maturity, awn absent or up to 10 mm long; palea as long as lemma, 2 rough keels; anther 1.4–1.7 mm long. **Flowering time** Sept.–Jan. **Caryopsis** when mature > 3× as long as wide. Weed, in disturbed and weedy places on sandy to clayey soils, preferably where it is moist, occasionally in water and on stream edges; Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Beaufort West District S to Port Elizabeth and Jeffreys Bay).

temulentum L.

Bearded darnel; *dronkgras* (A)

Robust annual, 400–900 mm high; culms solitary or tufted. **Leaf blade** 150–300 × 3–7 mm; ligule an unfringed membrane. **Inflorescence** a spike, spikelets sunk and lying edgeways in partial cavities on alternate sides of central axis. **Spikelet** 8–28 × 3–8 mm; lower glume usually suppressed, except in terminal spikelet; upper glume ascending or spreading, shorter than spikelet. **Florets** 5–9; lemma elliptical to ovate, < 3× as long as wide, very turgid at maturity, awn absent or up to 20 mm long; palea as long as lemma, 2-keeled; anther 2.1–3.2 mm long. **Flowering time** Sept.–Feb. **Caryopsis** when mature 2–3× as long as wide. Weed, usually in cultivated or fallow lands, gardens or other disturbed areas, often associated with wheat; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East S to Queenstown, Somerset East, Fort Beaufort, Grahamstown District and Humansdorp).

***LOPHOCHLOA** Rchb.

Species ± 85, temperate regions of the world; 2 naturalised in sthn Afr., western regions of NC, WC, EC.

cristata (L.) Hyl.

Loosely tufted annual, 50–400 mm high. **Leaf blade** 40–120 × 2.5 mm; ligule an unfringed membrane. **Inflorescence** a spike-like panicle. **Spikelets** 3–5 mm long, laterally compressed, rachilla hairs not > 0.5 mm long; glumes unequal, 1–3-nerved, glabrous to slightly pubescent, or lower glume pubescent and upper glume glabrous; lower glume ± $^{3}/_{4}$ as long as upper, much narrower than upper glume and lemma; upper glume equal to longer than spikelet. **Florets** 3–6; lemma lobed, central awn 1–3 mm long; palea keels scabrid or ciliate; anther 0.2–0.6 mm long. **Flowering time** Oct.–Dec. Weed, dry exposed areas or sometimes also in moist or rocky areas; Albany Thicket, Eastern Fynbos-Renosterveld (East London, Port Alfred, Port Elizabeth and Humansdorp).

LOUDETIA Hochst. ex Steud.

Species ± 26, mostly tropical Africa, also Madagascar and South America; 6 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, EC.

simplex (Nees) C.E.Hubb.

Common russet grass; *stingelgras*, *besemgras* (A)

Tufted perennial, 0.4–1.5 m high; basal leaf sheaths densely silky hairy, rarely glabrescent, splitting into fibres; culm unbranched after first node. **Leaf blade** 100–300 × 5 mm, flat or convolute, rarely filiform; ligule a fringe of hairs. **Inflorescence** a linear to narrowly ovate, contracted or loose panicle; branches and pedicels scabrid, glabrous or sometimes hairy; pedicels free. **Spikelets** 7–13 mm long, laterally to not noticeably compressed; glumes very unequal, truncate, obtuse, glabrous or with white hairs from rows of dark brown or black tubercles; lower glume usually $^{1}/_{3}$–$^{1}/_{2}$ as long as upper glume; upper glume as long as spikelet. **Florets** 2; lower floret male or rarely sterile, lemma 3-nerved, rounded on back; upper floret bisexual, lemma 5–9-nerved, 2-lobed, acute, glabrous or hairy, hairs not in tufts; central awn 25–50 mm long, twisted below; callus narrowly oblong, 2-toothed in mature specimens; anther 2.6–4.2 mm long. **Flowering time** July–June. Poor coarse, sandy soils in open grassland or hillsides; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests (Mkambati Nature Reserve, Lusikisiki District).

MELICA L.

Species ± 80, temperate regions throughout the world, except Australia; 2 in sthn Afr., M, FS, KZN, L, NC, WC, EC.

decumbens Thunb.

Staggers grass; *dronkgras* (A); *ntlo-ea-motintinyane* (SS)

Tufted perennial, 300–500 mm high. **Leaf blade** 20–200 × 1.5–3.5 mm, erect, usually rolled, strongly scabrous; ligule an unfringed membrane. **Inflorescence** an erect, terminal raceme or narrow panicle, often secund; spikelets solitary, on short, hairy pedicels with thickened apex; pedicels capillary, often nodding. **Spikelets** 10–15 mm long, laterally compressed, awnless; glumes as long as spikelet. **Florets** 3–6; lower 2 florets bisexual, lemma 7–9-nerved; entire, hairy on back and margins; anther 1.0–1.5 mm long; upper 2 or 3 florets sterile, lemmas usually hairy. **Flowering time** Oct.–Apr. Hillsides and mountainsides, among rocks or in shade of trees, occasionally on roadsides; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Dry Highveld Grassland, Albany Thicket (Aliwal North E to Zastron southwards, from Middelburg to Queenstown, Graaff-Reinet, Mountain Zebra National Park and Albany District).

racemosa Thunb.

Melic grass; *haakgras* (A)

Tufted perennial, 300–500 mm high. **Leaf blade** 40–300 × 1.5–5.0 mm, erect, flat or rolled, often scabrous; ligule an unfringed membrane. **Inflorescence** an erect, terminal raceme or a narrow panicle, often secund; spikelets solitary, on short, hairy pedicels with thickened apex; pedicels capillary, often nodding. **Spikelets** 5–9(–11) mm long, laterally compressed, awnless; glumes as long as spikelet. **Florets** 3–6; lower 2 florets bisexual, lemma 7–9-nerved, entire, hairy only on margins; anther 1.2–1.7 mm long; upper 2 or 3 florets sterile; lemmas glabrous or with only a few hairs. **Flowering time** Sept.–Apr. On steep hills and mountain slopes among rocks and also in lightly shaded places at edges of bush clumps and dune forest; in all bioregions, except Rainshadow Valley Karoo and Indigenous Forests (widespread from Aliwal North E to Griqualand East southwards, from Middelburg to Port St Johns District, Graaff-Reinet, Komga, Seekoei River, East London and Humansdorp).

MELINIS P.Beauv.

Species 20, mainly Africa, also on other continents but possibly introduced there; 10 in sthn Afr., widespread.

minutiflora P.Beauv.

Molasses grass, Brazilian stink grass; *heuninggras* (A)

Tufted perennial, 0.8–1.5 m; strongly aromatic, sticky; densely hairy, hairs finely tubercled and exuding drops of viscid oil, smelling of linseed oil. **Leaf blade** 40–200 × 5–11 mm; ligule a fringe of hairs. **Inflorescence** a panicle; pedicels glabrous, rarely hairy, scabrous. **Spikelets** 1.5–2.0 × 0.5 mm, narrowly ovate to narrowly oblong, laterally compressed, glabrous or shortly hairy; glumes unequal; internode absent; lower glume 0.1–0.4 mm long; upper glume as long as spikelet, 7-nerved, obtusely bilobed, mucronate or awnless, rarely with an awn up to 9 mm long, usually glabrous; upper glume and lower lemma grooved between prominent veins. **Florets** 2; lower floret male or sterile, lemma 5-nerved, acutely bilobed, awnless or awn 5–14 mm long, palea absent; upper floret bisexual, lemma hard, smaller than lower lemma; anther 1.0–1.2 mm long. **Flowering time** Apr.–June. Sand or near rocks, moist and shady areas, grassland or savanna, open hillsides; Indian Ocean Coastal Belt (KZN border).

nerviglumis (Franch.) Zizka

Tufted perennial, (0.25–)0.40–1.20(–1.50) m high; basal leaf sheaths strongly overlapping. **Leaf blade** (30–)100–300(–440) × (1.3–)2.0–3.5(–4.5) mm, filiform, rolled; ligule a fringe of hairs. **Inflorescence** a panicle; pedicels glabrous to sparsely hairy. **Spikelets** (3.2–)3.6–5.0(–5.7) × 2 mm, narrowly ovate, laterally compressed, densely villous with silky white, pink or purplish hairs up to 4 mm long and exceeding beyond apex; glumes unequal; internode between glumes absent or short, up to 0.3(–0.6) mm long; lower glume 0.5–1.0(–1.9) mm long; upper glume as long as spikelet, straight on back, 5(–7)-nerved; mucronate or with awn 1–2(–3) mm long. **Florets** 2; lower floret male, lemma 5-nerved, awned, palea keels ciliate; upper floret bisexual; lemma hard, smaller than lower lemma; anther 1.4–2.2 mm long. **Flowering time** Nov.–Sept. Open grassland, stony hillsides; in all bioregions, except Rainshadow Valley Karoo and Indigenous Forests (widespread from Aliwal North E to Maclear District southwards, from Jamestown to Port St Johns, Graaff-Reinet, Kentani, East London and Humansdorp).

repens (Willd.) Zizka

Natal red top

Tufted annual or short-lived perennial, 0.25–1.20(–1.50) m high. **Leaf blade** 40–150 (–180) × 2–11(–13) mm; ligule a fringe of hairs. **Inflorescence** a panicle; pedicels with long hairs towards apex, attached centrally to base of spikelet. **Spikelets** 2.2–12.0 × 2–3 mm, laterally compressed, glabrous to densely hairy, hairs exceeding spikelet; glumes unequal; internode between glumes 0.1–1.7(–2.0) mm long; lower glume (0.3–) 0.6–3.0(–4.3) mm long; upper glume and lower lemma gibbous, tapering into an elongated narrow, glabrous beak; upper glume 5-nerved, mucronate or awn (2–)12–22 mm long, hairy or glabrous. **Florets** 2; lower floret male, lemma 5-nerved, awned or awnless, palea keels ciliate; anther 1.5–2.2 mm long; upper floret bisexual, lemma hard, smaller than lower lemma. **Flowering time** Sept.–July. More often in sunny arid areas, sometimes common in disturbed areas; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment

Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket (Colesberg E to Oribi Gorge southwards, from Middelburg to Engcobo, Port St Johns, Graaff-Reinet, Nqabara River and Port Elizabeth and Grahamstown).

MERXMUELLERA Conert

Species 7, sthn Afr., N, M, FS, KZN, L, NC, WC, EC.

arundinacea (P.J.Bergius) Conert = **Capeochloa arundinacea** (P.J.Bergius) N.P.Barker & H.P.Linder

cincta (Nees) Conert = **Capeochloa cincta** (Nees) N.P.Barker & H.P.Linder

decora (Nees) Conert = **Geochloa decora** (Nees) N.P.Barker & H.P.Linder

disticha (Nees) Conert = **Tenaxia disticha** (Nees) N.P.Barker & H.P.Linder

drakensbergensis (Schweick.) Conert

Tufted perennial, up to 1 m high; old leaves break off close to sheath mouth, remaining leaf bases splitting along midrib and two halves curling away from each other. **Leaf blade** up to 300 × 1.3 mm; ligule a fringe of hairs. **Inflorescence** a loosely contracted, interrupted panicle, 80–180 mm long. **Spikelets** 12–17 mm long (including awns), laterally compressed; glumes ± equal, 13–17 mm long, 1–3-nerved. **Florets** (5)6–8; lemma 6.5–9.0 mm long, back with 3 tufts of equally spaced white hairs on either side of central nerve, marginal tufts basal; lobes 3.5–5.0 mm long, adnate to central awn for approximately half their length; central awn 9–12 mm long, geniculate, slightly twisted at base. **Flowering time** Oct.–Mar. Mesic sites in streambanks, mud patch communities and rocky outcrops of alpine belt, in areas of deeper soils; Drakensberg Grassland (Barkly East S to Otto du Plessis Pass and Amatole Mts).

guillarmodiae Conert = **Tenaxia guillarmodiea** (Conert) N.P.Barker

macowanii (Stapf) Conert

Tufted perennial, 0.7–1.3 mm high; old leaves break off above sheath mouth, remaining leaf bases sometimes split along midrib and two halves curl away from each other. **Leaf blade** up to 650 × 1.3 mm; ligule a fringe of hairs. **Inflorescence** a loosely contracted panicle, 170–270 mm long, interrupted, shortly branched. **Spikelets** up to 13 × 6 mm (including awns), laterally compressed; glumes ± equal, 9–14 mm long, 1–3-nerved. **Florets** (2)3 or 4; lemmas 10 mm long, with 3 equally spaced tufts of white hairs on either side of central nerve, tufts on margins mostly basal; lobes usually fully adnate to central awn; central awn 5–8 mm long, seldom geniculate, sometimes basally twisted. **Flowering time** July–Jan. In montane and subalpine regions, alt. 1 500–3 000 m; Drakensberg Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Witteberg Mts and Rhodes Districts S to Molteno, Maclear District and Tarkastad District).

papposa (Nees) Conert = **Ellisochloa papposa** (Nees) P.M.Peterson & N.P.Barker

stereophylla (J.G.Anderson) Conert

Tufted perennial, ± 800 mm high. **Leaf blade** up to 360 × 1.5 mm, rigid, erect. **Inflorescence** a contracted, shortly branched panicle up to 180 mm long. **Spikelet** up to

20 mm long, laterally compressed; glumes ± equal, 11–18 mm long, 1-nerved. **Florets** (3)4 or 5; lemma 10–16 mm long, backs glabrous with only margins fringed with short hairs from base to middle, this fringe terminates in a marginal tuft of white hairs; lobes 5–7 mm long, free from central awn, long awned; central awn 13–18 mm long, geniculate close to base, twisted basally, apical portion much longer than base and protruding from spikelets for some length. **Flowering time** Dec.–Apr. Xeric alpine grassland and crevices in basaltic cliffs of Drakensberg, alt. > 2 000 m; Drakensberg Grassland (KZN Border).

stricta (Schrad.) Conert = **Tenaxia stricta** (Schrad.) N.P.Barker & H.P.Linder

MICROCHLOA R.Br.

Species ± 4, throughout tropics; 3 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, NC, EC.

caffra Nees

Pincushion grass; *elsgras* (A)

Densely tufted perennial, 100–500 mm high; old sheaths splitting into fibres; leaves mostly crowded at base; culm 2- or 3-noded. **Leaf blade** 20–100 mm long, tapering to an obtuse or acute point; ligule a fringed membrane to a fringe of hairs. **Inflorescence** spike-like, a solitary, terminal, slender, curved, secund raceme, 40–150 × 1–2 mm. **Spikelet** 3.4–4.5 mm long, usually purple or purple-brown, awnless; glumes ± equal. **Floret** 1; lemma 2.0–2.6 mm long, 2-nerved; anther 1.0–1.6 mm long. **Flowering time** Oct.–Apr. **Caryopsis** terete, > 1 mm long. Shallow soils on rocky outcrops; often in veld that is overgrazed; in all bioregions, except Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld and Indigenous Forests (widespread from Aliwal North E to Griqualand East southwards, from Queenstown to Port St Johns, Mountain Zebra National Park, Komga, Greater Addo Elephant National Park to Grahamstown District).

kunthii Desv.

Pincushion grass; *elsgras* (A)

Densely tufted perennial, 100–430 mm high, forming compact mats; basal sheaths splitting into fibres; leaves mostly crowded at base; culm 1–4-noded. **Leaf blade** 10–80 mm long, tapering to a fine point; ligule a fringe of hairs to a fringed membrane. **Inflorescence** a solitary, terminal, slender, curved, secund raceme, 20–150(–250) × 1 mm (rarely more). **Spikelet** 2.0–3.2 mm long, awnless; glumes ± equal. **Floret** 1; lemma 1.9–2.8 mm long; anther 0.4–0.9(–1.0) mm long. **Flowering time** Nov.–Apr. **Caryopsis** 1.5 mm long. Shallow soil on rocky outcrops, open sandy patches or sometimes even on waterlogged, clayey soils; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Aliwal North E to Zastron southwards, from Queenstown to Elliotdale District, Tarkastad and King William's Town).

MICROSTEGIUM Nees

Species ± 15, tropical Asia and Africa but possibly introduced there; 1 in sthn Afr., LIM, M, KZN, WC, EC.

nudum (Trin.) A.Camus

Trailing annual, ± 600 mm high, forming a tangled mat. **Leaf blade** up to 80 mm long; ligule an unfringed membrane. **Inflorescence** solitary or digitate to subdigitate, of 3 or 4 slender racemes, or a number of racemes up central axis; internodes linear; spike-

lets in pairs, similar: one sessile, the other pedicelled; pedicels free. **Sessile spikelet** 3.5–4.5 mm long, dorsiventrally compressed, bearded at base with a ring of white hairs; glumes ± equal, dissimilar; lower glume concave on back with median groove. **Florets** 2; lower floret male or sterile, upper floret bisexual, lemma central awn 6–20 mm long, hair-like, glabrous; anther 0.8–1.0 mm long. **Pedicelled spikelet** similar to sessile spikelet; awned. **Flowering time** Jan.–May. Moist shady places in forests; Sub-Escarpment Grassland, Indigenous Forests, Eastern Fynbos-Renosterveld (Mhlahlane Forest and Humansdorp District).

MISCANTHUS Andersson

Species ± 7, tropical and sthn Afr.; 2 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, L, NC, EC.

capensis (Nees) Andersson

Daba grass; *ruigtegras* (A)

Tufted, robust perennial, up to 2.4 m high. **Leaf blade** up to 90 × 16 mm, expanded. **Inflorescence** a large, plumose panicle; rachis tough, internodes and pedicels slender, free; spikelets paired, unequally pedicelled, similar in form and function. **Spikelets** 4–6 mm long, dorsiventrally compressed; glumes ± equal, as long as spikelet, very dissimilar, awnless; lower glume ± flattened on back, 2-keeled with inflexed margins; upper glume 1-keeled. **Florets** 2; lower floret sterile, hyaline, less firm than glumes; upper floret bisexual; lemma less firm than glumes, awn as long as to longer than body of lemma. **Flowering time** Nov.–Apr. Riverbanks, forest margins and wet places; in all bioregions, except Rainshadow Valley Karoo and Indigenous Forests (widespread from Albert District E to Griqualand East southwards, from Middelburg District to Port St Johns, Cradock, Kentani, Uitenhage District and Humansdorp).

junceus (Stapf) Pilg.

Broom grass; *besemgras*, *ruigtegras* (A)

Tufted perennial, 1.0–1.8 m high. **Leaf blade** up to 500–1 000 × 3 mm, terete. **Inflorescence** a large, plumose panicle; spikelets paired, unequally pedicelled, similar in form and function. **Spikelets** 4–5 mm long, dorsiventrally compressed; glumes ± equal, as long as spikelet, very dissimilar, awnless; lower glume ± flattened on back, 2-keeled with inflexed margins; upper glume 1-keeled. **Florets** 2; lower floret sterile, hyaline, less firm than glumes; upper floret bisexual, lemma less firm than glumes, awn as long as to longer than body of lemma. **Flowering time** Nov.–June. Riverbanks and vleis; Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Mkambati Nature Reserve, Port Edward and Mazeppa Bay).

MONOCYMBIUM Stapf

Species ± 4, tropical and sthn Afr.; 1 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, EC.

ceresiiforme (Nees) Stapf

Wild oat grass, boat grass; *wildehawergras* (A); *tshinwamulwadze* (Venda)

Loosely or densely tufted perennial, 0.3–1.0 m high; sometimes shortly rhizomatous; often reddish or purple-tinged when flowering. **Leaf blade** 50–180 × 2–6 mm, dried leaves curled like a corkscrew; ligule an unfringed membrane. **Inflorescence** of solitary racemes, enclosed in reddish brown, boat-shaped, acuminate spatheoles, loosely gath-

ered into an open, false leafy panicle; spikelets paired: one sessile, the other pedicelled. **Sessile spikelet** 3.5–4.0 mm long, dorsiventrally compressed; glumes ± equal, dissimilar, awned. **Florets** 2; lower floret sterile, reduced to a hyaline, hairy lemma, awnless; upper floret bisexual; lemma less firm than glumes, glabrous, deeply 2-lobed, awned from between lobes; awn delicate, 6–20 mm long, much longer than body of lemma, geniculate, twisted, glabrous; anther 1.5–2.0 mm long. **Pedicelled spikelet** 4.0–5.0 mm long, broadly lanceolate, resembling sessile spikelet but slightly longer and wider, male, awnless; anther 1.5–2.5 mm long. **Flowering time** Jan.–June. Open grassland and hillsides; often in wet places; indicator of acid soils; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests (Qacha's Neck E to Griqualand East southwards, from Maclear District to Port St Johns District).

*NASSELLA (Trin.) E.Desv.

Species ± 15, South America, mainly Andes; ± 5 naturalised in sthn Afr., FS, WC, EC.

neesiana (Trin. & Rupr.) Barkworth

Loosely to densely tufted, erect perennial, 0.3–1.0 m high. **Leaf blade** up to 300 × 3 mm; ligule an unfringed membrane. **Inflorescence** a panicle; spikelets all alike, pedicelled. **Spikelets** 15–17 mm long (excluding awn), laterally compressed; glumes ± equal, longer than spikelet, similar, rounded on back, 3-nerved, dark purple. **Floret** 1; lemma firmer than glumes, becoming indurated, tuberculate, rough, strongly overlapping, with a raised crown at junction of awn; awn up to 100 mm long, scabrous, geniculate, twisted; anther 0.3–0.5 mm long. **Flowering time** Nov., Dec. Disturbed places and cultivated lands; Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Indigenous Forests, Albany Thicket (Barkly East S to Sterkstroom, Bosberge near Somerset East and Grahamstown Districts).

tenuissima (Trin.) Barkworth

Serrated tussock, white tussock; *witpolgras* (A)

Very densely tufted perennial, 0.25–1.00 m high, often drooping at maturity. **Leaf blade** up to 700 × 0.5 mm, tightly rolled, setaceous; ligule an unfringed membrane. **Spikelets** 4.0–5.0(–5.5) mm long (excluding awn), laterally compressed; glumes ± equal, longer than spikelet, similar, rounded on back, 3-nerved, not swollen around floret at base. **Floret** 1; lemma firmer than glumes, becoming indurated, tuberculate, rough, strongly overlapping; awn centrally placed, up to 80 mm long, fine, geniculate, twisted. **Flowering time** Jan. Weed on open mountain grassland; origin USA and Mexico, declared weed (Category 1); Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East and Lady Frere).

trichotoma (Nees) Hack. ex Arechav.

Nassella tussock, serrated tussock; *nassella-polgras* (A)

Very densely tufted perennial, 250–650 mm high. **Leaf blade** 150–450 × 0.25–0.50 mm, setaceous; ligule an unfringed membrane. **Inflorescence** a panicle; spikelets all alike, pedicelled. **Spikelets** 6.0–8.5 mm long (excluding awns), laterally compressed; glumes ± equal, longer than spikelet, similar, rounded on back, 3-nerved, swollen around floret at base, long, finely acuminate. **Floret** 1; lemma firmer than glumes, becoming indurated, tuberculate, rough, strongly overlapping; awn up to 35 mm long, asymmetrically attached, geniculate, robust, longer than body of lemma. **Flowering time** Aug.–Jan.

Weed, in mountain grassland, old degraded lands and disturbed places; origin South America, declared weed (Category 1); Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Molteno E to Dordrecht District, Cathcart southwards, from Graaff-Reinet to Somerset East and Stutterheim).

OLYRA L.

Species 23, mainly tropical and subtropical America and Africa; 1 in sthn Afr., KZN, EC.

*?**latifolia** L.

Klimgras (A)

Bamboo-like, scrambling perennial, 0.9–3.0 m high. **Leaf blade** 170 × 25–70 mm, flat, broadly lanceolate, pseudopetiolate, cross-veins visible. **Inflorescence** a scanty, whitish panicle, with male spikelets below and female spikelets above; female spikelets on clavate pedicels. **Male spikelets** smaller than female spikelets; glumes absent; lemma 3-nerved, shortly awned. **Female spikelets** 7–10 mm long (excluding awns), dorsiventrally compressed; lower glume drawn out into an awn up to 20 mm long. **Floret** 1; lemma 5-nerved, keeled, awnless; palea similar to lemma. **Flowering time** Dec.–May. Wet forests, climbing over shrubs; Indian Ocean Coastal Belt, Indigenous Forests (Ntsubane Forest, Port St Johns and Umtamvuna River).

OPLISMENUS P.Beauv.

Species 5, tropics and subtropics; 3 in sthn Afr., N, B, LIM, NW, M, S, KZN, WC, EC.

hirtellus (L.) P.Beauv.

Bosgras (A)

Prostrate perennial, sometimes climbing in undergrowth; culm 150–800 mm long. **Leaf blade** up to 130 × 4–20 mm; ligule a fringed membrane. **Inflorescence** of elongated racemes with 6–20 spikelets, usually scattered and distant on a slender central axis. **Spikelet** 2–4 mm long; glumes ± equal, similar, shorter than spikelet, 3–5-nerved, with smooth sticky awns; lower glume with longest awn, 3–14 mm long. **Florets** 2; lower floret sterile or rarely male; upper floret bisexual, lemma smooth, shining, margins inrolled and clasping palea, awnless; anther 1.4–2.5 mm long. **Flowering time** Jan.–June. (rarely at other times). In forest shade; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Humansdorp, Indigenous Forests (Paddock District S to Mhlahlane Forest, Port St Johns, Fort Beaufort, Kentani, Grahamstown and Humansdorp District).

undulatifolius (Ard.) Roem. & Schult.

Trailing perennial; culm 150–500 mm long. **Leaf blade** 10–70 × 4–15 mm; ligule a fringed membrane. **Inflorescence** of racemes scattered on a slender central axis, racemes with 2–6 spikelets fascicled into wedge-shaped clumps. **Spikelets** 2.5–4.0 mm long; glumes ± equal, similar, shorter than spikelet, 3–5-nerved, with smooth, sticky awns; lower glume with longest awn, 7–14 mm long. **Florets** 2; lower floret sterile or rarely male; upper floret bisexual, lemma smooth, shining, margins inrolled and clasping palea, awnless; anther 1.7–2.4 mm long. **Flowering time** Jan.–July. In forest shade; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld, Indigenous Forests (Mkambati Nature Reserve S to Seymour, Stutterheim, King William's Town, Tsitsikamma Forest, Port Elizabeth and Humansdorp).

OROPETIUM Trin.

Species 3–6, dry areas of India and Africa; 1 in sthn Afr., N, B, LIM, NW, G, M, FS, KZN, L, NC, WC, EC.

capense Stapf

Dwarf grass; *haasgras* (A)

Densely tufted, dwarf perennial, 25–100(–170) mm high. **Leaf blade** 10–40 × 1.2 mm; ligule a fringed membrane. **Inflorescence** a solitary, slender, straight or gradually curved, terminal spike-like raceme; spikelets alternate on and sunk in rachis. **Spikelet** 2.5–4.0 mm long; laterally compressed; glumes of terminal spikelet equal and similar; glumes of lateral spikelets unequal, dissimilar, awnless; lower glume suppressed or reduced; upper glume of lateral spikelet 2–3 mm long. **Floret** 1; lemma finely 1–3-nerved, hairy along nerves, mucronate; anther 0.5 mm long. **Flowering time** Dec.–May. In shallow soils in open places or rocky outcrops or in crevices and hollows on exposed rocks, often in badly grazed or disturbed veld; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Lower Karoo, Sub-Escarpment Grassland, Albany Thicket (Aliwal North District E to Lady Grey southwards, from Middelburg to Rietbron District, Alice, Somerset East and Albany District).

OXYRHACHIS Pilg.

Species 1, Africa and Madagascar, KZN, EC.

gracillima (Baker) C.E.Hubb.

Densely tufted perennial, 200–600 mm high. **Leaf blade** 50–300 mm long, filiform; ligule a fringed membrane. **Inflorescence** a single, very slender, cylindrical, spike-like raceme; spikelets apparently borne singly, since pedicels fused to rachis and indistinguishable from internode; internodes semi-cylindrical, strongly oblique top and bottom; spikelets alternate and sunken on rachis. **Sessile spikelet** 3–6 mm long, dorsiventrally compressed, awnless; glumes ± equal, rounded on back, dissimilar; lower glume smooth. **Florets** 2; upper lemma less firm in texture than glumes; anther 2.0–2.5 mm long. **Pedicelled spikelet** and pedicel suppressed or fused and indistinguishable from internode. **Flowering time** June. Wet places; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

PANICUM L.

Species ± 470, tropical, subtropical and warm temperate; 42 in sthn Afr., widespread.

Perennial

aequinerve Nees

Bosbuffelsgras (A)

Short-lived perennial or annual, scrambling or trailing, up to 1 m long; decumbent and rooting at nodes. **Leaf blade** 30–110 × 3–10(–12) mm; ligule a fringed membrane. **Inflorescence** a sparsely branched sometimes contracted panicle, usually spreading at maturity, branches naked for a long distance, with 2–5 spikelets crowded at apex, exserted from uppermost leaf. **Spikelets** 2.5–3.5(–4.0) mm long, dorsiventrally compressed, acuminate, glabrous or hairy; glumes ± equal; lower glume as long as spikelet, 5(–7)-nerved; upper glume 7-nerved. **Florets** 2; lower floret sterile, lemma 5-nerved, palea reduced; upper floret bisexual; lemma indurated, smooth, pale, shiny, entire, mar-

gins only clasping edges of palea. **Flowering time** Sept., Jan.–June. Clay or sand on shallow soils of forest margins or open grassland, mainly in damp places and around boulders; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Prentjiesberg Crest E to Mkambati Nature Reserve southwards, from Winterberge Mts Range to Kentani District, Grahamstown and Skuitbaai).

coloratum L.

Small buffalo grass, white buffalo grass; *witbuffelgras* (A)

Tufted perennial, up to 1 m high; erect, geniculate or occasionally decumbent; lower leaf sheaths glabrous to densely appressed-hairy, bulbous-based hairs present or absent; leaves mainly cauline. **Leaf blade** up to 300 × 5–10 mm, expanded, rounded or almost cordate at base, green or glaucous, glabrous or loosely to fairly densely hairy with tubercle-based hairs. **Inflorescence** an open panicle, branches spreading, spikelets distant. **Spikelets** 2.5–3.0 mm long, dorsiventrally compressed; glumes unequal; lower glume ovate, $^{1}/_{2}$–$^{2}/_{3}$ length of spikelet; upper glume 7(–9)-nerved. **Florets** 2; lower floret male, lemma 7(–9)-nerved, palea well developed; upper floret bisexual, lemma indurated, smooth, pale to dark, shiny, entire, margins only clasping edges of palea. **Flowering time** Oct.–May. Sandy or clay soils in riverbeds, drainage courses, around pans or in depressions; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Colesberg District E to Aliwal North southwards, from Middelburg to Cradock, Queenstown District, Uitenhage, Alexandria District, Port Alfred and Humansdorp).

deustum Thunb.

Reed panicum, broad-leaved panicum; *breëblaarwintergras* (A)

Tufted perennial, up to 2.0(–2.4) m high, shortly rhizomatous, sometimes rooting at lower nodes; leaves mainly cauline. **Leaf blade** 150–480 × 5–35(–45) mm, cordate or straight at base. **Inflorescence** an open panicle, branches usually with clavate hairs. **Spikelets** 3.5–5.0(–5.5) mm long, dorsiventrally compressed; glumes unequal; lower glume $^{1}/_{2}$–$^{2}/_{3}$ length of spikelet, separated by a short internode from rest of spikelet; upper glume 7-nerved, as long as spikelet. **Florets** 2; lower floret male, lemma 5-nerved, palea well developed; upper lemma indurated, pale, dull or shiny, entire, margins only clasping edges of palea. **Flowering time** Sept.–Apr. Often in moist soils, shady places or rocky hillsides on clay, loam or sandy soils; in all bioregions, except Dry Highveld Grassland, Mesic Highveld Grassland (Griqualand East S to Queenstown District, Port St Johns, Cradock District, Komga, Groot River Pass, Port Elizabeth and Humansdorp District).

dregeanum Nees

Densely tufted perennial, up to 1.1 m high; basal sheaths silky pubescent; leaves mostly basal. **Leaf blade** 140–350(–500) × 1.5–3.0 mm. **Inflorescence** an open ovate to elliptic panicle, 80–150 mm long, much branched. **Spikelets** 2.0–2.5(–3.0) mm long, ovate, dorsiventrally compressed, usually strongly flushed with purple; glume apices shortly mucronate, recurved; lower glume $^{1}/_{2}$–$^{3}/_{4}$ length of spikelet, 5-nerved; upper glume 5–7-nerved. **Florets** 2; lower floret male, lemma 5-nerved, palea well developed; upper floret bisexual, lemma indurated, pale, smooth and shiny, entire, margins only clasping edges of palea. **Flowering time** Nov.–Apr. Usually in wet places, frequently in vleis,

sometimes on hillsides; Indian Ocean Coastal Belt, Sub-Escarpment Savanna, Albany Thicket (Umtamvuna S to Port St Johns District, Port Edward and Grahamstown District).

ecklonii Nees

Densely tufted perennial, up to 800 mm high, shortly rhizomatous; leaves mainly basal; culms erect, slender, nodes densely hairy. **Leaf blade** 60–200(–260) × 3–8 mm, flat, bright green, usually loosely to densely hairy with long tubercle-based and some clavate hairs at apex; ligule a fringe of hairs. **Inflorescence** a 50–200 mm long, loose, open or somewhat contracted panicle, clavate hairs present or absent. **Spikelets** 2.5–3.5 mm long, obtuse, dorsiventrally compressed, glabrous, light yellow-green usually tinged purple; glumes pectinate at apex; lower glume up to $^1/_2$ as long as spikelet, 3-nerved; upper glume 5-nerved. **Florets** 2; lower floret sterile, lemma pectinate at apex, 7-nerved, palea absent or reduced; upper floret bisexual; lemma indurated, smooth, dull, often flushed purple and shortly hairy towards apex, entire, margins only clasping edges of palea; palea as long as spikelet, shortly hairy towards apex. **Flowering time** Sept.–Apr. Sandy soils and often in moist areas in mountainous regions that are subjected to burning; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East District E to Griqualand East southwards, from Mthatha to Port St Johns, Winterberge Mts Range, Kentani District, Groot Winterhoek Mts and Grahamstown).

maximum Jacq.

Guinea grass, barbed grass; *blousaad soetgras* (A); *lehola* (SS); *ubabe* (Z)

Loosely to densely tufted, usually perennial, occasionally annual, up to 2 m high, erect or geniculate and rooting at nodes; usually glabrous or sometimes hispid to pilose. **Leaf blade** 60–400(–1 000) × 4–12(–35) mm; ligule a fimbriate membrane. **Inflorescence** a (120–)450(–600) mm long panicle, usually much branched, secondary branches well developed and flexuous, glabrous; lowest branches usually arranged in a whorl. **Spikelets** 2.5–3.0(–4.0) mm long, mostly blunt or acute, dorsiventrally compressed, glabrous or pubescent; lower glume ± $^1/_3$ length of spikelet, 3-nerved; upper glume 5-nerved. **Florets** 2; lower floret usually male, lemma back rounded, palea well developed, slightly longer than upper floret; upper floret bisexual, lemma indurated, pale, conspicuously transversely rugose, entire, margins only clasping edges of palea. **Flowering time** Nov.–July. In shady places, especially under canopy of trees, in cultivated areas and along riverbanks, but well adapted to a variety of conditions; in all bioregions, except Drakensberg Grassland, Dry Highveld Grassland, Mesic Highveld Grassland (Aliwal North E to Paddock District southwards, from Hofmeyr to Port St Johns, Graaff-Reinet, Komga, Steytlerville and East London Districts).

natalense Hochst.

Natal buffalo grass; *Natal buffelsgras* (A)

Densely tufted, wiry perennial, up to 500(–800) mm high; shortly rhizomatous knotty base; leaves mainly basal. **Leaf blade** up to 500 × 3.5 mm, tightly folded or flat. **Inflorescence** a 70–150 mm long, ovate to oblong panicle. **Spikelets** 1.7–2.2 mm long, obtuse or subacute to almost globose in outline, glabrous, usually light green or brownish green; lower glume $^1/_2$–$^3/_4$ spikelet length, distinctly 3-nerved; upper glume 5-nerved. **Florets** 2; lower floret male or sterile, lemma 5-nerved, palea membranous, well developed or reduced in width only, not longer than lemma; upper floret bisexual, lemma indurated, pale, sparsely to densely papillose, entire, margins only clasping edges of palea.

Flowering time Oct.–Apr. Sandy loam or sandy soils in well-drained or shallow soils in rocky areas, often in burnt veld; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Matatiele, Engcobo Mts, Maclear District and Pondoland).

parvifolium Lam.

Wiry perennial, scrambler; hygro- or hydrophyte; culms 80–500 mm long, rooting at lower nodes. **Leaf blade** (13–)15–30 × 2–7 mm, lanceolate to narrowly ovate, acute, base cordate, cross-veins present, often reflexed at maturity. **Inflorescence** an ovate, open panicle, 10–50 mm long; branches spreading to reflexed; often barely exserted from uppermost leaf sheath. **Spikelets** 1–2 mm long; glume apices not recurved; lower glume $^1/_2$–$^2/_3$ length of spikelet, 3-nerved, acuminate; upper glume 5-nerved. **Florets** 2; lower floret usually male or sterile, lemma 5-nerved, palea well developed; upper floret bisexual, lemma indurated, pale, smooth and shiny, entire, margins only clasping edges of palea. **Flowering time** Dec.–June. Organically rich sandy soils in water or along streams or in swamps; Indian Ocean Coastal Belt (Port Edward District).

repens L.

Couch panicum; *kruipgras* (A)

Tufted perennial, up to 1 m high, hygrophyte to occasional hydrophyte, erect to decumbent, sometimes floating, rhizomatous, base maybe knotty; leaves mainly cauline. **Leaf blade** 70–250 × 2–8 mm, distichous, ascending, usually pungent. **Inflorescence** a 50–200 mm long, narrowly oblong panicle, sparsely to moderately branched, usually ascending. **Spikelets** 2–3 mm long, ovate-elliptic to ovate, dorsiventrally compressed; lower glume broadly ovate, $^1/_2$ length of spikelet, 0–3-nerved; upper glume 7–9-nerved. **Florets** 2; lower floret usually male, lemma 7–9-nerved, broadest interspaces between nerves not confined to adjacent to central nerve, palea well developed; upper floret bisexual, lemma indurated, pale to yellowish, shiny, entire, margins only clasping edges of palea. **Flowering time** Oct.–June. Wet sandy soils, sometimes in either fresh or brackish water; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Mkambati Nature Reserve, Port Edward and Komga).

Annual

aequinerve Nees. (see 1a above)

gilvum Launert

Hygrophytic, tufted annual, up to 650 mm high, geniculate, rarely erect; culm nodes glabrous. **Leaf blade** 30–150 × 3–8 mm, glabrous or sparsely hairy; ligule a fringe of hairs. **Inflorescence** a panicle, not exserted beyond uppermost leaf which is usually ± 8 mm wide; often 2 leaves closely associated with inflorescence; secondary branches usually absent, spikelets appressed to branches. **Spikelets** 2.8–3.4 mm long, acute, dorsiventrally compressed, glabrous; glumes unequal; lower glume up to $^1/_3$ length of spikelet, not nerved or 1-nerved; upper glume (10)11–14-nerved. **Florets** 2; lower floret sterile, lemma (9)10- or 11-nerved, palea absent or conspicuously shorter than lower lemma; upper floret bisexual, lemma indurated, smooth, pale to yellow, often flushed dark, smooth and shiny, entire, margins only clasping edges of palea. **Flowering time** Jan.–Apr. Sandy soils, margin of vleis, dams and waterholes, in ephemeral water, and in disturbed areas; Drakensberg Grassland, Albany Thicket (Stormberge and Greater Addo Elephant National Park).

hymeniochilum Nees

Semi-hygrophytic annual or short lived perennial, 0.14–2.00 m high, scrambler, often rooting at lower nodes. **Leaf blade** 12–70 × 1.2–5.0(–10.0) mm. **Inflorescence** an oblong to pyramidal panicle, 20–90 mm long; sparsely branched; clavate hairs usually present, rarely absent. **Spikelets** 2.0–2.5(–3.0) mm long, narrowly elliptic-oblong, dorsiventrally compressed, often purple-tinged; lower glume narrowly ovate, $^{1}/_{2}$–$^{2}/_{3}$ length of spikelet; upper glume 7–9-nerved. **Florets** 2; lower floret male or sterile, lemma (7–)9–11-nerved, palea developed or reduced; upper floret bisexual, lemma indurated, shiny, entire, margins only clasping edges of palea. **Flowering time** Dec.–May. Moist organically rich soils of river margins and perennial swamps, in or near water; Indian Ocean Coastal Belt, Drakensberg Grassland (Lusikisiki and Amatole Mts).

laticomum Nees

Scrambling annual, up to 2 m long, decumbent to semi-erect, rooting at nodes. **Leaf blade** up to 100 × (5–)8–28 mm, abruptly or asymmetrically narrowed at base. **Inflorescence** an open panicle, 100–250 mm long; finely and usually profusely branched, extending beyond uppermost leaf. **Spikelets** 1.5–2.5 mm long, asymmetrical, dorsiventrally compressed, glabrous or hairy; lower glume $^{1}/_{2}$ length of spikelet, separated from rest of spikelet by a short internode, 3-nerved; upper glume 5-nerved. **Florets** 2; lower floret sterile, lemma 5–7-nerved, palea reduced or poorly developed; upper floret bisexual, lemma indurated, pale and granulose, margins only clasping edges of palea. **Flowering time** Jan.–Apr. (June, July). Sandy soils in dense shade and wet areas in forests; Indian Ocean Coastal Belt (Lusikisiki, Port St Johns and Port Edward districts).

schinzii Hack.

Land grass, sweet grass; *blousaadgras* (A)

Tufted annual, up to 900 mm high, erect to sprawling; occasionally rooting at nodes. **Leaf blade** up to 300 × 20 mm, expanded or folded, glabrous, dark green. **Inflorescence** a 100–350 mm long, oblanceolate to narrowly obovate panicle, open, profusely branched with many spikelets; well exserted from uppermost leaf. **Spikelets** 2.0–2.5(–3.5) mm long, obtuse, dorsiventrally compressed, glabrous, light green often tinged with purple, rarely entirely purple; apex of glumes not recurved; lower glume $^{1}/_{4}$ as long as spikelet, broadly ovate, cuff-like, 1-nerved; upper glume (7–)9–11-nerved. **Florets** 2; lower floret male or both male and sterile occurring in same inflorescence, lemma (7–)9–11-nerved, palea well developed; upper floret bisexual, lemma indurated, pale to yellow to light brown, shiny, entire, margins only clasping edges of palea. **Flowering time** Nov.–May. Moisture-loving, in sandy and clay soils of seepage areas, depressions where water collects and in cultivated lands; Dry Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Zastron E to Griqualand East District southwards, from Ugie to Port St Johns, Fort Beaufort, Stutterheim, Grahamstown and Humansdorp District).

stapfianum Fourc.

Stapf's buffalo grass; *blousaadgras* (A)

Erect, tufted perennial, up to 900 mm high; bulbous-based hairs present or absent; leaves mainly basal. **Leaf blade** up to 400 × 5 mm (but usually shorter); upper leaf surface usually densely papillate. **Inflorescence** a panicle. **Spikelets** up to 3 mm long, dorsiventrally compressed; lower glume $^{1}/_{2}$–$^{2}/_{3}$ length of spikelet; upper glume 7–9-nerved. **Florets** 2; lower floret male, lemma 7–9-nerved, palea well developed; upper floret

bisexual, lemma indurated, pale yellow to flushed greyish, smooth, margins only clasping edges of palea. **Flowering time** Nov.–May. Damp areas on heavy or sandy soils, calcrete and occasionally rocky dry areas, as well as disturbed areas; in all bioregions, except Indian Ocean Coastal Belt, Rainshadow Valley Karoo, Indigenous Forests (Venterstad District E to Lady Grey southwards, from Middelburg to Queenstown, Cradock, Komga, Jansenville District and Ciskei).

subalbidum Kunth

Elbow buffalo grass; *elmboogbuffelgras* (A)

Tufted, slender to robust, short-lived perennial or annual, up to 2 m high; hygro- or occasionally hydrophyte, erect to decumbent and rooting at nodes; culm soft, often spongy, nodes usually dark brown or black. **Leaf blade** 200–500 × 6–18 mm, expanded, glabrous; upper surface with large white prickles (always visible on upper leaves), papillae sometimes present. **Inflorescence** a 200–500 mm long panicle; sparsely to moderately branched; spikelets appressed to branches. **Spikelets** 2.5–3.5 mm long, narrowly ovate, acute to acuminate, dorsiventrally compressed, glabrous, light green sometimes tinged with purple; lower glume broadly ovate, up to $^{1}/_{3}$ length of spikelet, 1–3-nerved; upper glume 7–9(–11)-nerved. **Florets** 2; lower floret sterile, lemma 7–9(–11)-nerved, palea poorly developed or absent; upper floret bisexual, lemma indurated, smooth, pale to yellowish, shiny, entire margins only clasping edges of palea. **Flowering time** Oct.–Apr. Usually on clay soils in disturbed areas, in or near water, along rivers and swamps; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Griqualand East S to Mthatha, Port St Johns, Stutterheim, Grahamstown and East London).

*PARAPHOLIS C.E.Hubb.

Species 6, Europe and Asia; 1 naturalised in sthn Afr., NC, WC, EC.

incurva (L.) C.E.Hubb.

Coast barb grass

Annual, 60–300 mm high; culms erect or decumbent. **Leaf blade** up to 30 × 1.5–2.0 mm; ligule an unfringed membrane. **Inflorescence** a single, usually curved, ylindrical spike; spikelets alternate on rachis. **Spikelet** 4.5–5.5 mm long, ± laterally compressed, awnless; glumes ± equal, as long as spikelet, lying side by side, keels not winged, 3–5-nerved. **Floret** 1; lemma 3-nerved; anther 1.0–2.0 mm long. **Flowering time** Aug.–Oct. Weed on roadsides and in moist places; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth and Humansdorp).

PASPALIDIUM Stapf

Species ± 40, warmer regions of both hemispheres; 2 in sthn Afr., N, B, LIM, KZN, EC.

geminatum (Forssk.) Stapf

Perennial, 100–600 mm high; rhizomatous or stoloniferous, hydrophyte; culms floating and spongy or prostrate and rooting at nodes. **Leaf blade** 50–350 × 2–13 mm, acuminate; ligule a fringe of hairs. **Inflorescence** an elongated, secund, false spike, consisting of several sessile, spike-like, secund racemes scattered singly on alternate sides and ± appressed to long central axis 0.5–1.0 mm wide, narrowly winged. **Spikelet** 1.6–2.6 mm long, ovate, dorsiventrally compressed, awnless; glumes unequal; lower glume $^{1}/_{4}$–$^{1}/_{3}$ as long as spikelet, truncate; upper glume $^{2}/_{3}$–$^{4}/_{5}$ as long as spikelet. **Florets** 2; lower floret male or sterile, lemma as long as spikelet; upper floret bisexual, lemma firmer than

glumes, almost as long as spikelet, entire, granulose; anther 1.0–1.6 mm long. **Flowering time** Mar.–June. In water up to 2 m deep, but also extending to wet marshy soils on edges of rivers, pans or vleis; Indian Ocean Coastal Belt (KZN Border, Munster).

PASPALUM L.

Species ± 330, tropics, predominately New World; 6 in sthn Afr., widespread.

Upper glumes densely fringed around margins

***dilatatum** Poir.

Dallis grass; *gewone paspalum*, *watergras* (A)

Tufted perennial, 0.3–1.8 m high; rhizome short and creeping; basal sheaths glabrous or sometimes hairy; culm nodes glabrous. **Leaf blade** 90–350(–450) × 6–14 mm; ligule a conspicuous unfringed membrane. **Inflorescence** of (3)4–9 secund racemes, scattered up a 30–200 mm long central axis; spikelets arranged in 4 rows on one side of rachis; lower glume abaxial, upper lemma facing rachis. **Spikelets** 3–4 × 2.0–2.5 mm, dorsiventrally compressed, awnless, yellowish green to purplish, matt; glumes unequal; lower glume absent; upper glume fringed with long white hairs around margins, 5-nerved. **Florets** 2; lower floret sterile, lemma equal and similar to upper glume but flat on back; upper floret bisexual, lemma similar in texture, to firmer than glumes, papillose-striate, obtuse, entire, faintly nerved, glabrous, indurated, margins narrow and inrolled, clasping only edges of palea, pallid at maturity; anther 1.2–1.5 mm long. **Flowering time** Oct.–May. Usually in damp places, most often in disturbed areas such as roadsides, gardens, plantations and cultivated lands; in all bioregions, except Dry Highveld Grassland, Lower Karoo, Rainshadow Valley Karoo (Albert District E to Kokstad District southwards, from Middelburg to Port St Johns, Daggaboersnek, Komga, Joubertina District to East London).

***urvillei** Steud.

Vasey grass; *langbeen-paspalum* (A)

Coarsely tufted, erect, rhizomatous perennial, 0.1–2.5 m high; basal sheaths densely hairy; culm nodes pubescent. **Leaf blade** 250–600 × 4–15 mm; ligule an unfringed membrane. **Inflorescence** with 10–30 secund racemes, closely spaced on 120–300 mm long central axis; spikelets arranged in 4 rows. **Spikelets** 1.6–2.8 × 1.2–1.4 mm, ovate, dorsiventrally compressed, awnless, yellowish green; glumes unequal; lower glume absent, upper glume 3-nerved; lower lemma and upper glume fringed on margins with silky hairs giving a woolly appearance. **Florets** 2; lower floret sterile, lemma equal and similar to upper glume but flat on back; upper floret bisexual, lemma similar in texture to, to firmer than glumes, uniformly striate to irregularly striate, obtuse, entire, faintly nerved, indurated, glabrous, sometimes minutely punctiform, margins narrow and inrolled, clasping only edges of palea; anther 1.0–1.2 mm long. **Flowering time** Oct.–Apr. Weed, near water or in moist places, along water furrows, roadsides and streambanks on sandy loam, disturbed areas; Indian Ocean Coastal Belt, Albany Thicket (Port St Johns S to East London and Alexandria District).

Upper glume glabrous or with short inconspicuous hairs

distichum L.

Couch paspalum; *bulgras* (A)

Perennial, 100–300 mm high; hydro- to hygrophyte; mat-forming as rhizomatous or stoloniferous and rooting at nodes; culm nodes pubescent. **Leaf blade** 20–220 × 3–8 mm;

ligule an unfringed membrane. **Inflorescence** digitate to subdigitate, usually 2, secund racemes; rachis dorsally flat, with a raised midrib on front, bearing single spikelets alternately on either side of midrib in 2 or 4 rows; lower glume abaxial, upper lemma facing rachis. **Spikelets** 2.5–3.5 × 1.3–1.5 mm, lanceolate, dorsiventrally compressed, apex acute, glabrous, awnless, green; glumes unequal; lower glume usually a small triangular scale, or up to $^{2}/_{3}$ as long as spikelet to absent (all 3 states can occur on same inflorescence); upper glume minutely hairy especially towards apex, 3-nerved. **Florets** 2; lower floret sterile, lemma equal, similar to upper glume but flat on back, a prominent median nerve present; upper floret bisexual, lemma hard, obtuse, entire, median nerve present, glabrous, smooth, pallid at maturity, margins narrow and inrolled, clasping only edges of palea; anther 1.0–1.6 mm long. **Flowering time** Nov.–May. Always in or near salt or fresh water on riverbanks, in vleis and along pan edges in muddy soil, sand or black turf; Upper Karoo, Mesic Highveld Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Aliwal North E to Griqualand East southwards, from Steynsburg District to Mkambati Nature Reserve, Alice, Komga District, Greater Addo Elephant National Park and Port Elizabeth).

scrobiculatum L.

Creeping paspalum; *dronkgras* (A)

Loosely tufted, erect or decumbent perennial, 100–700 mm high, occasionally a hydrophyte; shortly rhizomatous, sometimes stoloniferous; culm nodes glabrous. **Leaf blade** 150–200(–380) × 6–8(–10) mm; ligule an unfringed membrane. **Inflorescence** of 1–5 secund racemes, digitate or on elongated central axis; rachis flat, linear, almost leaflike; spikelets borne singly, arranged in 2 rows; upper lemma facing rachis. **Spikelets** 2.0–2.5 × 1.8–2.4 mm, ovate, dorsiventrally compressed, awnless, green becoming brown, glabrous; glumes unequal; lower glume absent; upper glume papery, 3-nerved. **Florets** 2; lower floret sterile, lemma equal, similar to upper glume but flat on back, median nerve present; upper floret bisexual, lemma hard, finely striate, obtuse, entire, faintly nerved, glabrous, margins narrow and inrolled, clasping only edges of palea, brown at maturity; anther 0.5–0.8 mm long. **Flowering time** Sept.–May. Moist, semi-swampy areas or on fertile well-drained soils, often in disturbed places and abandoned lands, ruderal weed in damp areas; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Elliotdale District E to Port St Johns southwards, from King William's Town to Kentani, Grahamstown and Port Alfred).

vaginatum Sw.

Seashore paspalum; *brakpaspalum* (A)

Perennial, 300–400(–600) mm high; mat-forming, hydro- to hygrophyte; shortly rhizomatous or stoloniferous or rooting at nodes below water level and branching above; internodes short, branching at most nodes; culm nodes glabrous. **Leaf blade** 40–90 × 2–4 mm; ligule an unfringed membrane. **Inflorescence** digitate to subdigitate, usually of 2 (rarely more) secund racemes; rachis dorsally flat, with a raised midrib on front, bearing single spikelets alternately on either side of midrib in 2 or 4 rows; lower glume abaxial, upper lemma facing rachis. **Spikelets** 3.0–4.5 × 0.9–1.5 mm, lanceolate, apices acute, dorsiventrally compressed, awnless, usually pale brownish green, glabrous; glumes unequal; lower glume absent or reduced to a rim; upper glume 5-nerved. **Florets** 2; lower floret sterile, lemma equal, similar to upper glume but flat on back, median nerve present; upper floret bisexual, lemma hard, obtuse, entire, median nerve present,

smooth, pallid at maturity, margins narrow and inrolled, clasping only edges of palea; anther 1.6–2.0 mm long. **Flowering time** Dec.–Apr. Near coasts, in or near estuaries or rivers, also inland at water edges on sandy soils but most often in saline water; potential problematic weed; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Mazeppa Bay, Komga District, Maitland River Mouth).

PENNISETUM Rich.

Species ± 80, cosmopolitan in tropical and warm regions; 14 in sthn Afr., widespread, except B.

1a Inflorescence hidden

***clandestinum** Hochst. ex Chiov.

Kikuyu grass; *kikoejoegras* (A); *tajoe* (SS)

Perennial, 0.03–1.20 m high; creeps vigorously by rhizomes and stolons; culms closely sheathed, with abundance of bright green leaves. **Leaf blade** 50–300 × 3–7 mm, flat or folded, spreading; ligule a fringe of hairs. **Inflorescence** hidden, enclosed in uppermost leaf sheath, axis glabrous; filamentous stigmas and stamens with long filaments are clearly visible at flowering time; spikelet cluster sessile or nearly so; bristles delicate, scaberulous to ciliolate. **Spikelet** 10–20 mm long; glumes unequal; lower glume absent, upper glume 1–3 mm long, sometimes suppressed, glabrous. **Florets** 2; lower floret male or sterile, lemma as long as spikelet, tapering, without palea, glabrous; upper floret bisexual, lemma membranous to thinly coriaceous; anther 5.5–6.0 mm long and silvery, apical tufts of hairs absent. **Flowering time** Aug.–Apr. Requires high rainfall and sunlight; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Stutterheim, Komga, Grahamstown and Port Elizabeth districts).

1b Inflorescence obvious
2a Bristle solitary below each spikelet

unisetum (Nees) Benth.

Natal grass, silky grass

Tufted, robust perennial, 0.9–2.4 m high. **Leaf blade** 200–450 × 5–10 mm, broadly linear to linear lanceolate; ligule a fringe of hairs. **Inflorescence** a compound false panicle, branches filiform, usually in groups of 2–5; rachis ribs rounded, involucral stumps distinct, minutely hairy; involucre reduced to a single bristle 3–4× as long as spikelet, glabrous, scabrid. **Spikelet** 2.5–3.5 × 1 mm; glumes ± equal, rarely unequal, 0.2–0.5(–0.8) mm long. **Florets** 2; lower floret male or sterile, lemma as long as spikelet, membranous, scaberulous to minutely hairy; upper floret bisexual; anther 1.2–1.5 mm long, without tuft of hairs at apex. **Flowering time** Mar.–June. Near water and in shady places; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (KZN border, Izingolweni).

2b Bristles several below each spikelet or cluster of spikelets
3a Involucre borne on a stipe

***setaceum** (Forssk.) Chiov.

Fountain grass; *pronkgras* (A)

Tufted perennial, 0.2–1.0 m high. **Leaf blade** 20–40 × 1–2 mm, often rolled, rigid, rough; ligule a fringe of hairs. **Inflorescence** a spike-like panicle, 60–250 mm long, purple; rachis cylindrical with shallow angular ribs below stumpless scars, glabrous to hairy; involucre borne on a stipe, enclosing 1–3 spikelets, one sessile, rest pedicelled;

bristles mostly ± 20 mm long but longest 16–40 mm, 4–5× as long as spikelet, usually purple, inner bristles plumose. **Spikelet** 4.0–6.5 × 3 mm; occasionally rachilla prolonged beyond upper lemma as tiny bristle; glumes unequal; lower glume short and subrotund or sometimes ovate and up to $^1/_3$ length of spikelet, sometimes suppressed; upper glume $^1/_4$–$^2/_3$ length of spikelet, acute to acuminate. **Florets** 2; lower floret male or sterile, lemma as long as spikelet; upper floret bisexual; anther 1.8–2.0 mm long, without tuft of hairs at apex. **Flowering time** Nov.–July. Ruderal on stony slopes and dry open places; origin East Africa, tropical Africa, Middle East and SW Asia, declared weed (Category 1); Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg District E to Queenstown District southwards, from Aberdeen to Fort Beaufort, Uitenhage, Port Elizabeth and Grahamstown District).

3b Involucre not borne on a stipe

glaucocladum Stapf & C.E.Hubb.

Riverbank pennisetum

Tufted perennial, 1–3 m high; rhizomes stout; leaves widely spaced, often held at right angles to culm; lowest leaf sheaths with many transverse veins. **Leaf blade** 300–650 × 5–13 mm; ligule a fringe of hairs. **Inflorescence** a cylindrical to subglobose, spike-like panicle, 200–300 mm long; spikelets subtended by an involucre of up to 30 slender, glabrous, scabrid bristles, most longer than spikelet but one stouter and longer than rest; bristles free to base, falling with spikelets at maturity. **Spikelet** 3–6 × 1 mm, glumes unequal; lower glume minute; upper glume $^1/_4$–$^1/_3$ as long as spikelet. **Florets** 2; lower floret male or sterile, lemma 3–5-nerved, shortly awned; upper floret bisexual, lemma 5-nerved. **Flowering time** Jan.–May. Riverbanks and wet areas; Upper Karoo (Middelburg).

macrourum Trin.

Beddinggras, *witruigte* (A)

Tufted, reed-like perennial, 0.8–2.5 m high; rhizome creeping, often branched. **Leaf blade** 250–600 × 4–11 mm, hard, flat or sometimes rolled, glabrous or variably pilose; ligule a fringe of hairs. **Inflorescence** a cylindrical to subglobose, spike-like panicle, 60–250 mm long, light green or straw-coloured, often tinged purple; rachis cylindrical, ribs rounded, involucral stumps present or absent, scaberulous to rarely hairy; involucre of up to 20 slender, glabrous bristles, free to base; bristles unequal, mostly shorter to as long as spikelet; spikelets solitary, sessile. **Spikelet** 4–6 × 1 mm; glumes unequal; lower glume minute, up to 1 mm long or absent; upper glume $^1/_4$–$^1/_3$ length of spikelet, acute or acuminate. **Florets** 2; lower floret male or sterile, lemma $^3/_4$ to as long as spikelet, acute, palea absent; upper floret bisexual, lemma thinly coriaceous and similar to lower lemma; anther 1.6–1.8 mm long; without tuft of hairs at apex. **Flowering time** Nov.–May. Near streams or damp places; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg S to Amatole Mts, Stutterheim, Grahamstown District, East London, Tsitsikamma and Humansdorp).

***purpureum** Schumach.

Napier fodder, elephant grass; *olifantsgras* (A)

Tufted, robust perennial, 1.8–7.5 m high, often forms tall bamboo-like clumps; culms branched. **Leaf blade** 300–1 200 × 10–40 mm, flat; ligule a fringe of hairs. **Inflorescence** a linear, robust, spike-like panicle, 70–300 mm long; rachis cylindrical, involucral stumps present or absent, hairy; involucre of up to 40 bristles; bristles unequal, outer

glabrous and scabrid, inner few loosely plumose towards base, one inner bristle longer than rest; involucre enclosing 1–5 spikelets, one sessile and bisexual and rest pedicelled and male. **Spikelet** 4.5–7.0 × 1 mm; glumes unequal; lower glume absent; upper glume $^{1}/_{4}$–$^{1}/_{2}$ length of spikelet, rarely absent. **Florets** 2; lower floret usually male, sometimes sterile, lemma $^{2}/_{3}$ to as long as spikelet, 3-nerved; upper floret bisexual, lemma shining basally; anther apex bearing tiny tuft of hairs, rarely glabrous. **Flowering time** Jan.–June. Riverine sites, valley floors, forest margins, with a preference for rich soils; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Kwelera and Cintsa West S to Bloukrans, Hankey, East London and Humansdorp).

sphacelatum (Nees) T.Durand & Schinz

Bull grass; *bulgras* (A)

Densely tufted perennial, 400–900 mm high. **Leaf blade** 100–400 × 2–4 mm, convolute, often filiform, hard, prominently nerved; ligule a fringe of hairs. **Inflorescence** a cylindrical to subglobose, spike-like panicle, 40–150 mm long, straw-coloured, culm hairy for some distance below inflorescence; rachis cylindrical, ribs rounded; peduncle stumps very short, scaberulous to minutely hairy; involucre bristles enclosing 1 spikelet; most involucral bristles equalling to twice as long as spikelet, glabrous, scabrid. **Spikelet** 2.5–4.5 × 1 mm; glumes unequal; lower glume minute. **Florets** 2; lower floret sterile, lemma $^{4}/_{5}$–$^{2}/_{3}$ as long as spikelet, gradually tapering to an acute, acuminate or caudate apex, palea well developed or absent; upper floret bisexual, lemma firmly membranous, similar to lower lemma; anther 2.2–2.4 mm long, without tuft of hairs at apex. **Flowering time** Nov.–Apr. Wet areas, vleis, usually hillsides, moist or clay soil; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Albert District E to Lady Grey, Mount Fletcher southwards, from Middelburg to Maclear District, Somerset East, Fort Beaufort and Idutywa).

thunbergii Kunth

Thunberg's pennisetum; *kleinmanna* (A)

Loosely tufted perennial, 100–800 mm high, erect or geniculate; rhizome extensively creeping, robust. **Leaf blade** 100–400 × 2–7 mm, flat or folded, usually sparsely to densely pilose; ligule a fringe of hairs. **Inflorescence** a cylindrical to subglobose, spike-like panicle, 20–100 mm long, purple; rachis cylindrical, ribs rounded; peduncle stumps distinct, scaberulous; involucre enclosing 1 spikelet; bristles fine, glabrous, scaberulous, one thicker and longer. **Spikelet** 2.5–5.0 × 1 mm; glumes unequal; lower glume absent or up to 1 mm long; upper glume $^{1}/_{4}$–$^{1}/_{5}$ as long as spikelet. **Florets** 2; lower floret male or sterile, lemma abruptly acuminate, palea absent; upper floret bisexual, lemma acuminate or with mucro up to 1 mm long; anther 1.4–1.6 mm long, with a few hairs or minute tuft at apex. **Flowering time** Oct.–June. Wet places, riverbanks, vleis. Mainly upland grassland; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Sub-Escarpment Savanna (Zastron District E to Naude's Neck and Griqualand East southwards, from Elliot District to Aberdeen, Amatole Mts, King William's Town and Port Elizabeth).

***villosum** R.Br. ex Fresen.

Feathertop; *veergras* (A)

Tufted, mat-forming, rhizomatous perennial, 120–900 mm high. **Leaf blade** 5–15 × 3 mm, narrowly to broadly lanceolate; ligule a fringe of hairs. **Inflorescence** an ovoid

to subspherical spike-like panicle, 40–100 mm long, usually white; involucre enclosing 1 or 2 sub-sessile spikelets; involucral bristles unequal, some 4–5× as long as spikelet, most of them ± 30 mm long, plumose in lower part, occasionally outer ones sparsely plumose to glabrous, white, often turning yellowish at maturity. **Spikelet** 9–14 × 4 mm; glumes unequal; lower glume 0.8–1.0 mm long, obtuse or absent; upper glume triangular, 3.0–4.0 mm long, $^{1}/_{4}$–$^{2}/_{3}$ length of spikelet, acute. **Florets** 2; lower floret male or sterile, lemma acuminate, scabrid on nerves, 6–13-nerved, palea reduced; upper floret bisexual, lemma membranous, acute, 5-nerved, nerves scabrid; anther 3.2–3.5 mm long, without tuft of hairs at apex. **Flowering time** Jan.–May. Roadsides and disturbed areas; origin North Africa, declared weed (Category 1); Sub-Escarpment Grassland, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg District E to Queenstown District southwards, from Aberdeen to Fort Beaufort, Uitenhage, Port Elizabeth and Grahamstown District).

PENTAMERIS P.Beauv.

[*PENTASCHISTIS* (Nees) Spach, *PRIONANTHIUM* Desv.]

Species 84, Falkland Islands (probably erroneous), Madagascar, Territory of the French southern and Antarctic Lands, St Paul Island, Indian Ocean, Africa: Cameroun, Ethiopia, Tanzania; ± 71 in sthn Afr., LIM, M, FS, KZN, L, NC, WC, EC.

Section *Pentameris*

Fruit with a brittle pericarp crowned with a tuft of white hairs.
Species 10, all of these have historically been placed in this genus; 3 in EC.

distichophylla (Lehm.) Nees

Variable, tufted to decumbent perennial, 0.3–1.2 m high; cushion-forming with age; culm branched basally. **Leaf blade** 80–190(–300) × 1.5 mm, folded or rolled, flexible, usually densely pubescent, especially near base, rarely glabrous; leaf sheath pubescent to woolly, sheath mouth densely bearded; ligule a fringe of hairs. **Inflorescence** a lanceolate, loosely contracted panicle, 50–110 mm long. **Spikelets** 12–15 × 3.5–10.0 mm (excluding awns), laterally compressed; glumes ± equal, much longer than spikelet, 1-nerved, glabrous or pubescent. **Florets** 2; lemma body 2.3–4.0 mm long, not keeled, hairy from between nerves; lobes acuminate, 1–3 mm long, partially fused for most of their length to a 5.0–10.5 mm long lateral awn; central awn 13.0–15.5 mm long, twisted below; palea 4–7 mm long; anther 3.0–4.5 mm long; ovary with branched hairs at apex. **Flowering time** Sept.–Dec. **Fruit** an achene, 2.0 × 0.9 mm, rugosely sculptured. In rock crevices and coarse sandy soil of the Cape fold mountains, especially on northern aspects. Reacts well to fire; Eastern Fynbos-Renosterveld (Uniondale, Willowmore and Joubertina Districts).

macrocalycina (Steud.) Schweick.

Tufted perennial, 0.4–1.1 m high; culm branching basally. **Leaf blade** 30–350 × 1.5 mm, rigid, erect, glabrous, needle-like, sometimes pungent, permanently folded into a cylinder with deep adaxial groove when seen in cross section; leaf sheath tightly appressed to culm, bearded at mouth; ligule a fringe of hairs. **Inflorescence** a lanceolate, contracted panicle, 60–120 mm long. **Spikelets** 16–30 × 2.5–10.0 mm, laterally compressed; glumes ± equal, much longer than spikelet, 1-nerved, glabrous. **Florets** 2; lemma body 3.5–5.5 mm long, not keeled, hairy from between nerves; lobes acuminate, 1.3–4.0 mm long, adnate for most of their length to a 7.5–14.0 mm long lateral awn; central awn 15–26 mm long, twisted below; palea 6.5–11.0 mm long; anther 4.2–6.5 mm long;

ovary with branched hairs at apex. **Flowering time** Sept.–Dec. **Fruit** an achene, 3.6 × 1.2 mm; broadly fusiform, surface colliculately sculptured. In rock crevices and stony or sandy soils; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore, Uitenhage and Port Elizabeth districts).

thuarii P.Beauv.

Tufted or decumbent perennial, 0.35–2.00 m high; culm single or branched. **Leaf blade** up to 500 × 10 mm, open or folded, rarely rolled, glabrous to sparsely pubescent; leaf sheath pubescent, persistent, with purple to dark brown or black collar; ligule a fringe of hairs. **Inflorescence** a globose, lax panicle, 70–220 mm long. **Spikelets** 15–22 × 3–5 mm, laterally compressed; glumes ± equal, much longer than spikelet, 1-nerved, glabrous. **Florets** 2; lemma body 2.2–3.3 mm long, not keeled, hairy from between nerves; lobes truncate, 0.4–0.7 mm long, almost free from a 4.0–6.0 mm long lateral awn; central awn 15–20 mm long, twisted below; palea 2.8–4.0 mm long; anther 3.0–6.5 mm long; ovary with branched hairs at apex. **Flowering time** Sept.–Dec. **Fruit** an achene, 2.5 × 1.7–2.0 mm, globose, surface colliculately sculptured. Moist places such as in seeps, drainage lines and along riverbanks; Eastern Fynbos-Renosterveld (Whiskey Creek Nature Reserve).

Section *Dracomontanum* H.P.Linder & Galley

Fruit a glabrous caryopsis.

Species in sthn Afr.: 2, both were previously included in *Pentaschistis*; 1 in EC.

tysonii (Stapf) Galley & H.P.Linder
(*Pentaschistis tysonii* Stapf)

Tufted perennial, 300–500 mm high; basal sheath of burnt-off leaf bases or of fibres; glands absent. **Leaf blade** up to 300 × 0.5–2.0 mm, rolled, rigid, glabrous, margins smooth, sheath mouth villous; ligule a fringe of hairs. **Inflorescence** an open panicle, 60–100 × 60–90 mm, nodes glabrous with basal nodes sparsely hairy; pedicels glabrous. **Spikelets** 6–10 mm long, laterally compressed, awned; glumes acute, 1-nerved, green, glabrous. **Florets** 2; lemma 7–9-nerved, hairy; lateral awns 1–5 mm long, included in glumes; central awn 3–11 mm long, twisted below; palea hairy in upper half; anther 3.2–4.0 mm long; ovary apex glabrous. **Flowering time** Oct., Nov. Sour grassland on mountain slopes; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Naude's Neck Pass E to Griqualand East southwards, from Tarka to Xalanga District, King William's Town, and Grahamstown).

Section *Pentaschistis* (Nees) H.P.Linder & Galley

Fruit a glabrous caryopsis; plants often with multicellular glands.

Species in sthn Afr.: 72, all previously placed in the genera *Pentaschistis* (Nees) Spach and *Prionanthium* Desv.; 29 in EC.

airoides Nees subsp. **jugorum** (Stapf) Galley & H.P.Linder
[*Pentaschistis jugorum* Stapf, *Pentaschistis airoides* (Nees) Stapf subsp. *jugorum* (Stapf) H.P.Linder]

Tufted or nearly cushion-forming, annual or weak perennial, 60–350 mm high; glands present on leaves, pedicels and glumes. **Leaf blade** 40–60 × 1–3 mm; ligule a fringe of hairs. **Inflorescence** an open panicle. **Spikelets** 2.5–5.0 mm long, laterally compressed; glumes ± equal, 1-nerved. **Florets** 2; lemma 7–9-nerved, 2-lobed; lobe awn

as long as or exserted from glumes; central awn 5–8 mm long, twisted below; anther 0.5–1.0 mm long; ovary apex glabrous. **Flowering time** Aug.–Dec., Feb. On shallow soils and disturbed areas in alpine and high montane areas; Mesic Highveld Grassland, Drakensberg Grassland, Upper Karoo, Dry Highveld Grassland (Witteberge Mts near Aliwal North and Barkly East District to Rhodes and Naude's Neck Pass S, from Cradock to Tarkastad).

P. airoides Nees subsp. **airoides**

Dry Highveld Grassland, Drakensberg Grassland, Upper Karoo, Lower Karoo, Eastern Fynbos-Renosterveld, Albany Thicket [Burgersdorp (Nooitgedacht) and Witteberge Mts S, from Steynsburg to Buffelsfontein, Mountain Zebra National Park to Kat River near Fort Beaufort and from Willowmore District to Uitenhage, Port Elizabeth and Grahamstown]

ampla (Nees) Galley & H.P.Linder

[*Pentaschistis ampla* (Nees) McClean]

Weakly tufted perennial, 400–700 mm high; base woody; basal sheaths white, shiny, persistent; leaves basal; glands on leaves and pedicels. **Leaf blade** up to 300 × 1–6 mm, expanded, usually with obscure linear glands, margins smooth; ligule a fringe of hairs. **Inflorescence** an open panicle, 70–170 × 60–170 mm, nodes glabrous, rarely hairy; pedicels usually with obscure linear glands, rarely with obscure sunken glands. **Spikelets** 3.3–4.6 mm long, laterally compressed, awnless; glumes ± equal, acute, 1-nerved, green or straw-coloured, base purple. **Florets** 2; lemma 7–9-nerved, acute or lobed, awnless, glabrous or hairy along keel and margins; palea scaberulous near apex or often hairy between keels; anther 1.5–2.2 mm long; ovary apex glabrous. **Flowering time** Dec.–Mar. At low to mid altitudes on sandstone derived soils, often found on rock ledges; Albany Thicket, Eastern Fynbos-Renosterveld (Grahamstown and Humansdorp Districts).

argentea (Stapf) Galley & H.P.Linder

(*Pentaschistis argentea* Stapf)

Tufted perennial, 300–800 mm high; geophyte with a swollen, villous underground base; stolons horizontal; basal sheaths forming a sheath of burnt-off leaf bases; glands present on pedicels. **Leaf blade** up to 250 × 2 mm, expanded, rigid, glabrous, margins scabrid, sheath mouth with a ring of hairs; ligule a fringe of hairs. **Inflorescence** an open panicle, 50–120 × 20–80 mm; pedicels with linear glands. **Spikelets** 9–12 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, straw-coloured or silvery, glabrous or scaberulous along keels. **Florets** 2; lemma 7–9-nerved, glabrous, rarely hairy all over back, lobes small; lateral awns 8–10 mm long, exserted from glumes; central awn 15–20 mm long, base twisted; palea hairy all over; anther 2.7–3.0 mm long; ovary apex glabrous. **Flowering time** Oct., Nov., after fire or bush-cutting. On dry mountain slopes and foothills in sandstone derived soils; Eastern Fynbos-Renosterveld (Tsitsikamma).

aurea (Steud.) Galley & H.P.Linder subsp. **pilosogluma** (McClean) Galley & H.P.Linder

[*Pentaschistis pilosogluma* McClean, *Pentaschistis aurea* (Steud.) McClean subsp. *pilosogluma* (McClean) H.P.Linder]

Tufted perennial, 300–700 mm high, forming large floppy tussocks; base compact, glabrous; basal sheaths white, shiny, persistent; leaves basal; glands on pedicels. **Leaf blade** up to 300 × 1–5 mm, expanded, margins smooth, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle, 60–140 × 50–120 mm; pedicels with obscure linear glands. **Spikelets** 3.5–5.0 mm long, laterally compressed, awn-

less; glumes ± equal, 1-nerved, yellow to green, scaberulous or puberulous apically. **Florets** 2; lemma 7–9-nerved, glabrous to hairy all over on back; palea glabrous or villous; anther 2–3 mm long; ovary apex glabrous. **Flowering time** Dec.–Mar. Along streams and seepages on cave sandstone and basaltic soils; Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East E to Ongeluksnek southwards, from Grahamstown to Patensie and Winterhoek Mts).
Pentameris aurea (Steud.) Galley & H.P.Linder subsp. *aurea* occurs in WC.

barbata (Nees) Steud. subsp. **orientalis** (H.P.Linder) Galley & H.P.Linder
[*Pentaschistis barbata* (Nees) H.P.Linder subsp. *orientalis* H.P.Linder]
Weakly tufted perennial, 300–600 mm high, almost forming cushions; basal sheaths glabrous, brown, soon rotting away; leaves basal or cauline; glands present on leaves, pedicels and glumes. **Leaf blade** up to 200 × 12 mm, expanded, margins usually with stalked glands, sheath mouth with a ring of hairs. **Inflorescence** an open panicle, 110 × 70 mm, nodes villous; pedicels glandular. **Spikelets** 5–6 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, green, glabrous or puberulous all over, usually with stalked glands. **Florets** 2; lemma 7–9-nerved, lobed; lobes truncate-lacerate, villous; lateral awns 3 mm long, exserted from glumes; central awn 8–11 mm long, twisted below; palea puberulous in upper half; anther 1.8–2.0 mm long; ovary apex glabrous. **Flowering time** Sept.–Nov., Feb. On coastal dunes; Eastern Fynbos-Renosterveld (Humansdorp District).
Pentameris barbata (Nees) Steud. subsp. *barbata* occurs in the WC and possibly in the NC.

basutorum (Stapf) Galley & H.P.Linder
(*Pentaschistis basutorum* Stapf)
Tufted perennial, 500–700 mm high; base glabrous; basal sheaths either burnt-off or consisting of white, shiny persistent sheaths; leaves basal; glands absent. **Leaf blade** up to 600 × 0.5 mm, rolled, rigid, glabrous, hairy inside, margins smooth, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 120 × 30 mm, almost cylindrical with a tangled appearance, nodes hairy; pedicels glabrous. **Spikelets** 7–10 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acute to acuminate, straw-coloured, glabrous. **Florets** 2; lemma 7–9-nerved, hairy all over back, lateral awns 5–6 mm long, exserted from glumes, central awn 10–20 mm long, twisted below; palea glabrous or possibly with few long hairs; anther 2 mm long; ovary apex glabrous. **Flowering time** Nov., Dec. On shallow soil over sandstone platforms on western slopes of Drakensberg; Mesic Highveld Grassland (Zastron District).

colorata (Steud.) Galley & H.P.Linder
[*Pentaschistis colorata* (Steud.) Stapf]
Tufted perennial, 300–600 mm high, cushion-forming or base tangled; basal sheath white, shiny, persistent, glabrous; leaves basal; glands absent. **Leaf blade** 150–300 × 0.3–1.0 mm, usually curly, glabrous, margins scabrid, sheath mouth glabrous, occasionally with few hairs; ligule a fringe of hairs. **Inflorescence** an open, contracted panicle, 50–120 × 20–60 mm, nodes glabrous; pedicels glabrous or scaberulous. **Spikelets** 8–13 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, pale yellow, base purplish, glabrous. **Florets** 2; lemma 7–9-nerved, hairy along nerves; lateral awns 5–9 mm long, as long as glumes; central awn 13–21 mm long, twisted below; palea glabrous or puberulous in upper third; anther 2.5–4.0 mm long; ovary apex glabrous. **Flowering time** Aug.–Dec. With a wide ecological range, usually occurs on stony mountain slopes in sandstone derived soils; Eastern Fynbos-Renosterveld (Uitenhage and Humansdorp Districts).

curvifolia (Schrad.) Nees
[*Pentaschistis curvifolia* (Schrad.) Stapf]

Tassel grass; *kwasgras* (A)

Tufted perennial, 400–500 mm high; basal sheaths white, shiny, persistent; leaves basal; glands absent. **Leaf blade** up to 300 × 4 mm, expanded, rigid, glabrous, margins smooth, thickened; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 40–90 × 20–50 mm, nodes glabrous; pedicels mostly erect, obscured by spikelets, scaberulous. **Spikelets** 8–12 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, ivory-coloured, scaberulous all over back or only along keels. **Florets** 2; lemmas 7–9-nerved, villous along nerves; lateral awns 4–7 mm long, included in glumes or as long as glumes; central awn 10–17 mm long, twisted below; palea puberulous; anther 2.0–2.3 mm long; ovary apex glabrous. **Flowering time** Oct., Nov. Widespread over wide alt. range, usually in Fynbos on sandstone derived soils; Albany Thicket, Eastern Fynbos-Renosterveld (Steytlerville District E to Greater Addo Elephant National Park, Uitenhage, Port Elizabeth and Grahamstown, and to Humansdorp).

eriostoma (Nees) Steud.
[*Pentaschistis eriostoma* (Nees) Stapf]

Tufted perennial, 300–900 mm high; basal leaf sheaths with a dense woolly covering or only sheath apex woolly; leaves basal; glands absent. **Leaf blade** up to 400 × 1.5 mm, rolled, rarely expanded, rigid, glabrous, margins smooth, sheath mouth woolly; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 50–150 × 20–35 mm, nodes hairy; pedicels mostly erect, glabrous, puberulous or scaberulous. **Spikelets** 8–12 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, glabrous. **Florets** 2; lemma 7–9-nerved, hairy all over back; lateral awns 4–6 mm long, as long as glumes; central awn 10–17 mm long, twisted below; palea villous between keels; anther 2.7–3.5 mm long; ovary apex glabrous. **Flowering time** Sept.–Nov. Shales and sandstones; Eastern Fynbos-Renosterveld, Albany Thicket (Willowmore District, Greater Addo Elephant National Park, Graskop and Grahamstown).

exserta (H.P.Linder) Galley & H.P.Linder
(*Pentaschistis exserta* H.P.Linder)

Tufted perennial, ± 600 mm high; stolons horizontal; basal sheath white, shiny and persistent; leaves basal; glands absent. **Leaf blade** up to 300 × 0.5 mm, rolled, rigid, glabrous, margins scabrid, sheath mouth with a ring of hairs; ligule a fringe of hairs. **Inflorescence** an open panicle, 60–110 × 50–80 mm, nodes hairy; pedicels glabrous. **Spikelets** 7.5–8.5 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, apple-green, glabrous. **Florets** 2; lemma 7–9-nerved, hairy all over back (sparse with apex usually glabrous); lateral awns 3–4 mm long, exserted from glumes, central awn 7–12 mm long, twisted below, geniculate; palea puberulous in upper third; anther 2–3 mm long; ovary apex glabrous. **Flowering time** Jan. In seeps and along streams in montane belt; Sub-Escarpment Grassland (KZN Border, Underberg District).

galpinii (Stapf) Galley & H.P.Linder
[*Pentaschistis galpinii* (Stapf) McClean]

Perennial, 150–300 mm high, forming low, rounded cushions, sometimes stoloniferous and mat-forming; basal sheaths white, shiny, persistent; leaves basal; glands on leaves and pedicels. **Leaf blade** 60–180 × 2–5 mm, expanded, rigid, margins smooth, with

stalked glands, darker coloured above than below, sheath mouth glabrous or villous; ligule a fringe of hairs. **Inflorescence** usually a contracted panicle, 20–50 × 10–30 mm, nodes villous; pedicels with stalked glands. **Spikelets** 4–6 mm long, laterally compressed, awned or awnless; glumes ± equal, 1-nerved, yellow, base greenish grey, glabrous. **Florets** 2; lemma 7–9-nerved, hairy basally, along keel and margins, apex lobed or acute; lateral awns when present 0.5 mm long, included in glumes; central awn when present 4 mm long, twisted below; palea glabrous; anther 1.6 mm long; ovary apex glabrous. **Flowering time** Jan. High altitude grassland, usually on basalt in bare patches, areas of slight disturbances on margins of rock-sheets and frost hollows, alt. 2 400–3 000 m; Drakensberg Grassland, Lower Karoo, Upper Karoo (Barkly East E to Qacha's Neck District southwards, from Steynsburg to Willowmore District).

glandulosa (Schrad.) Steud.
[*Pentaschistis glandulosa* (Schrad.) H.P.Linder]

Tufted perennial, 100–350 mm high; basal sheaths white, shiny, persistent; leaves basal; glands on leaves, pedicels and glumes. **Leaf blade** 80–300 × 1–3 mm, U-shaped, rigid, blades with scattered sunken glands, margins smooth, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle, 40–100 × 30–100 mm, nodes hairy; pedicels glabrous, with sunken or stalked glands. **Spikelets** 4.0–5.5 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acute to acuminate, brownish, sparsely scaberulous along margins or along keels, with sunken or stalked glands. **Florets** 2; lemmas 7–9-nerved, glabrous or hairy basally; lateral awns 2–3 mm long, as long as to exserted from glumes; central awn 5–10 mm long, twisted below; palea glabrous; anther 1.5–2.8 mm long; ovary apex glabrous. **Flowering time** Oct.–Dec. On nutrient-rich soils derived from shales or granites; in all bioregions, except Mesic Highveld Grassland, Indian Ocean Coastal Belt, Rainshadow Valley Karoo and Indigenous Forests (widespread from Matatiele S to Middelburg, Table Mts, Queenstown, Cradock District, Komga, Uitenhage District, Bathurst and Humansdorp).

[E]**heptameris** (Nees) Steud.
[*Pentaschistis heptamera* (Nees) Stapf]

Tufted perennial, 200–300 mm high, single or several shoots; basal sheath brown and soon rotting away; leaves cauline; glands absent. **Leaf blade** up to 80 × 0.5 mm, rolled, rigid, glabrous, margins smooth; sheath mouth glabrous; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 30–50 × 10–30 mm, nodes hairy; pedicels obscured by spikelets, glabrous. **Spikelets** 5–6 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, hyaline, glabrous or scaberulous along keels. **Florets** 2; lemma 7–9-nerved, hairy all over on back, 2-lobed, each lobe extended into 1 or 2 awns, 6–10 mm long, as long as or exserted from glumes; central awn 10–15 mm long, twisted below; palea glabrous, awned; anther 1.5–2.1 mm long; ovary apex glabrous. **Flowering time** Nov., Dec. Restricted to coastal sands; Eastern Fynbos-Renosterveld, Albany Thicket (Swartkops River to Port Alfred and East London, and to Humansdorp District and Cape Recife).

horrida (Galley) Galley & H.P.Linder
(*Pentaschistis horrida* Galley)

Cushion-forming perennial, 150–400 mm high, forms fairy rings at maturity; basal sheaths white, shiny, persistent; leaves cauline; glands absent. **Leaf blade** 40–200 ×

0.5–1.0 mm, rolled, rigid, glabrous but hairy at base, apex pungent, sheath southglabrous; ligule a fringe of hairs. **Inflorescence** 70–90 × 25–50 mm; pedicels mostly erect, glabrous; nodes hairy. **Spikelets** up to 7.5 mm long, laterally compressed, awned; glumes 1-nerved, longer than spikelet, acute to acuminate, glabrous. **Florets** 2; lemmas 7-nerved, hairy, lobed; lobes awned; central awn 8 mm long; palea glabrous; anther 2.1–2.8 mm long. **Flowering time** Oct., Nov. Inland ranges of Cape Fold Belt on soils derived from sandstone, in open vegetation, open plains and summit plateaus or steep slopes and dry areas; Eastern Fynbos-Renosterveld (Kouga Mts).

juncifolia (Stapf) Galley & H.P.Linder
(*Pentaschistis juncifolia* Stapf)

Tufted perennial, 300–900 mm high; leaves basal; glands absent. **Leaf blade** up to 400 × 1.5 mm, rolled, rarely expanded, rigid, glabrous, margins smooth, sheath mouth woolly; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 50–150 × 20–35 mm, nodes hairy; pedicels mostly erect, glabrous, puberulous or scaberulous. **Spikelets** 8–12 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, glabrous. **Florets** 2; lemma 7–9-nerved, hairy all over back; lateral awns 4–6 mm long, as long as glumes; central awn 10–17 mm long, twisted below; palea hairy between keels; anther 2.7–3.5 mm long; ovary apex glabrous. **Flowering time** Oct. Eroded silcrete on coastal plains; Eastern Fynbos-Renosterveld (Willowmore District).

[E]**longipes** (Stapf) Galley & H.P.Linder
(*Pentaschistis longipes* Stapf)

Tufted perennial, 250–700 mm high; basal sheaths brown and soon rotting away; leaves basal; glands on leaf margins and glumes. **Leaf blade** up to 150 × 4 mm, expanded, hairy, margins with stalked glands, sheath mouth with a ring of hairs; ligule a fringe of hairs. **Inflorescence** an open panicle, 130 × 50 mm, nodes hairy; pedicels scaberulous. **Spikelets** 4.5–5.0 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, pale green, scaberulous along keels; with stalked glands. **Florets** 2; lemma 7–9-nerved, hairy at base, keel and margins; lateral awns 1.5–2.0 mm long, as long as glumes; central awn 7 mm long, twisted below; palea puberulous in upper third; anther 1.6 mm long; ovary apex glabrous. **Flowering time** Nov. Coastal sands, dunes; Eastern Fynbos-Renosterveld (Humansdorp District).

malouinensis (Steud.) Galley & H.P.Linder
[*Pentaschistis malouinensis* (Steud.) Clayton]

Tufted perennial, 150–300 mm high; weakly geniculate; basal sheaths white, shiny, persistent; leaves basal; glands absent. **Leaf blade** up to 150 × 0.5 mm, expanded or rolled, scaberulous, margins scabrid, sheath mouth glabrous; ligule a fringe of hairs. **Inflorescence** an open or spike-like panicle, 20–80 × 5–30 mm, nodes sparsely hairy; pedicels glabrous. **Spikelets** 3.5–4.5 mm long, laterally compressed, awnless; glumes ± equal, 1-nerved, rounded, apices brown and shortly puberulous. **Florets** 2; lemma acute, 7–9-nerved, hairy along nerves; palea hairy along keels; anther 2.0–2.2 mm long; ovary apex glabrous. **Flowering time** Nov.–Jan. Widespread in a range of habitats, from sparse vegetation to rock ledges, over a wide altitudinal range, often found in disturbed sites; Eastern Fynbos-Renosterveld (Uniondale, Uitenhage and Humansdorp districts).

[E]microphylla (Nees) Galley & H.P.Linder
[*Pentaschistis microphylla* (Nees) McClean]

Cushion- or sometimes mat-forming perennial, ± 300 mm high; leaves in basal rosettes; basal sheaths brown and soon rotting away; glands on pedicels. **Leaf blade** up to 50 × 3 mm, rigid, glabrous, margins scabrid, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle, 60–70 × 60–80 mm, nodes glabrous; pedicels with stalked glands. **Spikelets** 3 mm long, laterally compressed, awnless; glumes ± equal, 1-nerved, acute, straw-coloured, glabrous or scaberulous along keels. **Florets** 2; lemma truncate, 7–9-nerved, hairy basally; palea glabrous; anther 1 mm long; ovary apex glabrous. **Flowering time** Dec. Arid montane grassland in the Stormberge; in shallow soils over bedrock, alt. ± 2 000 m; Drakensberg Grassland, Upper Karoo (Barkly East District S to Middelburg and Molteno Districts).

montana (H.P.Linder) Galley & H.P.Linder
(*Pentaschistis montana* H.P.Linder)

Densely tufted or mat-forming perennial, 150–200 mm high; stolons very short; basal sheaths white, shiny, persistent; leaves basal; glands absent. **Leaf blade** up to 40 × 0.5 mm, rolled, rigid and hard, glabrous, margins scabrid, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle 20–50 × 20–30 mm, nodes puberulous; pedicels scaberulous. **Spikelets** 4.5–5.0 mm long, awned; glumes ± equal, 1-nerved, acuminate, straw-coloured with a purple base, scaberulous. **Florets** 2; lemma 7–9-nerved, hairy or only along keels and margins; lateral awns 1.0–1.5 mm long, included in or as long as glumes; central awn 5–6 mm long, twisted below; palea puberulous in upper half; anther 1.8 mm long; ovary apex glabrous. **Flowering time** Nov. Stony, arid upper slopes in sandstone on high mountains; Eastern Fynbos-Renosterveld (Uniondale District).

natalensis (Stapf) Galley & H.P.Linder
(*Pentaschistis natalensis* Stapf)

Loosely tufted perennial, 400–800 mm high, forming diffuse tussocks; basal sheaths white, shiny, persistent, glabrous; leaves basal; glands on glumes. **Leaf blade** up to 300 × 1–5 mm, expanded, hairy, margins smooth or scabrid, sheath mouth hairy with dense almost bristle-like hairs. **Inflorescence** an open panicle, 50–170 × 50–170 mm, nodes glabrous or hairy; pedicels glabrous. **Spikelets** 6–7 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acute, green to straw-coloured, glabrous, scaberulous or hairy in middle or along keels; minute rounded glands on keels. **Florets** 2; lemma 7–9-nerved, hairy; lateral awns 3.5–7.0 mm long, as long as or exserted from glumes; central awn 9–13 mm long, twisted below; palea hairy in upper third; anther 2.5 mm long; ovary apex glabrous. **Flowering time** Nov.–Feb. In sour grassland or near forest margins in montane belt; Sub-Escarpment Grassland (Griqualand East).

oreodoxa (Schweick.) Galley & H.P.Linder
(*Pentaschistis oreodoxa* Schweick.)

Tufted perennial, 200–500 mm high, tending towards cushion formation; basal sheaths either burnt-off or white, shiny, persistent, glabrous; leaves basal; glands on leaves, pedicels and glumes present or absent. **Leaf blade** up to 300 × 4 mm, expanded, glabrous or hairy, with stalked glands if present, margins scabrid, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle, 70–100 × 70–200 mm, nodes hairy or rarely glabrous; pedicels with stalked glands. **Spikelet** 4–6 mm long, laterally com-

pressed, awned; glumes ± equal, 1-nerved, acute, straw-coloured, glabrous or scaberulous along keels, with stalked glands or glands absent. **Florets** 2; lemma 7–9-nerved, hairy along nerves; lateral awns 1–3 mm long, included in or exserted from glumes; central awn 6–10 mm long, twisted below; palea puberulous in upper half; anther 2.0–2.2 mm long; ovary apex glabrous. **Flowering time** Jan. In sour grassland over a wide altitudinal range; Drakensberg Grassland, Albany Thicket (Ongeluksnek S to Stutterheim District and Amalinda near East London).

pallida (Thunb.) Galley & H.P.Linder
[*Pentaschistis pallida* (Thunb.) H.P.Linder]

Densely to loosely tufted, biennial or perennial, 150–400 mm high; basal sheaths white, shiny, persistent; leaves basal; glands on leaves, pedicels and glumes present or absent. **Leaf blade** 120–200 × 1–5 mm, expanded or rarely rolled, glabrous or hairy, margins smooth, sheath mouth glabrous or with a ring of hairs; ligule a fringe of hairs. **Inflorescence** an open or contracted panicle, 20–80 × 10–70 mm, nodes hairy. **Spikelets** 3–5 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, straw- to purple-coloured, scaberulous all over or only along keels. **Florets** 2; lemma 7–9-nerved, hairy, lateral awns 2 mm long, exserted from glumes; central awn 6–7 mm long, twisted below; palea glabrous or villous in upper third; anther 1.5–2.0 mm long; ovary apex glabrous. **Flowering time** Oct.–Dec. Widespread in places with slight to heavy disturbance; Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Mount Fletcher District S to Middelburg, Queenstown, Tarkastad, Stutterheim, Uniondale, Albany District and Humansdorp).

patula (Nees) Steud.
[*Pentaschistis patula* (Nees) Stapf]

Annual, 150–300 mm high; glands present or absent on leaves and pedicels. **Leaf blade** up to 50 × 3 mm, expanded, glabrous or villous, margins with stalked glands, sheath mouth with a ring of hairs; ligule a fringe of hairs. **Inflorescence** an open panicle, 50–100 × 40–90 mm, nodes villous; pedicels glabrous or scaberulous, with stalked glands. **Spikelets** 4–5 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, greenish or yellow and purple, glabrous or scaberulous along keels. **Florets** 2; lemmas 7–9-nerved, villous; lateral awns 1–3 mm long, included in glumes; central awn 4–12 mm long, twisted below; palea glabrous or villous; anther 1.9–2.5 mm long; ovary apex glabrous. **Flowering time** Sept., Oct. Highly variable species, local in sandy soils at arid margins of Fynbos; Rainshadow Valley Karoo (Uniondale District).

pyrophila (H.P.Linder) Galley & H.P.Linder
(*Pentaschistis pyrophila* H.P.Linder)

Tufted perennial, 200–600 mm high; base hairy or glabrous, usually with burnt-off leaf sheaths; leaves basal; glands absent. **Leaf blade** 60–200 × 0.5–1.5 mm, rolled, rigid, apices sometimes pungent, glabrous, margins smooth, sheath mouth glabrous or with a ring of hairs; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 25–80 × 15–60 mm, nodes glabrous or hairy; pedicels glabrous or scaberulous. **Spikelets** 10–12 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, yellow, glabrous or scaberulous along keels. **Florets** 2; lemmas 7–9-nerved, densely hairy; lateral awns 4–6 mm long, as long as glumes, central awn 12–13 mm long, twisted below; palea

puberulous between keels; anther 3.5–4.0 mm long; ovary apex glabrous. **Flowering time** Nov.–Jan. At higher altitudes on stony slopes on sandstone, grows well after fire; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage and Bathurst districts).

rigidissima (Pilg. ex H.P.Linder) Galley & H.P.Linder (*Pentaschistis rigidissima* Pilg. ex H.P.Linder)

Cushion-forming perennial, 150–200 mm high, forming small tufts; basal sheaths white, shiny, persistent; leaves basal; glands absent. **Leaf blade** 40–200 × 0.5–1.0 mm, rolled, rigid, glabrous, apices sometimes pungent, margins smooth, sheath mouth glabrous. **Inflorescence** 20–60 × 7–15 mm, contracted, almost spike-like; spikelets greenish; nodes hairy. **Spikelets** 6–8 mm long, laterally compressed, awned; glumes 1-nerved, glabrous; lemmas 7–9-nerved, hairy; lateral awns 2–5 mm long, as long as glumes; central awn 8–12 mm long; palea glabrous; anther 1.4–1.8 mm long; ovary apex glabrous. **Flowering time** Oct.–Feb. Mesic coastal mountains; in crevices of sandstone, often in cool shady protected sites under and beside rocks; Eastern Fynbos-Renosterveld (Uitenhage District, Winterhoek Mts).

setifolia (Thunb.) Galley & H.P.Linder [*Pentaschistis setifolia* (Thunb.) McClean]

Tufted perennial, 150–400 mm high; basal sheaths either forming a sheath of burnt-off bases or persisting as white, shiny sheaths, glabrous; leaves basal; glands on leaves, pedicels, glumes present or absent. **Leaf blade** up to 300 × 0.8 mm, rolled, rigid, glabrous or hairy, with stalked or sunken glands, margins scabrid, sheath mouth hairy; ligule a fringe of hairs. **Inflorescence** an open panicle, 30–70 × 20–50 mm, nodes hairy; pedicels glabrous; with stalked glands. **Spikelets** 3.5–5.0 mm long, laterally compressed, awnless or occasionally awned; glumes ± equal, 1-nerved, obtuse, generally purple below, drying straw-coloured, glabrous or scaberulous along keels; with stalked glands. **Florets** 2; lemma 7–9-nerved, often dark-coloured, hairy or basally only; palea puberulous in upper third; anther 1.6–2.0 mm long; ovary apex glabrous. **Flowering time** Dec., Jan. Sour grassland over a wide altitudinal range; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld (Albert District E to Lady Grey, Barkly East, Qacha's Neck southwards, from Middelburg District to Molteno, Amatole Mts and Winterhoek Mts).

tomentella (Stapf) Galley & H.P.Linder (*Pentaschistis tomentella* Stapf)

Tufted or cushion-forming perennial, 100–300 mm high; basal sheath white, shiny, persistent; leaves basal; glands on sheaths, pedicels and glumes. **Leaf blade** up to 50 × 3 mm, expanded, usually with short grey hairs, margins smooth, leaf sheaths with distinctive rows of stalked glands; ligule a fringe of hairs. **Inflorescence** a contracted panicle, 30–50 × 30–40 mm, nodes glabrous; pedicels mostly erect, glabrous or scaberulous. **Spikelets** 4–5 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acute, straw-coloured, glabrous or scaberulous along keels, glands present. **Florets** 2; lemma 7–9-nerved, hairy basally, puberulous all over on back; lateral awns 1.0–1.5 mm long, included in glumes; central awn 3–5 mm long, twisted below; palea glabrous; anther 2 mm long; ovary apex glabrous. **Flowering time** Sept. (Oct.). Widespread in higher and cooler parts of Namaqualand; Lower Karoo (Aberdeen District).

tortuosa (Trin.) Nees
[*Pentaschistis tortuosa* (Trin.) Stapf]

Tufted perennial, 0.6–1.0 m high, tussock tight; basal sheaths white, shiny, persistent; leaves basal; glands absent. **Leaf blade** up to 500 × 4 mm, expanded or rolled, rigid, curly, linear, glabrous or scaberulous, margins scabrid, sheath mouth glabrous; ligule a fringe of hairs. **Inflorescence** a contracted, brown, slender panicle, 80–200 × 20–40 mm, nodes glabrous; pedicels mostly erect, glabrous or scaberulous. **Spikelets** 7–11 mm long, laterally compressed, awned; glumes ± equal, 1-nerved, acuminate, straw-coloured, glabrous or scaberulous apically or along keels. **Florets** 2; lemma 7–9-nerved, sparsely hairy; lateral awns 4–5 mm long, as long as glumes; central awn 10–15 mm long, twisted below; palea puberulous in upper third; anther 3 mm long; ovary apex glabrous. **Flowering time** Oct.–Dec. In damp places on mountains and foothills, usually associated with sandstone soils; Eastern Fynbos-Renosterveld (Tsitsikamma and Uitenhage districts).

viscidula (Nees) Steud.
[*Pentaschistis viscidula* (Nees) Stapf]

Bokbaardgras (A)

Geophytic perennial, 200–500 mm high; base swollen, hairy; basal sheaths forming a sheath of burnt-off leaf bases; glands on pedicels. **Leaf blade** up to 100 × 0.8 mm, rolled, glabrous or hairy, margins smooth, sheath mouth hairy, hairs extending down sheath margins; ligule a fringe of hairs. **Inflorescence** usually a contracted panicle, 30–60 × 20–40 mm, nodes glabrous or villous, hairy nodes usually associated with hairy leaf sheaths; pedicels mostly erect, glabrous, sometimes with obscure linear glands. **Spikelets** 7–10 mm long, laterally compressed, awned; glumes acuminate, 1-nerved, silvery from a purple base, glabrous or scaberulous along keels. **Florets** 2; lemma 7–9-nerved, glabrous; lateral awns 6–12 mm long, exserted from glumes; central awn 15–20 mm long, twisted below; palea glabrous or villous; anther 3–4 mm long; ovary apex glabrous. **Flowering time** Oct., Nov. On sandstone derived soils after fire or bush cutting; Albany Thicket (Uitenhage District).

PENTASCHISTIS (Nees) Spach = **PENTAMERIS** P.Beauv.

*__PHALARIS__ L.

Species ± 16, north temperate, but mostly from the Mediterranean region, also South America; 6 in sthn Afr., widespread weeds or escapes from cultivation, NW, G, M, FS, KZN, L, NC, WC, EC.

angusta Nees ex Trin.

Tufted annual, up to 1.5 m high. **Leaf blade** 50–300 × 3–12 mm; ligule an unfringed membrane. **Inflorescence** a narrow, cylindrical panicle, 25–170 × 6–15 mm. **Spikelets** 2.9–5.5 mm long, laterally compressed; glumes ± equal, much longer than spikelet, very narrowly and unevenly winged, tapering abruptly to apex, glabrous, pale green with dark green longitudinal stripes. **Florets** 3; lowest 2 florets reduced, sterile, 0.5–1.5 mm long, $< {}^{1}/_{2}$ fertile lemma length, hairy; uppermost floret bisexual, 2.2–3.8 × 0.9–1.5 mm, hard, sparsely pubescent; anther 1.0–1.5 mm long. **Flowering time** Sept.–Dec. Cultivated and fallow lands; Albany Thicket, Eastern Fynbos-Renosterveld (Port Elizabeth and Humansdorp districts).

aquatica L.

Towoomba canary grass

Loosely tufted perennial, up to 1.5 m high; culms often bulbous at base, lateral culms geniculately ascending. **Leaf blade** 180–350 × 2–15 mm; ligule an unfringed membrane. **Inflorescence** a panicle, 15–110 × 10–25 mm, occasionally interrupted at base. **Spikelets** 4.5–7.5 mm long, laterally compressed; glumes ± equal, much longer than spikelet, glabrous, broadly winged, margins entire. **Florets** usually 2, lowest floret reduced, sterile, 1.4–1.6 mm long, densely pubescent, rarely a second sterile floret present, then < 0.5 mm long; uppermost floret bisexual, 3.1–4.6 × 1.2–1.5 mm, hard, densely pubescent; anther 1.5–3.5 mm long. **Flowering time** Nov.–Apr. Wet ground by streams and channels or as a weed in moist fields; Albany Thicket, Eastern Fynbos-Renosterveld (Somerset East S to Port Elizabeth and Humansdorp).

arundinacea L.

Reed canary grass; *langbeenkanariegras* (A); *lekolojane* (SS)

Rhizomatous perennial, 0.5–1.5 m high; rhizome scaly, creeping. **Leaf blade** 50–200 × 5–15 mm; ligule an unfringed membrane. **Inflorescence** a panicle, 70–180 × 10–30 mm, lower part often interrupted. **Spikelet** 3.5–7.5 mm long, laterally compressed; glumes ± equal, much longer than spikelet, glabrous, wingless, gradually tapering to apex, usually purple-tinged. **Florets** 3; lowest 2 florets reduced, sterile, 1.0–2.5 mm long, densely pubescent; uppermost floret bisexual, 2.7–4.5 × 1.0–1.3 mm, hard, sparsely pubescent. **Flowering time** Nov.–Apr. Marshes, riverbanks, swamp margins and damp hollows in upland areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Barkly East District E to Griqualand East southwards, from Dordrecht District to Port Edward, Stutterheim, Komga, Tsitsikamma and Grahamstown).

canariensis L.

Common canary grass, birdseed; *gewone kanariegras* (A)

Tufted annual, 0.3–1.0 m high; culms usually fascicled, erect or geniculately ascending. **Leaf blade** 100–260 × 3–12 mm; ligule an unfringed membrane. **Inflorescence** an ovate to oblong-ovate panicle, 15–40 × 10–15 mm. **Spikelets** 7–10 mm long, laterally compressed; glumes ± equal, much longer than spikelet, pale green with dark green longitudinal stripes, sparsely hairy, prominently winged, wing broadening upwards. **Florets** 3; lowest 2 florets reduced, sterile, ± equal, 2.5–4.5 mm long, > $^1/_2$ length of fertile lemma, broad, somewhat chaffy; uppermost floret bisexual, 4.8–6.8 × 1.0 mm, hard, pilose; anther 2.5–3.5 mm long. **Flowering time** Oct.–Dec. Ruderal weed of disturbed areas such as waste places, road verges, cultivated lands and pastures; Dry Highveld Grassland, Drakensberg Grassland, Albany Thicket (Stormberge S to Port Elizabeth and Port Alfred).

minor Retz.

Small canary grass; *kanariegras* (A)

Loosely tufted annual, (0.01–)0.20–1.00 m high; culms erect or geniculately ascending. **Leaf blade** 50–250 × 5–10 mm; ligule an unfringed membrane. **Inflorescence** a panicle, 10–60 × 10–15 mm. **Spikelets** 4.0–6.5 mm long, laterally compressed; glumes ± equal, much longer than spikelet, glabrous, winged, keel denticulate-undulate. **Florets** 2; lowest floret reduced, sterile, (0.2–0.3)0.5–1.3 mm long, sparsely pubescent;

uppermost floret bisexual, 2.7–4.0 × 0.5–1.0 mm, hard, pilose; anther 1.5–2.0 mm long. **Flowering time** Sept.–Jan. Ruderal weed in disturbed areas such as cultivated and fallow lands, roadsides and waste places, often in damp situations; Lower Karoo, Sub-Escarpment Savanna, Drakensberg Grassland, Albany Thicket (Willowmore District E to Somerset East, Stutterheim southwards, from Bathurst to Bushman's River Mouth).

PHRAGMITES Adans.

Species ± 3, cosmopolitan; 2 in sthn Afr., widespread in aquatic or semi-aquatic habitats.

australis (Cav.) Steud.

Common reed; *fluitjiesriet* (A)

Robust, perennial reed, up to 4 m high; rhizomes long; culms solitary, not tillering; leaves cauline, deciduous at base of blade, thus sheath remains on culm. **Leaf blade** 350 × 35 mm, apex filiform and flexuous; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a large, 120–400 mm long, compact, drooping, densely plumose panicle, with a ring of silky hairs at base of lowest branches; spikelets solitary, pedicelled. **Spikelets** 10–18 mm long, laterally compressed; glumes very unequal, shorter than spikelet; upper glume 6–9 mm long, acute. **Florets** 3–11; lowermost floret male or sterile; succeeding florets bisexual; lemma entire, glabrous, acuminate or tapering into an awn; awn straight, shorter than body of lemma; callus with silky hairs 6–10 mm long; anther 1.5–2.0 mm long. **Flowering time** Dec.–June. In riverbeds and wet places; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North E to Griqualand East southwards, from Graaff-Reinet to Port St Johns, Komga, Kentani, Uitenhage, Port Elizabeth and Humansdorp).

mauritianus Kunth

Lowveld reed; *dekriet* (A)

Robust, perennial reed, up to 5 m high; rhizomes long; culms tillering from lower nodes; leaves cauline, deciduous at base of sheath. **Leaf blade** 300 × 30 mm, apex sharp and rigid; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a large, 200–400 mm long, drooping, densely plumose panicle, open or contracted; with ring of silky hairs at base of lowest branches; spikelets solitary, pedicelled. **Spikelets** 7–15 mm long, laterally compressed; glumes very unequal, shorter than spikelet; upper glume 3–5 mm long, shortly acuminate. **Florets** 3–11; lowermost floret male or sterile; succeeding florets bisexual; lemma entire, glabrous, acuminate or tapering into an awn; awn straight, shorter than body of lemma; callus with silky hairs 4–7 mm long; anther 1.5–2.0 mm long. **Flowering time** Jan.–June. Riverbeds; Indian Ocean Coastal Belt (Umtamvuna Nature Reserve).

POA L.

Species ± 500, cosmopolitan; 6 in sthn Afr., N, LIM, NW, G, M, S, FS, KZN, L, NC, WC, EC.

***annua** L.

Annual blue grass, low spear grass; *eenjarige blougras* (A); *joang-ba-lintja* (S)

Loosely to compactly tufted annual, sometimes biennial, 25–300 mm high; maybe stoloniferous or rooting at nodes; culms usually geniculate at base. **Leaf blade** 20–50 (–140) × 1–5 mm, expanded or folded, flaccid; ligule an unfringed membrane (0.5–)

2.0–5.0 mm long. **Inflorescence** a ± pyramidal panicle, 10–120 mm long; branches solitary or paired, spreading horizontally or almost so at maturity; spikelets aggregated in upper $^{1}/_{2}$ of branches. **Spikelets** (3–)4–6 mm long, laterally compressed, awnless; glumes ± equal, shorter than spikelet; lower glume 1-nerved; upper glume 3-nerved. **Florets** 3–5; lemmas entire, keeled, 5–7-nerved, membranous, densely to sparsely woolly on keel and marginal nerves below middle or glabrous; palea keels ciliate or woolly; anther 0.6–0.8(–1.0) mm long. **Flowering time** Dec., Jan., usually in rainy season of a particular region. Weed in damp places on roadsides, gardens and wasteland or other disturbed areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Naude's Neck S to Queenstown, Lusikisiki, Cradock District, Alice, Grahamstown and Humansdorp).

binata Nees

Densely tufted perennial, 150–600 mm high; rhizome oblique; old basal leaf sheaths split into fibres. **Leaf blade** 30–200 × 1–5 mm, expanded or folded; ligule an unfringed membrane, obtuse, up to 2 mm long. **Inflorescence** an ovate to pyramidal panicle, 50–150 mm long, branches solitary or binate, usually less than their own length apart; spikelets aggregated on upper $^{1}/_{2}$ of branches. **Spikelets** 4–6 mm long, laterally compressed, awnless; glumes ± equal to unequal, shorter than spikelet; lower glume 1-nerved, occasionally 1 or 2 additional nerves at base; upper glume 3-nerved. **Florets** 3–5; lemma entire, 5–7-nerved, glabrous, rarely woolly at base, keels glabrous or occasionally scabrid; palea keels glabrous or sparsely ciliate; anther 1.5–2.5 mm long. **Flowering time** Sept.–May. Along mountains and escarpment in moist areas; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East E to Griqualand East southwards, from Bailey to Port Edward, Somerset East, Kentani, Grahamstown and Humansdorp).

*__pratensis__ L.

Kentucky blue grass, meadow grass; *wintergras* (A)

Loosely to compactly tufted perennial, 250–600(–800) mm high; rhizome long, wiry. **Leaf blade** 60–250 × 2–5 mm, flat or rolled; ligule a fringed to unfringed membrane, truncate to rounded, 0.5–2.0(–3.0) mm long. **Inflorescence** an ovate panicle, 50–200 mm long; lowest branches whorled, branches of up to 6 fascicles; spikelets aggregated on upper part of branches. **Spikelets** 3.0–5.5(–7.0) mm long, laterally compressed, awnless; glumes ± equal to unequal, shorter than spikelet; lower glume 1–3-nerved; upper glume 3-nerved. **Florets** 2–5; lemma entire, 5–7-nerved, keeled, woolly at base on keel and margins; palea ciliate on keels; anther 1.5–2.0 mm long. **Flowering time** Sept.–Jan. (Apr.). Moist shady areas, usually in mountains; Upper Karoo, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Albert District E to Naude's Neck southwards, from Queenstown to Graaff-Reinet District, Alice, Stutterheim, Uitenhage and Humansdorp).

POGONARTHRIA Stapf

Species 4, tropical and sthn Afr.; 3 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, NC, EC.

squarrosa (Roem. & Schult.) Pilg.

Herringbone grass; *sekelgras* (A)

Perennial, tufted, with a short rhizome, 270–1 400 mm high. **Leaves**: sheaths glabrous; blades 40–330 × 2.0–5.5 mm, expanded or folded, flaccid; ligule an unfringed membrane (0.5–)2.0–5.0 mm long. **Spikelets** 4–10-flowered; lower glume 0.8–1.5 mm long; upper glume 0.8–1.5 mm long. **Flowering time** Nov.–May. Common, an occasional weed in disturbed places, open veld or under trees, in light sandy soil; Indian Ocean Coastal Belt (Port St Johns).

POLEVANSIA De Winter

Species 1, sthn Afr., L, EC.

rigida De Winter

Perennial, 100–410 mm high, mat-forming, rhizomatous and stoloniferous. **Leaf blade** 10–30 × 1.5–2.0 mm; sheath loose and overlapping; ligule a fringed membrane. **Inflorescence** a number of short, dense, not distinctly secund, spike-like racemes, appressed and arranged alternately on central axis; oblong; rachis branches and pedicels triangular in cross section. **Spikelets** 3.5–4.5 mm long, dorsiventrally compressed; glumes unequal, with a single thick central nerve. **Floret** 1; lemma dorsiventrally compressed, subcoriaceous, acute, small mucro present; callus short, obtuse; anther 2.5–3.0 mm long. **Flowering time** Feb.–May. On lands worn out by traditional pastoral methods or on rocky outcrops, often near water, alt. > 1 250 m; Drakensberg Grassland (Barkly East District S to Grahamstown District).

POLYPOGON Desf.

Species ± 18, tropics and warm temperate regions; ± 3 (1 endemic) in sthn Afr., N, B, G, S, FS, KZN, NC, WC, EC.

***monspeliensis** (L.) Desf.

Annual beard grass, rabbit foot grass; *brakbaardgras* (A)

Tufted annual, 60–500 mm high; sometimes with creeping culms. **Leaf blade** 50–200 × 2–8 mm; ligule an unfringed membrane. **Inflorescence** a dense, narrowly elliptic panicle, sometimes lobed. **Spikelets** 2–3 mm long (excluding awns), narrowly oblong, ± laterally compressed, falling with glumes and pedicel or part of it; glumes ± equal, longer than spikelet, scabrid on back, margins minutely hairy, awn 4–8(–10) mm long, spreading. **Floret** 1, bisexual; lemma awnless or with a short awn up to 2.5 mm long, lateral nerves sometimes minutely extended; anther ± 0.5 mm long. **Flowering time** Sept.–Apr. Weed, in damp and disturbed places, often in brackish soils; Upper Karoo, Dry Highveld Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg E to Burgersdorp southwards, from Beaufort West District to Kei River, Uitenhage, Port Alfred and Humansdorp).

strictus Nees

Tufted annual, 70–700 mm high. **Leaf blade** up to 200 × 1–5 mm; ligule an unfringed membrane. **Inflorescence** a dense, contracted panicle. **Spikelets** 1.8–2.6 mm (excluding awns), narrowly oblong, falling with glumes and pedicel or part of it; glumes ± equal, longer than spikelet, scabrid on back, margins minutely hairy, awn (8–)10–15 mm long. **Floret** 1; lemma awn 4–10 mm long; anther 0.4–0.5 mm long. **Flowering time**

Oct.–Apr. Wet places, usually in coastal areas; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Pondoland S to Kentani District, East London, Port Elizabeth and Humansdorp District).

*viridis (Gouan) Breistr.

Bent grass

Stoloniferous perennial or annual, 150–600 mm high; often rooting at nodes. **Leaf blade** up to 150 × 7 mm; ligule an unfringed membrane. **Inflorescence** an open, interrupted panicle; branches ascending. **Spikelets** 1.5–2.0 mm long, narrowly oblong, awnless, falling with glumes and pedicel or part of it; glumes ± equal, longer than spikelet, scabrid across back, margins minutely hairy. **Floret** 1; anther 0.4–0.5 mm long. **Flowering time** Sept.–Apr. Wet places, especially riverbanks; Dry Highveld Grassland, Drakensberg Grassland, Upper Karoo, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North E to Barkly East southwards, from Middelburg to Mkambati Nature Reserve, Graaff-Reinet, East London District and Humansdorp).

PROSPHYTOCHLOA Schweick.

Species 1, sthn Afr., LIM, M, S, KZN, EC.

prehensilis (Nees) Schweick.

Perennial, climber, up to 10 m high. **Leaf blade** of 2 dissimilar kinds, margins scabrid; lower leaves lanceolate, acuminate, expanded, ± flaccid, caudate; upper leaves filiform, longer than lower leaves, apex long filiform; ligule an unfringed membrane. **Inflorescence** an open panicle. **Spikelets** 6–9 mm long, awnless; glumes minute, very reduced, ± equal, joined to form a small cup, awnless. **Florets** 3; lower 2 florets sterile, subulate, minute; uppermost floret bisexual, lemma acuminate, boat-shaped, coarsely covered with hyaline spines, entire, margins inflexed, 5-nerved, scarcely keeled; anther 4.5–6.0 mm long. **Flowering time** Nov.–Apr. Moist forests, where it climbs in dense masses; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (uMzimkhulu District, Umtamvuna Nature Reserve, Elliotdale District, King William's Town and Kentani).

PSEUDECHINOLAENA Stapf

Species 6, 5 in Madagascar; 1 pantropical in sthn Afr., LIM, S, KZN, EC.

polystachya (Kunth) Stapf

Soft, slender, short-lived perennial or annual, up to 400 mm high; often mat-forming; culms prostrate or trailing. **Leaf blade** up to 10–80 × 14 mm; ligule an unfringed membrane. **Inflorescence** of 2–6 racemes, scattered up a slender central axis; appears different as upper glume hooks only develop after fertilisation and delayed maturation of sessile spikelets causes an extended flowering period. **Spikelets** 3.5–5.0 mm long, laterally compressed, often burr-like, awnless; glumes ± equal, dissimilar; upper glume gibbous, as long as spikelet, translucent spots between nerves which usually have stiff hooked hairs after fertilisation. **Florets** 2; lower floret male or sterile; upper floret bisexual, lemma hard; anther 1.0–1.5 mm long. **Flowering time** Aug., Sept., Dec.–Apr. In forest shade; Indian Ocean Coastal Belt, Indigenous Forests (Pondoland S to Port Edward, Port St Johns and Dwesa Forest).

PUCCINELLIA Parl.

Species ± 80, north temperate regions, mainly Asia; ± 4 in sthn Afr., N, FS, NC, WC, EC.

angusta (Nees) C.A.Sm. & C.E.Hubb.

Finch alkali grass; *brakgras* (A)

Densely tufted perennial, 300–600 mm high; basal leaf sheaths shining; culms 1-noded. **Leaf blade** 75–100(–300) × 1.0–1.5(–2.5) mm; leaf sheaths overlapping and enclosing culms and lower part of panicle; ligule an unfringed membrane. **Inflorescence** a linear, open or contracted panicle, 30–120 mm long. **Spikelets** 4.0–5.5 × 1.0–1.5 mm, laterally compressed, disarticulating above glumes, awnless; glumes very unequal, shorter than spikelet; lower glume 1-nerved; upper glume 3-nerved. **Florets** 2–12, bisexual; lemma 1.8–2.2 mm long, obtuse to rounded, entire, apex thinly scarious to hyaline, rounded on back, glabrous except hairy on nerves towards base, margins narrowly membranous, 5 nerves conspicuous; palea keels scabrid, margins glabrous; anther 0.6–0.8 mm long. **Flowering time** Aug.–Oct. In disturbed areas on strongly saline moist soils; Albany Thicket, Eastern Fynbos-Renosterveld (Bathurst and Uitenhage districts).

***distans** (L.) Parl.

Reflexed salt grass

Tufted perennial, 250–650 mm high; basal sheaths white. **Leaf blade** 70–180 × 2–4 mm; ligule an unfringed membrane. **Inflorescence** a pyramidal to elongate panicle; branches spreading to deflexed; spikelets absent in lower half. **Spikelets** 4–8 × 1–2 mm, laterally compressed, disarticulating above glumes, awnless; glumes very unequal, shorter than spikelet; lower glume 1-nerved; upper glume 3-nerved. **Florets** 2–12, bisexual; lemma 1.5–4.0 mm long, entire, back rounded, glabrous to hairy at base, nerves inconspicuous, minutely hairy, margins broadly membranous, apex thinly scarious to hyaline; palea bifid, keels ciliate, margins glabrous; anther 0.6–1.2 mm long. **Flowering time** Apr., June, July, Oct. In wet often very saline habitats along rivers, irrigation canals and furrows; Eastern Fynbos-Renosterveld (Willowmore District).

***fasciculata** (Torr.) E.P.Bicknell

Salt grass; *brakgras* (A)

Tufted perennial, 200–400 mm high. **Leaf blade** 80–200 × 2–5 mm; ligule an unfringed membrane. **Inflorescence** an ellipsoid, rather compact sometimes more open panicle; branches stout and stiff, bearing spikelets nearly to base. **Spikelets** 4–7 × 1–2 mm, laterally compressed, disarticulating above glumes, awnless; glumes very unequal, shorter than spikelet; lower glume 1-nerved; upper glume 3-nerved. **Florets** 2–12, bisexual; lemma 1.5–2.5 mm long, entire, back rounded, glabrous except for short hairs at base and lower part of nerves; nerves 3, conspicuous; apex thinly scarious to hyaline, smooth or minutely ciliate; palea ciliate on keels, margins glabrous; anther 0.6–1.0 mm long. **Flowering time** Sept.–Jan. In wet, saline habitats like salt marshes, often in disturbed areas; Upper Karoo, Lower Karoo (Middelburg S to Beaufort West and Willowmore districts).

RENDLIA Chiov.

Species 1, Africa, high eastern regions of LIM, G, M, S, FS, KZN, EC.

altera (Rendle) Chiov.

Mahem's crest; *kleinrolblaar* (A)

Tufted perennial, cushion-like, 200–400 mm high; leaf bases persistent and becoming fibrous with age. **Leaf blade** up to 30–250 × 1.5 mm; ligule a fringed membrane. **Inflorescence** a solitary, rarely paired, terminal, secund toothbrush-like raceme, 20–50 mm long; rachis convex on back with membranous margins; spikelets densely packed and often at right angles to tough, narrow rachis. **Spikelet** 4.0–5.5 mm long, awnless; glumes ± equal, longer than spikelet, dissimilar, 1-nerved; lower glume glabrous; upper glume glabrous, crispate-hirsute or with a barbellate line on either side of midnerve. **Florets** 2; lower lemma keeled, pubescent on keel or rarely glabrous, densely white to reddish hairy on margins; upper floret banana-shaped; anther 1.5–2.5 mm long. **Flowering time** Sept.–May. Shallow humiferous or well-drained sandy soils; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Griqualand East S to Maclear District, Mkambati Nature Reserve and Stutterheim).

RHYTACHNE Desv.

Species 12, tropical and sthn Afr., Madagascar and tropical South America; 3 in sthn Afr., N, KZN, EC.

rottboellioides Desv.

Slender, densely tufted perennial, 0.25–1.00 m high; mainly reddish or purplish brown. **Leaf blade** 300 mm long, setaceous, narrow; sheath collar present; ligule an unfringed membrane. **Inflorescence** a solitary, terminal, rigid or flexuous, cylindrical raceme, raceme joints transverse; internodes clavate, as long as or longer than spikelets, glabrous; spikelets in pairs: one sessile, the other pedicelled; pedicels distinct, free. **Sessile spikelet** 3–5 mm long, glumes ± equal; lower glume strongly transversely rugose, longitudinal nerves indistinct; upper glume awnless or awned up to 5 mm long. **Florets** 2; lower floret male; upper floret bisexual; anther 1.3–2.0 mm long. **Pedicellate spikelet** reduced, sometimes to an awn up to 5 mm long. **Flowering time** Nov.–Feb. Vleis and seasonally wet grassland; Indian Ocean Coastal Belt (Port Edward District).

ROTTBOELLIA L.f.

Species 4, tropical and subtropical Africa and Asia; 1 in sthn Afr., N, B, LIM, M, S, KZN, EC?

cochinchinensis (Lour.) Clayton

Guineafowl grass, kokoma grass; *tarentaalgras* (A)

Annual, often robust, 0.3–3.0 m high; stilt roots usually present; basal sheaths with stiff irritating hairs. **Leaf blade** 600 × 10–30 mm; ligule a fringed membrane. **Inflorescence** a solitary, cylindrical raceme; internodes squatly clavate, fused to adjacent pedicel; spikelets sunken, in pairs: one sessile, the other pedicelled but appearing sessile due to almost complete fusion of pedicel with rachis. **Sessile spikelet** 4–7 mm long, awnless; glumes ± equal. **Florets** 2; lower floret male; upper floret bisexual; anther 1.0–2.0 mm long. **Pedicelled spikelet** 3–5 mm long, hardly discernible as internodes fused to adjacent pedicels. **Flowering time** Dec.–June. Weed in wet places, often on black turf soil, and in disturbed places; Albany Thicket (Port Elizabeth).

SACCIOLEPIS Nash

Species 30, tropics, mainly Africa; 8 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, EC.

curvata (L.) Chase

Forest hood grass; *kappiegras* (A)

Tufted to trailing, short-lived perennial or annual, 200–900 mm high; rhizome slender; prostrate at base, rooting at lower nodes; culms weak. **Leaf blade** 20–100 × 3–7 mm, mostly cauline, narrowly lanceolate, soft, thin. **Inflorescence** an open to loosely contracted panicle; spikelets distinctly pedicellate. **Spikelets** 2.5–3.5 mm long, conspicuously asymmetrical, laterally compressed, glabrous or slightly hairy, awnless; glumes very unequal, dissimilar, distinctly ribbed; lower glume a tiny scale 0.2–0.5 mm long; upper glume > 5× longer than lower glume, gibbous, prominently ribbed. **Florets** 2; lower floret male or sterile; upper floret bisexual, lemma dorsally compressed, indurated, brittle, smooth, glossy, entire; anther 0.6–1.0 mm long. **Flowering time** mainly Oct.–Apr. Weed, in damp shady places along rivers or streams and in forest undergrowth. Occasionally in woodlands and mopane veld; Sub-Escarpment Savanna (KZN border, Uvongo Beach).

indica (L.) Chase

Tufted annual, 0.1–1.0 m high; basal leaves few; culms slender, 1.0–2.5 mm in diam., solid, decumbent or ascending, often with aerial roots. **Leaf blade** 20–200 × 1–7 mm, broadly linear-lanceolate and rigid, flat, glabrous or often pilose; leaf sheaths usually with auricles 1.5–2.5 mm long; ligule an unfringed membrane. **Inflorescence** a spike-like panicle, 10–130 mm long; pedicels smooth. **Spikelets** 2.7–3.1 mm long, laterally compressed, obtuse; glumes very unequal, dissimilar, distinctly ribbed with broad hyaline margins and apices, awnless; lower glume 1.0–1.5 mm long, $^1/_2$ spikelet length, 3(–5)-nerved; upper glume equalling spikelet, gibbous, 7–9-nerved. **Florets** 2; lower floret male or sterile, palea 1.2–1.8 mm long; upper floret bisexual, lemma dorsally compressed, pallid, indurated, brittle, entire; anther 0.6 mm long. **Flowering time** Nov.–Apr. In sandy soils along streams, rivers and in marshy places; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

spiciformis (A.Rich.) Stapf

Annual swamp grass

Loosely tufted, short-lived, hydro-hygrophytic annual, 100–250(–500) mm high. **Leaf blade** 15–120 × 1–5 mm, upper surface ribbed and papillose, glabrous. **Inflorescence** a spike-like panicle; pedicels short, scabrid. **Spikelets** 1.3–1.8 mm long, laterally compressed, obtuse, purplish grey, awnless; glumes very unequal, dissimilar, distinctly ribbed; lower glume 0.8–1.4 mm long, $^1/_3$–$^2/_3$ spikelet length, 3–5-nerved; upper glume ± equalling spikelet, gibbous, 7–9-nerved. **Florets** 2; lower floret sterile, palea 0.3–0.9 mm long; upper floret bisexual, lemma dorsally compressed, pallid or light brown, indurated, entire; anther 0.6–0.8 mm long. **Flowering time** Mar.–June. At high altitudes in sandy soils at water edges, sometimes partly submerged in water; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

SCHISMUS P.Beauv.

Species 5, Africa, Mediterranean region to northwest India; 4 in sthn Afr., N, B, FS, L, NC, WC, EC.

barbatus (L.) Thell.

Haasgras (A)

Tufted annual, 50–250 mm high. **Leaf blade** up to 10–50 × 1.5 mm, involute; ligule a fringe of hairs. **Inflorescence** a panicle, 10–50 mm long. **Spikelet** 4–7 × 1.5 mm, narrowly lanceolate, mostly light green, sometimes purple; glumes ± equal, shorter than to as long as spikelet, 5–7-nerved. **Florets** 5–10; lemma 7–9-nerved, back pubescent, hairs 0.2–0.5 mm long and often club-shaped, lobes obtuse; short mucro of < 1 mm long arising from sinus or absent; anther 0.2–0.4 mm long. **Flowering time** June–Dec. Weed, in alluvial soils, disturbed sandy areas; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Middelburg E to Sterkstroom southwards, from Beaufort West to Graaff-Reinet, Komga, Alexandria and Port Alfred).

inermis (Stapf) C.E.Hubb.

Tufted perennial, 120–400 mm high. **Leaf blade** up to 300 × 1 mm; ligule a fringe of hairs. **Inflorescence** a contracted, dense panicle, 25–70 mm long. **Spikelets** 4.5–7.0 × 2.5–4.0 mm, ovate, green or purple; glumes ± equal, shorter than to as long as spikelet, 5–7-nerved. **Florets** 4–6; lemma 7–9-nerved, sparsely to densely pubescent, never glabrous,hairs 1.0–1.5 mm long, never club-shaped, lobes subacute to acute, a short mucro, < 1 mm long, arises from sinus between lobes, seldom extends much beyond lobes; palea hairy between and on keels; anther 0.6–1.2 mm long. **Flowering time** June–Feb. On dense grassy slopes and rocky areas; Upper Karoo, Albany Thicket (Middelburg District S to Graaff-Reinet, Cradock, Uitenhage and Port Alfred Districts).

scaberrimus Nees

Tufted perennial, 100–450 mm high. **Leaf blade** up to 30–200 × 1.5 mm, somewhat scabrid; ligule a fringe of hairs. **Inflorescence** a panicle, 10–50 mm long. **Spikelets** 5–7 × 1.5–2.5 mm, ovate to broadly ovate; glumes ± equal, shorter than to as long as spikelet, 5–7-nerved. **Florets** 4–6; lemma 7–9-nerved, back sparsely pubescent with short, scattered hairs and margins tufted to densely hairy or almost glabrous, lobes truncate, tend to be connate with almost no sinus, apex lacerate and nerveless, mucro short, < 0.5 mm long extending beyond lobes present or absent; anther 0.8–1.2 mm long. **Flowering time** Sept., Oct. Sandy areas such as dry riverbeds; Upper Karoo, Drakensberg Grassland (Middelburg SE to Fort Beaufort).

SCHIZACHYRIUM Nees

Species ± 60, throughout the tropics; 6 in sthn Afr., N, B, LIM, NW, G, M, S, KZN, NC, EC.

sanguineum (Retz.) Alston

Red autumn grass; *rooidekgras* (A)

Tufted perennial, 0.4–1.2 m high; conspicuously red in autumn; rhizome shortly creeping. **Leaf blade** 60–300 × 7 mm, apex rounded or abruptly pointed; ligule a fringed membrane. **Inflorescence** sometimes solitary and terminal, usually in a spatheate false panicle with solitary, cylindrical, narrow racemes; raceme nearly glabrous, hairs present only along margins of rachis and pedicel; internode and pedicels linear to clavate; spikelets paired, dissimilar: one sessile, the other pedicelled. **Sessile spikelet** 6–9 mm long, narrowly elliptic, laterally compressed; glumes ± equal, dissimilar; lower glume glabrous. **Florets** 2; lower floret sterile; upper floret bisexual, lemma bifid for almost whole length; central awn 8–21 mm long glabrous, geniculate; callus obtuse; anther 2.5–3.8 mm

long. **Pedicellate spikelet** 4–7 mm long, male or sterile; lower glume awn 2–6 mm long. **Flowering time** Jan.–May. Open veld; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Indigenous Forests (Paddock District S to Engcobo, Ntsubane Forest and Port Edward).

SETARIA P.Beauv.

Species ± 110, tropics and subtropics; 18 in sthn Afr., widespread.

1a Inflorescence a spike-like panicle
2a Annual

***italica** (L.) P.Beauv.

Foxtail millet; *boermanna* (A)

Annual, 0.35–1.50 m high; culms erect, solitary to densely tufted, node glabrous; leaves mainly cauline. **Leaf blade** 150–450 × 6–20 mm, expanded, linear, glabrous, usually scabrid; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, 8–24 mm wide; spikelets subtended by 2–5 bristles; bristles up to 15 mm long, scabrid, slender, purple or yellow, persisting on axis after spikelets fall. **Spikelets** 2.0–3.5 mm long, dorsiventrally compressed; lower glume 3-nerved; upper glume 5–7-nerved. **Florets** 2; lower floret sterile rarely with a minute palea; upper floret bisexual, lemma indurated, smooth and shiny or rugulose, entire; upper floret reluctantly disarticulating; anther 0.5–1.0 mm long. **Flowering time** Jan.–Apr. In gardens, cultivation and other disturbed areas, often as an escape from cultivation; Upper Karoo, Albany Thicket (Middelburg and Grahamstown Districts).

pumila (Poir.) Roem. & Schult.

Loosely tufted annual, 0.05–1.30 m high; culm erect or geniculate, nodes glabrous. **Leaf blade** 30–300 × 2–12 mm, expanded, soft, thin; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a cylindrical, spike-like panicle, 10–100(–200) mm long; spikelets subtended by 4–10 bristles; bristles 3–12 mm long, slightly scabrid, slender, yellowish, brownish, copper-coloured or greenish with golden-brown or green apices; bristles persist on axis after spikelets fall. **Spikelets** 1.5–3.5 mm long, apex acute, not deflexed, dorsiventrally compressed; lower glume 3-nerved. **Florets** 2; lower floret male or sterile, lemma widely grooved; upper floret bisexual, lemma indurated, rugose to corrugate, rarely almost smooth, entire; anther 0.6–1.5 mm long. **Flowering time** Dec.–May. In damp soils in disturbed weedy places and cultivation or drier bushveld regions in shade of trees and bushes; weed which colonises bare ground; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North E to Griqualand East southwards, from Queenstown District to Stutterheim, East London and Willowmore District).

verticillata (L.) P.Beauv.

Bur bristle grass; *klitssetaria*, *klitsgras* (A)

Loosely tufted annual, 0.3–1.0 m high, often sprawling; culm node glabrous. **Leaf blade** 50–300 × 6–22 mm, broadly linear, usually loosely hairy, rarely glabrous; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, 20–150 mm long, often shortly branched and interrupted in lower part; spikelets subtended by 1–4 bristles; bristles 4–16 mm long, rigid, retrorsely barbed therefore inflorescences often entangled, green tinged purple; bristles persistent on axis after spikelets falls. **Spikelets** 1.5–2.5 mm long, dorsiventrally compressed; lower glume 1-nerved. **Florets** 2; lower

floret sterile, palea reduced; upper floret bisexual, lemma indurated, finely rugose, entire; anther 0.5–1.0 mm long. **Flowering time** Dec.–May. Weed, ruderal in disturbed areas, cultivation, cattle kraals and along paths, often in damp, shady places; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Hofmeyr District E to Baziya, Alice, Steytlerville, Uitenhage and Grahamstown).

2b Perennial
3a Culm nodes hairy

nigrirostris (Nees) T.Durand & Schinz

Large seed setaria; *grootsaad setaria*, *mannagras* (A)

Tufted perennial, 0.5–1.2 m high; rhizome stout, very well developed, often much branched; basal sheaths robust, very dark brown; basal leaves few; culm nodes hairy. **Leaf blade** 100–550 × 4–10 mm, expanded, tapering to a fine point, mostly conspicuously narrowed at base; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, usually dense, cylindrical; spikelets subtended by up to 10 bristles; bristles 5–10 mm long, rather coarse, scabrid, straw-coloured, apices slightly thickened, usually dark purple; bristles persist on axis after spikelets fall. **Spikelets** 3.5–5.0 mm long; glume apices distinctly dark; lower glume 3-nerved. **Florets** 2; lower floret male or sterile, lemma deeply grooved; upper floret bisexual, lemma indurated, finely rugose, apex with a distinctly dark patch, entire; anther 2.0–2.5 mm long. **Flowering time** Oct.–Apr. Often on black turf in open grassland or on riverbanks; Sub-Escarpment Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt (Kokstad S to Queenstown, Victoria East and Kentani).

3b Culm nodes glabrous

rigida Stapf

Robust, erect perennial, 1.0–1.8 m high; rhizome stout and oblique; culm nodes glabrous. **Leaf blade** 100–300 × 3–6 mm, often inrolled; rigid, tapering to a spiny point; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, up to 200 mm long; spikelets subtended by 4–9 bristles; bristles up to 12 mm long, antrorsely barbed, often grooved, sometimes with sparse long hairs in lower part, light or yellowish green; bristles persistent on axis after spikelets fall. **Spikelets** 2.3–2.8 mm long, dorsiventrally compressed; lower glume 1-nerved. **Florets** 2; lower floret male or sterile, lemma shallow to deeply grooved, palea absent; upper floret bisexual, lemma indurated, rugose, entire; anther 1–2 mm long. **Flowering time** Feb., Mar. On streambanks and in swampy areas; Indian Ocean Coastal Belt (Lusikisiki District).

sphacelata (Schumach.) Moss

Golden bristle grass, twisted leaf bristle grass, creeping bristle grass

Tufted, robust to almost reed-like perennial, 0.4–2.0 m high; sometimes rhizomatous occasionally with stilt roots; nodes glabrous. **Leaf blade** 100–800 × 1–18 mm, flat; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, 25–500 mm long; spikelets subtended by 6–15 bristles; bristles 4–10 mm long, slender, finely scabrid, golden-yellow to reddish brown, persistent on axis after spikelets fall. **Spikelets** 1.5–3.5 mm long, dorsiventrally compressed; lower glume 3-nerved; upper glume 3–5-nerved. **Florets** 2; lower floret male or sterile, lemma widely grooved; upper floret bisexual, lemma indurated, coarsely rugose, entire; anther 0.7–1.8 mm long.

Flowering time Oct.–June. On a wide range of habitats ranging from water to streamsides and moist places to rocky hillsides, usually on well-drained soils; in all bioregions (widespread from Aliwal North E to Kokstad District southwards, from Queenstown to Port St Johns, Cradock, Kentani, Steytlerville, East London and Humansdorp).

1b Inflorescence an open or contracted, but not spike-like panicle

lindenbergiana (Nees) Stapf

Mountain bristle grass; *bergsetaria* (A)

Densely tufted perennial, 0.3–1.2 m high; rhizome short and creeping; culm nodes glabrous. **Leaf blade** 100–450 × 1.5–7.0(–13.0) mm, linear, finely plicate though mostly only plicate when young, flat or inrolled, base slender, often pseudopetiolate, glabrous or hairy; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a contracted but not spike-like, or an open but not flexuose panicle; spikelets or clusters subtended by a solitary bristle; bristle 2–10 mm long, scabrid, slender, green or purple, persisting on axis after spikelets fall. **Spikelets** 2.0–3.5 mm long; lower glume 3-nerved; upper glume $^{1}/_{2}$ to as long as spikelet. **Florets** 2; lower floret male or sterile; upper floret bisexual, lemma indurated, distinctly but finely rugose throughout, extreme apex often less conspicuously so, entire; anther 1.5–2.0 mm long. **Flowering time** Oct.–May. Usually in crevices on rocky or stony hillsides but also in open woodland; Indian Ocean Coastal Belt, Upper Karoo, Sub-Escarpment Grassland, Drakensberg Grassland, Albany Thicket (Pondoland S to Middelburg, Grahamstown, Keiskammahoek District, Steytlerville, Greater Addo Elephant National Park and Kowie).

megaphylla (Steud.) T.Durand & Schinz

Ribbon bristle grass; *riffelblaarsetaria* (A); *mufhafha* (Venda)

Very tall, robust, tufted, shortly rhizomatous perennial, 0.9–3.0 m high; culm erect and occasionally rooting at nodes, 4–10 mm in diam., nodes glabrous. **Leaf blade** 150–800 × 10–110 mm, lanceolate, conspicuously and coarsely plicate, sometimes pseudopetiolate, sparsely hairy with tubercle-based hairs; ligule a fringed membrane or a fringe of hairs. **Inflorescence** an open panicle, 400–600 mm long; spikelets subtended by a solitary slender bristle; bristle 3–15 mm long, finely scabrid persisting on axis after spikelets fall. **Spikelets** 2–3 mm long, dorsiventrally compressed; lower glume 3-nerved. **Florets** 2; lower floret male or sterile, lemma firmly membranous; upper floret bisexual, lemma indurated, usually smooth, often shining, sometimes rugose at base, rarely rugose throughout, entire; anther 1.8 mm long. **Flowering time** Sept.–May. Riverine or forest grass on damp soils, mostly in shade, extending to forest margins and disturbed places such as road cuttings; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Drakensberg Grassland, Albany Thicket (Port St Johns S to Stutterheim, King William's Town, Kentani and Kowie).

plicatilis (Hochst.) Engl.

Folded leaf tussock grass; *breeblaarpolgras* (A)

Loosely tufted, shortly rhizomatous perennial, 0.5–1.5 m high; culm 2–3(–5) mm in diam., often geniculate, nodes glabrous. **Leaf blade** 100–350 × 8–35 mm, broadly linear to narrowly lanceolate, coarsely and conspicuously plicate, sometimes pseudopetiolate; ligule a fringed membrane or a fringe of hairs. **Inflorescence** an open panicle, branches flexuous; spikelets subtended by a solitary bristle; bristle 3–15 mm long, scabrid, slender, greenish yellow to dark purple, persisting on axis after spikelets fall.

Spikelets 2.5–3.3 mm long, dorsiventrally compressed; lower glume 3-nerved; upper glume 5–7-nerved. **Florets** 2; lower floret male or sterile, lemma firmly membranous; upper floret bisexual, lemma indurated, smooth or obscurely rugose, entire; anther 1.5–2.0 mm long. **Flowering time** Oct.–Mar. Coastal and inland forests in semi-shade, extending to forest margins and occasionally into woodlands; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Indigenous Forests (Queenstown E to Port Edward southwards, from Komga to Kentani District).

SORGHUM Moench

Species ± 24, tropical and subtropical regions of the Old World; 3 in sthn Afr., widespread.

Mostly introduced and extensively cultivated either for grain or fodder.

bicolor (L.) Moench

Sudan grass, shattercane; *wilde graansorghum*, *witkoring* (A)

Short-lived perennial or annual, up to 3 m high; rhizomes absent. **Leaf blade** 8–30 mm wide; ligule a fringed membrane. **Inflorescence** an open or contracted panicle; racemes readily to tardily disarticulating; internodes and pedicels filiform; spikelets in pairs, terminally in triplets, one sessile, the other pedicelled; pedicels free from rachis. **Sessile spikelet** 5–7 mm long, lanceolate-elliptic, dorsiventrally compressed, variously coloured at maturity; glumes ± equal, dissimilar; lower glume densely to loosely hairy, at maturity glossy, often almost glabrous. **Florets** 2; lower floret sterile, upper floret bisexual; lemma less firm than glumes, not indurated, awn 10–16(18) mm long, geniculate, partly twisted below; anther 2.0–4.0 mm long. **Pedicelled spikelet** 5–7 mm long, linear to lanceolate, awnless, deciduous, pale greenish yellow or often reddish to purplish. **Flowering time** Jan.–June. Moist places, disturbed places and weed of cultivation; Upper Karoo, Sub-Escarpment Grassland, Indian Ocean Coastal Belt (Albert District, Queenstown and Port Edward Districts).

***halepense** (L.) Pers.

Johnson grass; *johnsongras* (A)

Perennial, up to 2.5 m high; usually strongly long-rhizomatous. **Leaf blade** 200–600 × 10–30 mm; ligule a fringed membrane. **Inflorescence** an open panicle; branches slender, often somewhat pendulous; internodes and pedicels filiform; spikelets in pairs, terminally in triplets, one sessile, the other pedicelled; pedicels free from rachis. **Sessile spikelets** 4.0–5.5(–7.0) mm long, ovate, dorsiventrally compressed, variously coloured at maturity; glumes ± equal, dissimilar; lower glume indurated, shiny, appressed-pubescent. **Florets** 2; lower floret sterile, upper floret bisexual; lemma less firm than glumes, not indurated, minutely bilobed, awnless or awned; awn 10–16 mm long, geniculate, twisted below; anther 2.1–4.5 mm long. **Pedicelled spikelet** 5–7 mm long, lanceolate, awnless. **Flowering time** usually Dec.–May (occasionally at other times). In disturbed places, watercourses, roadsides and cultivated lands; origin Mediterranean, declared invader (Category 2); Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket (Middelburg E to Queenstown and Port St Johns southwards, from Graaff-Reinet to Alice, Kei River Mouth and Albany District).

SPARTINA Schreb.

Species ± 16, temperate America, coastal Europe and Africa; 1 in sthn Afr., N, WC, EC.

maritima (Curtis) Fernald

Cape cord grass; *strandkweek* (A)

Perennial, 200–800 mm high; hygrophyte; rhizomatous or stoloniferous. **Leaf blade** inrolled, rigid; ligule a fringe of hairs. **Inflorescence** digitate to subdigitate, robust, of (1)2 or 3 long, secund, persistent, spike-like racemes; rachis keeled on face, flattened dorsally, elongated at apex into a sharp point; spikelets solitary at point of attachment to rachis, subsessile, 2-ranked on rachis. **Spikelets** 12–15 mm long, strongly laterally compressed, awnless; glumes very unequal; lower glume linear, acute or obtuse, 1-nerved; upper glume membranous or subcoriaceous, 3-nerved. **Floret** 1, bisexual; lemma oblong, membranous, keeled, minutely hairy upwards, 1-nerved, awnless; palea equalling lemma, 2-nerved; anther 5.0–6.0 mm long. **Flowering time** Nov.–Apr. Along coasts on intertidal mud flats, around estuaries or submerged in lagoons; Albany Thicket, Eastern Fynbos-Renosterveld (Bathurst District, Uitenhage and Humansdorp).

SPOROBOLUS R.Br.

Species ± 160, tropical and warm temperate; 38 in sthn Afr., widespread.

1a Inflorescence lowest branches not whorled
2a Inflorescence spike-like

africanus (Poir.) A.Robyns & Tournay

Dropseed, rush grass; *taaipol* (A)

Tufted perennial, 0.28–1.50 m high; rhizomatous. **Leaf blade** 200–400 × 1–4 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a dense panicle, almost spike-like; branches not whorled, relatively short and rigid, central axis usually visible. **Spikelets** 2.0–2.8 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^1/_4$–$^1/_2$ as long as spikelet; upper glume $^1/_2$ spikelet length. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Oct.–Apr. **Caryopsis** ellipsoid, 1.1–1.2 mm long. Mainly in disturbed places and along streams; Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Maclear District E to Oribi Gorge southwards, from Queenstown to Port St Johns, Tarkastad, Grahamstown, Kowie, Port Elizabeth and Humansdorp District).

albicans (Nees ex Trin) Nees

Mat-forming perennial, 200–360 mm high; rhizomatous. **Leaf blade** 5–12 × 1 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a spike-like panicle, 25–30 mm wide, central axis usually visible; branches not whorled. **Spikelets** 2.0–2.5 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved, pale yellow. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Feb.–Apr. Limestone pans or dried-up depressions; Upper Karoo, Sub-Escarpment Grassland (Middelburg E to Queenstown).

virginicus (L.) Kunth

Seaside rush grass; *brakgras* (A)

Mat-forming perennial, 110–770 mm high; rhizomes extensively creeping; stoloniferous. **Leaf blade** 50–150 × 1–7 mm, convolute and pungent; ligule a fringed membrane

or a fringe of hairs. **Inflorescence** a spike-like panicle, branches not whorled. **Spikelets** 1.7–2.5 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved, lower glume $^{3}/_{4}$ as long as spikelet; upper glume as long or slightly longer than spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Oct.–Apr. On dunes, beaches and along tidal streams on sand; mostly along coast but also inland at saline water edges; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (along coast, from Port Edward to Kentani, Port Alfred and Tsitsikamma National Park).

2b Inflorescence not spike-like

africanus (Poir.) A.Robyns & Tournay. (see 2a above)

fimbriatus (Trin.) Nees

Dropseed; *blousaadgras* (A); *matolo-a-maholo* (S)

Densely tufted perennial, 0.24–1.60 m high; rhizome oblique. **Leaf blade** up to 300 × 2–4 mm wide; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a fairly dense, open panicle; branches many, not whorled nor spreading > 60 degrees. **Spikelets** 1.4–2.2 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^{1}/_{4}$–$^{3}/_{4}$ as long as spikelet; upper glume ± $^{2}/_{3}$ as long as spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Dec.–May. Sandy, well-drained loam near water, often in disturbed areas or in shady spots; in all bioregions, except Rainshadow Valley Karoo (Colesberg S to Steynsburg, Queenstown, Port St Johns, Graaff-Reinet, Kowie West, Port Elizabeth and Humansdorp).

fourcadii Stent

Tufted perennial, 250–400(–700) mm high; rhizomatous. **Leaf blade** 80–350 × 4–7 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle much longer than wide, branches not whorled, spreading almost horizontally at maturity. **Spikelets** 2.0–2.6 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^{1}/_{3}$ as long as spikelet, upper glume $^{2}/_{3}$ as long as spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Mar. On edge of floodplains or on forest margins; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Albany Thicket (Griqualand East S to Lusikisiki, Alice and Alexandria districts).

natalensis (Steud.) T.Durand & Schinz

Tufted perennial, 0.55–1.45 m high. **Leaf blade** 250–500 × 2–4 mm. **Inflorescence** a fairly dense panicle, branches many, not whorled, contracted or sometimes spreading. **Spikelet** 1.6–2.3 mm long, laterally compressed, awnless, disarticulating above glumes; glumes 1-nerved; lower glume $^{1}/_{3}$–$^{1}/_{2}$ spikelet length; upper glume $^{1}/_{2}$–$^{2}/_{3}$ as long as spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Dec.–Apr. Sandy, well-drained soil near water or in woodlands, often in disturbed places; Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Somerset East E to Keiskammahoek and Komga District).

oxyphyllus L.Fish

Mat-forming perennial, 130–320 mm high; rhizome long and deeply buried; leaves rigid. **Leaf blade** 20–100 × 3.0–4.5 mm, mostly inrolled; ligule a fringed membrane or a fringe of hairs. **Inflorescence** an ovate panicle, not whorled, < 3× longer than wide. **Spikelets**

1.8–2.9 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved, usually keeled along whole length or at least at apex, keel scabrid; lower glume $^{2}/_{3}$ to slightly shorter than spikelet; upper glume $^{3}/_{4}$ to slightly longer than spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Apr. Brackish soils in or near salt pans; Upper Karoo (Colesberg to NC border).

pyramidalis P.Beauv.

Cat's tail grass; *vleigras*, *taaipol* (A)

Densely tufted perennial, 0.7–1.6 m high; rhizomatous. **Leaf blade** 100–500 × 3–10 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a linear panicle, > 5× longer than wide; branches not whorled. **Spikelets** 1.7–2.0 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved, both glumes < $^{1}/_{3}$ as long as spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–May. Vleis, watercourses, periodically flooded areas or near dams on sandy soil or heavy clay; Indian Ocean Coastal Belt, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Thembuland E to Mkambati Nature Reserve southwards, from Komga District to Dwesa Nature Reserve).

salsus Mez

Perennial, 270–700 mm high, rhizomatous. **Leaf blade** 45–150 × 1–4 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, dichotomously branched, without long hairs in axils; branches not whorled; spikelets large and solitary at branchlet apex. **Spikelet** 2.0–2.9 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Jan.–Sept. Seasonally flooded brackish pans and near hot springs or rivers; Upper Karoo (Middelburg).

stapfianus Gand.

Fibrous drop seed; *fynblousaadgras* (A)

Tufted perennial, 150–550 mm high; old leaf sheaths fibrous with woolly hairs between fibres. **Leaf blade** 30–150 × 1–2 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, dichotomously branched, without long hairs in axils; branches not whorled. **Spikelet** 1.4–2.1 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Oct.–Mar. Sandy, well-drained to very compacted soils on rocky outcrops or near streams; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Kokstad Region).

subtilis Kunth

Misty dropseed

Tufted perennial, 320–600 mm high; rhizome slender and creeping, or sometimes stoloniferous; with few basal leaves; culms wiry. **Leaf blade** 40–150 mm long; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, dichotomously branched with long stiff hairs in axils; branches not whorled. **Spikelets** 1.5–3.0 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; rachilla extending into a rudimentary floret between upper glume and palea; glumes 1-nerved. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Jan. Shallow, sandy soil in moist areas; Indian Ocean Coastal Belt (Lusikisiki and Port Edward District).

tenellus (Spreng.) Kunth

Pankweek, *pangras* (A)

Mat-forming perennial, 60–280 mm high; rhizome long and profusely branched; leaves mostly basal; culms usually 1-noded. **Leaf blade** 5–35 × 1–3 mm wide, rounded at apex; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, dichotomously branched; branches not whorled; spikelets solitary at branch apex. **Spikelets** 1.5–1.8 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Apr. Shallow soils at pan edges or in moist depressions; Upper Karoo (NC border, Colesberg District).

1b Inflorescence lowest branches whorled
3a Annual

discosporus Nees

Disc dropseed; *oortjiesgras* (A)

Tufted perennial or annual, 55–180 mm high; shortly rhizomatous; leaves in a basal rosette. **Leaf blade** 10–30 × 2–5 mm, margins pectinately ciliate; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, whorled; spikelets pendulous at maturity. **Spikelets** 1.0–1.7 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–May. **Caryopsis** discoid. Sandy depressions on cave sandstone or on exposed bedrock; often on clayey soil in bare patches or wet areas; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Lower Karoo, Dry Highveld Grassland (Aliwal North E to Lady Grey southwards, from Middelburg to Queenstown and Cradock District).

3b Perennial

centrifugus (Trin.) Nees

Olive dropseed; *blousaadgras* (A)

Perennial, 0.18–0.90(–1.06) m high; rhizome can be long and creeping; basal sheaths hard, brittle, glossy, yellow or brown. **Leaf blade** 60–300 × 1.0–1.5 mm, filiform; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a contracted panicle, unobtrusively whorled; spikelets in lowest whorl often sterile and disarticulating at maturity. **Spikelets** 2.5–4.2 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume slightly shorter than spikelet; upper glume longer than spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Oct.–Apr. High mountainveld or highveld on humiferous well-drained soils; Sub-Escarpment Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Qacha's Neck S to Port Edward, King William's Town, Amatole Mts and Port Elizabeth).

ioclados (Trin.) Nees

Pan dropseed; *blousaadgras* (A)

Perennial, 0.25–1.00 m high, often mat-forming; rhizomatous and stoloniferous; basal leaf sheaths papery; culm geniculate. **Leaf blade** 20–300 × 2.0–12.0 mm, flat; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, branches whorled. **Spikelet** 1.5–2.5 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^1/_4$–$^1/_3$ as long as spikelet; upper glume

as long as, or longer than spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Jan.–Apr. A variety of soil types, including black turf and sand, often in disturbed places; Dry Highveld Grassland, Upper Karoo, Lower Karoo, Albany Thicket (Aliwal North S to Middelburg, Beaufort West and Uitenhage).

ludwigii Hochst.

Brakvleigras (A)

Mat-forming perennial, 100–450 mm high; rhizome long, creeping and profusely branched. **Leaf blade** 10–30 × 2–3 mm, margins not ciliate; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, branches whorled. **Spikelets** 1.5–2.0 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; lower glume $^{1}/_{3}$ as long as spikelet; upper glume as long as spikelet. **Floret** 1. **Flowering time** Jan.–May. Fine, damp calcareous soils in vleis or near pans; Upper Karoo, Rainshadow Valley Karoo (Middelburg District, Hofmeyr and Steytlerville districts).

nitens Stent

Perennial, 190–520 mm high; rhizomatous and stoloniferous. **Leaf blade** 35–90 × 4–8 mm, margins wavy and scabrid or ciliate; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, lowest branches whorled; spikelets clustered on upper half of primary branches. **Spikelets** 1.2–1.5 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^{1}/_{2}$ as long as spikelet; upper glume as long as spikelet, acuminate, prominently keeled, keel scabrid. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Apr. In bare patches and in overgrazed veld, also in gardens and other disturbed places; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Kei River S to Grahamstown and Greater Addo Elephant National Park).

pectinatus Hack.

Fringed dropseed; *kammetjiesgras* (A)

Perennial, 240–740 mm high; older plants with long, horizontally creeping rhizomes. **Leaf blade** 50–300 × 5–8 mm, pectinately ciliate; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, branches whorled; spikelets very densely clustered on upper third of branches, leaving lower part bare. **Spikelets** 3.0–3.7 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^{1}/_{2}$ as long as spikelet; upper glume as long as spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Nov.–Feb. Shallow rocky soil on outcrops or quartzite ridges; Sub-Escarpment Grassland (KZN border, Underberg District).

subulatus Hack.

Densely tufted perennial, 170–430 mm high; rhizomatous; basal sheaths papery, not glossy. **Leaf blade** 50–250 × 1–6 mm, often filiform; ligule a fringed membrane or a fringe of hairs. **Inflorescence** a panicle, lowest branches whorled, primary branches short and contracted. **Spikelets** 2.5–5.0 mm long, laterally compressed, awnless, glabrous, disarticulating above glumes; glumes 1-nerved; lower glume $^{2}/_{3}$–$^{3}/_{4}$ spikelet length; upper glume longer than spikelet. **Floret** 1; lemma similar in texture to glumes, membranous, often shining, 1–3-nerved. **Flowering time** Oct.–Jan. Poorly drained soil in marshy areas or on coastal sandflats, fairly frequent in sourveld; Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket (Mkambati Nature Reserve and Grahamstown District).

tenellus (Spreng.) Kunth. (see 1a above)

STENOTAPHRUM Trin.

Species 7, tropics and subtropics; 2 in sthn Afr., N, S, KZN, WC, EC.

dimidiatum (L.) Brongn.

Perennial, 60–400 mm high; extensively stoloniferous, forming dense swards; sheaths strongly flattened, often grouped in fan-shaped arrangements. **Leaf blade** 50–80 × 8–12 mm, folded when young, keeled, obtuse to rounded at apex; ligule a fringed membrane. **Inflorescence** spike-like, compact, compressed, central axis thickened, corky, flat on one side, hollowed out on other, each cavity is borne alternately on either side of a wavy, winged midrib, wing at edge of cavity formed into a broad acute tooth (at least on upper part of inflorescence); racemes short, of 3–7 spikelets, ending in a narrow, sharp, naked projection. **Spikelet** 4–5 mm long, dorsiventrally compressed, awnless; glumes very unequal, dissimilar; lower glume 1.0–1.5 mm long, shorter than spikelet, nerveless, obtuse; upper glume 4–5 mm long, as long as spikelet, 7–9-nerved, acute or acuminate. **Florets** 2; lower floret male or sterile; lemma 5–7-nerved, broadly convex or flat on back, palea acuminate; upper floret bisexual, lemma not hardened, 5-nerved; anther 1.7–2.2 mm long. **Flowering time** Oct.–May. Along beaches and marshes, saline and fresh water, coastal pioneer; introduced inland; Albany Thicket (East London).

secundatum (Walter) Kuntze

Buffalo grass, St Augustine grass; *buffelgras* (A); *umthombo* (Z)

Perennial, 60–400 mm high; extensively stoloniferous, forming dense swards; sheaths strongly flattened, often grouped in fan-shaped arrangements; culms rooting at nodes. **Leaf blade** 50–150 × 4–10 mm long, keeled, apex acute to obtuse or rounded; ligule a fringed membrane. **Inflorescence** spike-like, compact; central axis thick, swollen, flat on one side, deeply hollowed out on other; each cavity is borne alternately on either side of a wavy, slightly winged midrib, cavity not toothed, each raceme commonly with 1(–3) spikelets. **Spikelet** 4–5 mm long, dorsiventrally compressed, awnless; glumes very unequal, dissimilar; lower glume 0.8–2.0 mm long, shorter than spikelet, nerveless, obtuse or truncate; upper glume 4–5 mm long, acute or acuminate, 5–7-nerved. **Florets** 2; lower floret male or sterile, lemma 7–9-nerved, convex or flat on back, palea acute or acuminate; upper floret bisexual, lemma not hardened, 5-nerved; anther 1.8–2.4 mm long. **Flowering time** Oct.–May. Along beaches and marshes, saline and fresh water, coastal pioneer; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (along coast, from Port St Johns to East London, Port Elizabeth and Humansdorp District).

STIBURUS Stapf

Species 2, sthn Afr., LIM, G, M, S, FS, KZN, L, EC.

alopecuroides (Hack.) Stapf

Pongwa grass; *koperdraadgras* (A)

Tufted perennial, 170–630 mm high; rhizomatous. **Leaf blade** 90–360 × 2 mm, almost always overtopping inflorescence; ligule a fringe of hairs. **Inflorescence** a panicle, dense, compact, rarely interrupted; spikelets solitary, pedicelled. **Spikelets** 2.7–4.0 mm long, laterally compressed, disarticulating above glumes; glumes 1-nerved; lower glume shorter than spikelet; upper glume longer than spikelet; glumes and lemmas very densely hairy,

dark purple to black, apices acuminate to awned. **Florets** 2–6; lower florets bisexual; lemma entire, 3-nerved, mucro present or absent; anther 0.7–1.0 mm long. **Flowering time** Feb.–May. Open veld, mostly sourveld, in fertile soil and wet areas, at fairly high altitudes; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Kokstad District, Thembuland, Port Edward and Pirie).

conrathii Hack.

Tufted perennial, 100–410 mm high; rhizomatous. **Leaf blade** 30–100 mm long, rarely overtopping inflorescence; ligule a fringe of hairs. **Inflorescence** an open, interrupted panicle; spikelets solitary, pedicelled. **Spikelets** 1.7–3.0 mm long, laterally compressed, disarticulating above glumes; glumes 1-nerved; lower glume shorter than spikelet; upper glume longer than spikelet; glumes and lemmas hairy, light purple to yellow, apices acute to awned. **Florets** 2–6; lower florets bisexual; lemma entire, 3-nerved, mucro present or absent; anther 0.8–1.0 mm long. **Flowering time** Aug.–Dec. Damp or wet areas in mountain sourveld; Drakensberg Grassland, Sub-Escarpment Grassland, Indigenous Forests (Maclear District and Longwood Forest).

STIPA L.

Species ± 300, tropical and temperate regions of both hemispheres; ± 5 (3 naturalised) in sthn Afr., LIM, NW, G, M, FS, KZN, WC, EC.

dregeana Steud.

Tufted perennial, 0.8–1.2 m high; rhizomes short, knotty. **Leaf blade** up to 60 × 12 mm, flat; ligule an unfringed membrane. **Inflorescence** an open or contracted panicle, spikelets in upper half only or from near base. **Spikelets** 5–7 mm long (excluding awn); glumes equal, as long as to slightly longer than lemma. **Floret** 1; lemma smooth, becoming indurated, rounded on back, margins slightly overlapping or open; awn up to 20 mm long, straight or bent, column weakly twisted or not, shortly pilose to scabrid; callus short, obtuse; palea nerves conspicuous, hairy between nerves; acute, slightly shorter to as long as lemma; anther 3.2–4.0 mm long, not penicillate. **Flowering time** Aug.–May, most commonly in summer. Forests, in moist places; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Upper Karoo, Indian Ocean Coastal Belt, Lower Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Kokstad S to Queenstown, Graaff-Reinet, Elliot, Alice, Uitenhage and Humansdorp Districts).

STIPAGROSTIS Nees

Species ± 50, Africa, NW India and SW Asia; 29 in sthn Afr., widespread.

Only central awn plumose

ciliata (Desf.) De Winter

Tall bushman grass; *langbeenboesmangras* (A)

Densely or laxly tufted, 0.85–1.00 m high; sheaths hairy not woolly; culm nodes with long, stiff, spreading hairs; leaves mainly basal. **Leaf blade** up to 300 × 1.5 mm; ligule a fringe of hairs. **Inflorescence** a narrow or open panicle, branches flexuous; spikelets variable in size. **Spikelets** 6.5–12.0 mm long (excluding awn), straw-coloured, often purple at base, disarticulating above glumes; glumes equal to subequal, lower glume oblong to narrowly oblong, apex obtuse to truncate, firm. **Floret** 1; lemma indurated, articulation in middle of lemma; awns 3, column length variable; only central awn plumose, hairs usually silvery (occasionally golden); callus 2.0–2.5 mm long, with

pungent, naked point. **Flowering time** Aug.–Oct., Feb.–June. Coarse sandy soils especially in riverbeds or on gravel plains; Upper Karoo, Rainshadow Valley Karoo, Albany Thicket (Middelburg S to Steytlerville and Uitenhage).

obtusa (Delile) Nees

Kortbeenboesmangras (A)

Compact, densely tufted, up to 600 mm high; leaves basal. **Leaf blade** 10–250 mm long, up to 1 mm wide, curved, glabrous or with scattered long bulbous-based hairs; ligule a fringe of hairs. **Inflorescence** a contracted, interrupted, much-branched panicle; branches bearing spikelets to near base. **Spikelets** 11–12 mm long (excluding awn), disarticulating above glumes; glumes pallid, firm, with membranous apices and margins, glabrous, scabrid. **Floret** 1; lemma indurated, articulation between apex of lemma and base of column; awns 3, only central awn plumose, column length variable, scabrid to and at branching point of awns; callus 1.5 mm long, with a naked point varying from pungent to minutely bifid. **Flowering time** July–May. Mainly sandy soils in dry areas; Upper Karoo, Lower Karoo (Middelburg S to Beaufort West, Cradock and Jansenville District).

uniplumis (Licht.) De Winter

Silky bushman grass; *blinkaarboesmangras* (A)

Densely to laxly tufted perennial to subperennial, up to 900 mm high. **Leaf blade** up to 200 × 2 mm, setaceous; ligule a fringe of hairs. **Inflorescence** a narrow or effuse panicle; spikelets many. **Spikelets** 8–15 mm long (excluding awn), disarticulating above glumes; glumes glabrous. **Floret** 1; lemma indurated, articulation between apex of lemma and base of column; awns 3, only central awn plumose with hairs occurring up to $^1/_3$ above or down to branching point of awns, apex without hairs, column well developed; callus 0.5–1.2 mm long, with short hairs along entire length and long hairs at junction of lemma; callus has a pungent, naked point. **Flowering time** Dec.–May. Usually on sandy soils and disturbed areas and floodplains; Upper Karoo, Drakensberg Grassland (Bethulie District E to Qacha's Neck).

All 3 awns plumose

namaquensis (Nees) De Winter

River bushman grass; *steekriet boesmangras* (A)

Tufted, robust to slender, shrub or dwarf shrub, up to 2 m high; rhizomes long and strong; upper basal leaf sheaths appressed woolly-hairy; culm branches usually fascicled from nodes, rarely solitary. **Leaf blade** 60–100 mm long, setaceous, breaks off early, leaving sheaths and exposing upper part of internode, which is usually dark, giving it a characteristic banded appearance; ligule a fringe of hairs. **Inflorescence** an elongate, narrow, interrupted panicle; spikelets clustered. **Spikelets** 10–14 mm long (excluding awn), disarticulating above glumes; glumes straw-coloured; upper glume 10–14 mm long. **Floret** 1; lemma indurated, articulation at ± middle of lemma, awns 3, all awns plumose, a short, twisted beak present; callus 1.5 mm long, with naked, pungent point. **Flowering time** Feb.–May, July–Dec. Dry river courses, on loose gravelly soils, rarely on sand dunes; Upper Karoo, Lower Karoo (Middelburg S to Jansenville).

proxima (Steud.) De Winter

Tufted shrub or dwarf shrub, up to 600 mm high; long rhizomatous; culms and leaves with dense appressed hairs in grooves, hairs becoming more dense, longer and more obvious below nodes. **Leaf blade** up to 100 mm long (usually less), setaceous, rolled; ligule

a fringe of hairs. **Inflorescence** a narrow, branched panicle; densely hairy, hairs longer and thicker on swollen part just below spikelets. **Spikelets** 8–9 mm long (excluding awn), disarticulating above glumes; glumes firm, acute; upper glume 7–9 mm long. **Floret** 1; lemma indurated, articulation ± in middle of lemma; awns 3, all awns plumose down to branching point and just below on column; column short, stout; callus 1.5–2.0 mm long, narrow, with a very short pungent point. **Flowering time** Nov. Sandy soils in disturbed areas; Upper Karoo (Aliwal North District).

zeyheri (Nees) De Winter

Densely tufted, robust perennial, up to 900 mm high; rhizomes short and knotty. **Leaf blade** up to 500 mm long, setaceous, flaccid, often curling; ligule a fringe of hairs. **Inflorescence** a narrow, contracted to open and divaricate panicle. **Spikelets** up to 18 mm long (excluding awn), disarticulating above glumes; glumes glabrous to long-hairy, pallid then slightly darker at base or dark. **Floret** 1; lemma indurated, articulation between apex of lemma and base of column; awns 3, all awns plumose to branching point, excurrent into a long naked apex, hairs greyish, silvery, dirty-white to golden, column with long hairs below branching point of awns; callus 1.0–2.5 mm long, with a distinct, naked, pungent point. **Flowering time** Aug.–May. Sandy soils on limestone hills, rocky outcrops and disturbed areas such as old lands and recently burnt areas; coastal dunes; Upper Karoo, Mesic Highveld Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Lady Grey E to Mount Fletcher southwards, from Steynsburg to Kentani, Alexandra and Humansdorp Districts).

STREBLOCHAETE Pilg.

Species 1, tropical Africa, Réunion, Indonesia, Philippines, EC.

longiarista (A.Rich.) Pilg.

Loosely tufted perennial, 300–900 mm high. **Leaf blade** up to 250 × 3–11 mm, narrowed towards base; sheath tubular; ligule an unfringed membrane. **Inflorescence** an open panicle, ± secund; branches filiform, drooping, mostly solitary or paired, rather far apart on central axis. **Spikelets** 15–20 mm long, not noticeably compressed, awns from all florets intertwined so that spikelet falls as an unit; glumes unequal, shorter than spikelet. **Florets** 2–6, loosely arranged; lemma rounded on back, distinctly 7-nerved, shortly 2-lobed, awn up to 40 mm long, fine, twisted, geniculate; callus 2–3 mm long, sharp, with dense, short, white hairs; anther 1.4–2.0 mm long. **Flowering time** Apr., May. Open places in mountain forests; Sub-Escarpment Grassland, Drakensberg Grassland (Kokstad Region S to Somerset East, Keiskammahoek District and Amatole Mts).

STYPPEIOCHLOA De Winter

Species 2, mountainous areas of south and southeast tropical Africa; 1 in sthn Afr., M, S, FS, KZN, EC.

gynoglossa (Gooss.) De Winter

Mat-forming to tufted perennial, 100–700 mm high; lower sheaths split with age, forming a dense, hard, fibrous base. **Leaf blade** up to 100–400 × 1.2 mm; ligule a fringe of hairs. **Inflorescence** a scanty, contracted panicle; spikelets appressed to branches. **Spikelets** 5–7 mm long, laterally compressed; glumes unequal, shorter than spikelet, 1–3-nerved, central nerve produced into awn, 0.8–1.0 mm long. **Florets** 2–5; uppermost floret sterile or reduced; lemma 3–5(–7)-nerved, basally pubescent on margins, apex 3-lobed, lobes awnless, awned or mucronate; central awn 1.5–3.0 mm long, short-

er than body of lemma, straight; anther 1.5–2.0 mm long. **Flowering time** Sept.–Jan., even later to the north. Rock crevices and seepage areas over rocks; high rainfall areas (> 800 mm) at high altitudes; Drakensberg Grassland, Sub-Escarpment Grassland (Maclear S to Mthatha District).

TENAXIA N.P.Barker & H.P.Linder

Species 8, Himalayas, Ethiopia, Eritrea, sthn Afr.; higher and cooler mountains of Great Karoo, KZN, NC, WC, EC.
Previously classified in *Merxmuellera* and *Danthonia*.

disticha (Nees) N.P.Barker & H.P.Linder
[*Merxmuellera disticha* (Nees) Conert, *Rytidosperma distichum* (Nees) Cope]
Wiry danthonia; *koperdraaddanthonia* (A)

Tufted perennial, 150–700 mm high. **Leaf blade** up to 100–500 × 3.5 mm; ligule a fringe of hairs. **Inflorescence** a spike-like panicle, 20–100 mm long. **Spikelets** up to 18 mm long (including awns) laterally compressed; glumes ± equal, 9–20 mm long, 1–3-nerved. **Florets** 2(–5); lemma 10–15 mm long, fringed along margins with tufts of white hairs each side near base; lobes 7–9 mm long, attenuate into a long awn; central awn 10–16 mm long, geniculate, twisted at base. **Flowering time** Oct.–May. A variety of habitats, from coastal regions to high altitude montane bogs; in all bioregions, except Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Rainshadow Valley Karoo and Indigenous Forests (widespread from Burgersdorp E to Maclear District southwards, from Middelburg to Queenstown, Graaff-Reinet, Cathcart, Port Elizabeth, Grahamstown and Humansdorp).

guillarmodiea (Conert) N.P.Barker
(*Merxmuellera guillarmodiae* Conert)

Tufted perennial, 120–400(–700) mm high. **Leaf blade** 200–400 × 0.4–0.6 mm; ligule a fringe of hairs. **Inflorescence** an interrupted panicle, 40–90 mm long. **Spikelets** 12–15 mm long (including awns), laterally compressed; glumes ± equal, 9–14 mm long, 3–5-nerved. **Florets** 3 or 4(5); lemmas 6–7 mm long, with 4 or more, sometimes indistinct, tufts of white hairs along each margin near base, rest of lemma surface varying in pubescence from quite dense and basal to almost glabrous with a few hairs each side of central nerve; lobes 3 mm long, adnate to central awn for most of their length, terminating in a short awn; central awn 5–11 mm long, twisted at base. **Flowering time** Nov.–Feb. Grassland and rocky areas, the alpine form is associated with moist habitats, alt. > 2 000 m; Drakensberg Grassland (Lady Grey District).

stricta (Schrad.) N.P.Barker & H.P.Linder
[*Merxmuellera stricta* (Schrad.) Conert]

Tufted perennial, 300–800 mm high. **Leaf blade** up to 100–450 × 0.5 mm; ligule a fringe of hairs. **Inflorescence** a loosely contracted, interrupted panicle, 30–130 mm long. **Spikelets** up to 23 mm long (including awns), laterally compressed; glumes ± equal, 11–22 mm long, 3–7-nerved. **Florets** 5–7; lemma 6–9 mm long, backs with 4, sometimes more, occasionally indistinct tufts of white hairs along each margin near base; lobes 3.5–5.5 mm long, awned; central awn 6–12(–17) mm long, twisted at base. **Flowering time** Aug.–Mar. A variety of habitats; Drakensberg Grassland, Sub-Escarpment Grassland, Upper Karoo, Albany Thicket, Eastern Fynbos-Renosterveld (Matatiele S to Barkly Pass, Maclear District, Cradock, Joubertina District, Uitenhage and Grahamstown).

TETRACHNE Nees

Species 1, sthn Afr. and Pakistan, FS, L, NC, WC, EC.

dregei Nees

South African cocksfoot, robies cocksfoot; *kropaargras* (A)

Rhizomatous, tufted perennial, 320–860 mm high; base robust or woody. **Leaf blade** 50–125 × 1 mm, curly; ligule a fringe of hairs. **Inflorescence** of > 4 dense, secund, stout, spike-like racemes, 10–40 mm long, ± their own length apart, mostly scattered on a central axis, usually appressed to axis. **Spikelets** 4–6 mm long, laterally compressed; glumes ± equal, shorter than spikelet, 1-nerved, usually light to dark grey. **Florets** 5 or 6; lowest 2 florets reduced to lemmas; bisexual lemma 5-nerved, entire, keeled, hairy on keel, slightly winged, apex and margins also often flushed grey; awned or mucronate; anther 1.5–2.0 mm long. **Flowering time** Nov.–Mar. Sandy soil on riverbanks, rocky outcrops or mountain slopes, alt. > 1 250 m; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland (Oviston District E to Aliwal North District and Kraai River southwards, from Middelburg to Molteno, Queenstown and Cathcart Districts).

THAMNOCALAMUS Munro

Species ± 6, E Asia, Africa; 1 in sthn Afr., FS, KZN, L, EC.

tessellatus (Nees) Soderstr. & R.P.Ellis

Drakensberg bamboo; *bergbamboes* (A)

Loosely tufted bamboo, 1–5 m high; growth habit sympodial with each new rhizome becoming a culm; rhizome stout, woody; culm up to 20 mm in diam., profusely branched above, dark maroon when young. **Leaf blade** 50–150 × 8–15 mm, stiff, narrowly lanceolate, tapering to an acuminate apex forming a hard point, strongly cross-veined (therefore the specific name *tessellatus*). **Inflorescence** compound, of several racemes, each of 3–5 spikelets subtended by a bract, these gathered into a fascicle and partly enveloped by a spathe; lowermost spikelet sessile. **Spikelet** 16–18 mm long, with tessellate venation; glumes 9.9–15.0 mm long, ± equal; lower glume shorter than upper, acute; upper glume pointed. **Florets** 1–several, bisexual; lemma 10- or 11-nerved, awnless or awned; palea 10.0–12.5 mm long; anther 7.8–8.0 mm long. **Flowering** in local populations after many years, followed by death (herbarium records seen by Soderstrom and Ellis (1982) show flowering in 1908 and 1953). Mountainsides, in wet places and sheltered ravines, alt. 1 600–2 700 m; Drakensberg Grassland, Sub-Escarpment Grassland (Barkly East S to Maclear District, Lady Frere and Victoria District).

THEMEDA Forssk.

Species 18, tropical and subtropical regions of Old World, but mainly in Asia; 1 in sthn Afr., widespread and very variable.

triandra Forssk.

Angle grass; *rooigras* (A); *seboko* (SS); *insinde* (Z)

Rhizomatous perennial, 0.3–1.5 m high. **Leaf blade** up to 300 × 1–8 mm, sheath compressed; apices abruptly or gradually tapering; ligule a lacerated, unfringed membrane. **Inflorescence** a leafy, false panicle of densely packed racemes in fan-shaped clusters enclosed in spatheoles and spathes; racemes very short, composed of a single, awned

sessile spikelet and 2 pedicelled spikelets, the whole enclosed by an involucre of 4 sterile spikelets; internodes and pedicels linear, homogamous spikelets all sessile. **Sessile spikelet** 5–7 mm long; awn 25–70 mm long, stout, geniculate; anther 3.5–4.0 mm long. **Pedicelled spikelet** equalling sessile to somewhat longer, up to 8.5 mm long. **Flowering time** Sept.–June. Undisturbed veld, resistant to fire and increases in veld regularly unless veld is overgrazed; in all bioregions (widespread from Colesberg E to Kokstad District southwards, from Middelburg to Port St Johns, Graaff-Reinet, Kentani, Willowmore and Humansdorp District).

THINOPYRUM A.Löve

Species ± 5, coasts of Europe; 1 in sthn Afr., WC, EC.

distichum (Thunb.) A.Löve

Coastal wheat grass; *strandkoringgras* (A)

Hard, robust perennial, 400–600(–900) mm high; stoloniferous, underground parts thick and creeping; profusely rooting at nodes; culms often branched below with tufts of leaves from nodes. **Leaf blade** 200–400(–500) × 5–7 mm; flat at first, rolled later, rigid, sharp-pointed; ligule an unfringed membrane. **Inflorescence** a true spike, 60–250 mm long, spikelets arranged alternately, appressed to rachis, not secund, solitary, sessile to subsessile; rachis disarticulating, spikelets falling with internode below. **Spikelet** (15)28–40 mm long, hard, smooth, falling with glumes, laterally compressed, awnless; glumes ± equal, shorter than spikelet. **Florets** 5–11; lowest florets bisexual; lemma similar in texture to glumes, glabrous, 5-nerved, usually 3-toothed, awned; awn minute, straight; anther 6.0–7.0 mm long. **Flowering time** Oct.–Jan. On coastal sand dunes, usually in areas exposed to sea winds and salt spray; can also tolerate inundation by spring tides; Drakensberg Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Dohne E to Kei River Mouth southwards, from Port Alfred to Humansdorp District).

TRACHYPOGON Nees

Species ± 3–13, Africa, Madagascar and tropical America; 1 in sthn Afr., widespread.

spicatus (L.f.) Kuntze

Giant spear grass; *reuse pylgras* (A); *selokana* (SS); *isitshube* (Z)

Tufted perennial, 0.3–1.2 m high; rhizomatous; culm nodes appressed white-hairy. **Leaf blade** 50–200 × 5 mm, becomes hard as it ages; ligule an unfringed membrane, splitting into 3 lobes. **Inflorescence** a single, spike-like raceme, rarely digitate and up to 5 racemes, velvety awns throughout its length; spikelets paired, unequally pedicelled: one subsessile, the other long-pedicelled, dissimilar. **Subsessile spikelet** 6–8 mm long; awnless. **Long-pedicellate spikelet** 8–13 mm long; upper lemma awn 40–100 mm long, hairy, twisted, hygroscopic; callus white-hairy; anther 5.0–5.5 mm long; at maturity awned spikelets fall off leaving only awnless spikelets arranged alternatively on either side of rachis. **Flowering time** Oct.–May. Bushveld and sourveld; Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Lady Grey E to Griqualand East southwards, from Seymour to Port Edward, Kentani, Grahamstown and Humansdorp districts).

TRAGUS Haller

Species 7, throughout tropics but mainly Africa; 4 in sthn Afr., widespread in disturbed areas.

berteronianus Schult.

Small carrot-seed grass, *kousklits* (A)

Loosely tufted annual, 50–600 mm high; sometimes rooting at nodes. **Leaf blade** 10–60 × 2–5 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** narrow, spike-like; spikelets clustered on peduncles much shorter than spikelets. **Lowest spikelet** in each cluster 2.0–3.8 mm long, dorsiventrally compressed, awnless; glumes unequal, dissimilar; lower glume reduced or usually absent; upper glume 5-nerved, spaces between nerves 2–5× wider in middle and tapering sharply at ends, nerves formed into prominent ribs bearing bulbous-based hooked spines or prickles. **Floret** 1; anther 0.4–0.6 mm long. **Flowering time** all year, most commonly in summer. Ruderal weed in disturbed places; in all bioregions, except Mesic Highveld Grassland, Drakensberg Grassland, Indian Ocean Coastal Belt, Indigenous Forests (widespread from Colesberg District E to Aliwal North southwards, from Middelburg to Port St Johns District, Graaff-Reinet, Kentani, Willowmore, East London and Humansdorp).

koelerioides Asch.

Creeping carrot-seed grass; *kophaargras* (A)

Perennial, 120–650 mm high, rhizomatous and stoloniferous. **Leaf blade** 10–50(–80) × 3 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** narrow, spike-like; spikelets clustered on peduncles much shorter than spikelets. **Lowest spikelet** in each cluster 3.5–4.8 mm long, dorsiventrally compressed; glumes unequal, dissimilar; upper glume 5-nerved, nerves formed into prominent ribs bearing curved or straight bulbous-based spines or prickles, apices not hooked. **Floret** 1; anther 1.8–2.5 mm long. **Flowering time** Oct.–May. Open veld, on a variety of soil types; in all bioregions, except Indian Ocean Coastal Belt (Oviston E to Lady Grey southwards, from Middelburg to Queenstown, Graaff-Reinet, Alice, Steytlerville and Somerset East).

racemosus (L.) All.

Large carrot-seed grass; *klitsgras* (A)

Annual, 110–400 mm high, usually decumbent. **Leaf blade** 20–60 × 2–4 mm; ligule a fringed membrane or a fringe of hairs. **Inflorescence** loose, spike-like; spikelets clustered on peduncles much shorter than spikelets. **Lowest spikelet** in each cluster 3.5–5.0 mm long, dorsiventrally compressed; glumes unequal, dissimilar; upper glume 7-nerved, nerves formed into prominent ribs bearing hooked bulbous-based spines or prickles, spaces between nerves ± same width the entire length. **Floret** 1; anther 0.6–0.8 mm long. **Flowering time** Nov.–May. Ruderal weed in limestone and sandy soils, often in moist places and disturbed areas; Upper Karoo, Dry Highveld Grassland, Mesic Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Rainshadow Valley Karoo, Albany Thicket (Aliwal North E to Zastron southwards, from Steynsburg to Queenstown, Uniondale and Somerset East Districts).

TRIBOLIUM Desv.

Species ± 10, sthn Afr., NC, WC, EC.

Section *Tribolium*

Plants with hispid glumes, often with large, cushion-based hairs.

Species 5, revised by Linder and Davidse (1997) and cytogenetics done by Visser and Spies (1994); 1 in EC.

hispidum (Thunb.) Desv.

Tufted perennial, up to 400 mm high. **Leaf blade** up to 250 × 0.5–1.0 mm, usually glabrous on limestone and hairy elsewhere, hairs bulbous-based; ligule a fringed membrane to a fringe of hairs. **Inflorescence** a sparse, contracted panicle, 10–50(–70) mm long; ovate or linear. **Spikelets** up to 3–5 × 1.5 mm, not distichous, acute, laterally compressed, disarticulating above glumes; glumes usually longer than spikelet, acute to acuminate, awned, 5–7-nerved, scaberulous, densely pubescent with tubercled-based hairs. **Florets** 2 or 3(4); lemma acuminate, awned, 5–9-nerved, entire, back glabrous, rarely with sparsely scattered hairs, margins with tufts of long acute hairs 0.3–0.5 mm long; palea acute, pilose between keels, sometimes margins with long hairs; anther 1.5–2.0 mm long. **Flowering time** Aug.–Feb. Most widespread species found in a wide range of vegetation types with their matching soil types such as fynbos on oligotrophic soils derived from sandstone, renosterveld on heavier soils derived from shales and granites, valley bushveld on shaley soils in E; Upper Karoo, Drakensberg Grassland, Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg E to Barkly Pass southwards, from Cradock to Amatole Mts, Uniondale, Uitenhage and Humansdorp).

Section *Acutiflorae* N.C.Visser & Spies ex H.P.Linder & Davidse

Plants with stolons.

Species 7, previously described in or assigned to either *Tribolium*, *Schismus* or *Karroochloa*, these genera were all previously revised by Conert and Türpe (1969) or Linder and Davidse (1997); 4 in EC.

curvum (Nees) Verboom & H.P.Linder

[*Karroochloa curva* (Nees) Conert & Türpe]

Tufted, stoloniferous perennial, up to 400 mm high. **Leaf blade** up to 250 × 2 mm, flat or folded, blade and sheath usually glabrous, if pubescent, then never hispid; ligule a fringe of hairs. **Inflorescence** a panicle, 15–50 mm long. **Spikelets** ± 5–6 × 1.5 mm, laterally compressed; glumes ± equal, as long as spikelet, 3.5–6.0 mm long. **Florets** 3–6; lemma 2.5–3.5 mm long (including lobes), densely hairy with long hairs and a row of hairs in tufts across middle below awn insertion, margins not obviously fringed; lobes narrow, acute to acuminate, awned; central awn 4.0–5.5 mm long, twisted below; palea 2.2–2.5 mm long, glabrous or rarely pubescent between keels; callus short, 0.2 mm long, semi-circular; anther 1.5–1.8 mm long. **Flowering time** Oct.–May. In damp or shady habitats; Sub-Escarpment Grassland, Lower Karoo, Drakensberg Grassland, Indigenous Forests, Albany Thicket, Eastern Fynbos-Renosterveld (Queenstown S to Somerset East, King William's Town, Uitenhage and Humansdorp).

obliterum (Hemsl.) Renvoize

Prostrate or erect, tufted perennial, 100–350 mm high; stolons present or absent. **Leaf blade** up to 150 × 2 mm, glabrous; ligule a fringed membrane. **Inflorescence** a terminal, contracted panicle, 10–50 mm long, obovate or cylindrical, often partly enclosed in uppermost sheath. **Spikelets** up to (3.5–)4.0–5.0 × 2 mm, not distichous,

laterally compressed, disarticulating above glumes; glumes shorter than spikelet, acute, awnless, 5-nerved, entire, glabrous on back or with prickles restricted to nerves. **Florets** 3 or 4(–10); lemma acute or acuminate or mucronate, 5–9-nerved, entire, glabrous on back, hairs on margins only; hairs slender, acute; palea truncate, glabrous between keels, and margins sometimes with long hairs; anther 0.3–0.5 mm long. **Flowering time** Sept.–Dec. In well-drained habitats on gravelly soils often derived from silcrete; on disturbed areas such as cultivated fields and roadsides; Albany Thicket (Port Elizabeth).

obtusifolium (Nees) Renvoize

Tufted to spreading perennial, up to 300 mm high; stolons present or absent. **Leaf blade** up to 200 × 0.2–1.2 mm, glabrous, expanded or rolled; ligule a fringed membrane to a fringe of hairs. **Inflorescence** a terminal, contracted panicle, 20–60 mm long, ovate, obovate or cylindrical. **Spikelets** 3.0–5.2 × 1.5–2.0 mm, laterally compressed, disarticulating above glumes; glumes as long as spikelet, acute, 5-nerved, glabrous or scaberulous or hairy with long tubercled-based hairs. **Florets** 2 or 3(–6), not distichous; lemma acute to acuminate, 5–9-nerved, entire, back usually glabrous, hairs long 0.2–0.5 mm long, slender and acute and only on margins; palea truncate, glabrous or rarely pilose between keels and sometimes margins with long hairs; anther 0.8–2.0 mm long. **Flowering time** Sept.–Feb. Although rare, has a wide distribution and habitat range, preferring seasonally or perennially wet habitats such as seepages or fountains and water-logged coastal sands; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage, Port Elizabeth and Bathurst Districts).

purpureum (L.f.) Verboom & H.P.Linder
[*Karroochloa purpurea* (L.f.) Conert & Türpe]

Tufted perennial, up to 220 mm high; shortly rhizomatous; sparsely hispid. **Leaf blade** up to 40 × 1 mm, rolled, falcate; ligule a fringe of hairs. **Inflorescence** a panicle, 10–20 mm long. **Spikelets** up to 5–7 × 4 mm, laterally compressed; glumes ± equal, as long as spikelet, often tinged with dark purple around keels. **Florets** 3–6; lemma 3.0–3.5 mm long (including lobes), lobes rounded to acute, awnless; hairs 1.8–2.2 mm long, in tufts in a row across middle below awn insertion, near base and along margins, glabrous in between tufts; central awn 3–4 mm long, geniculate and twisted below; palea 2.8–3.2 mm long, sparsely pubescent between margins and keels, keels conspicuously ciliate, sometimes only on one side; anther 1.8–2.2 mm long. **Flowering time** July–May. In mountainous areas, in short grassland and roadsides; Mesic Highveld Grassland, Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Lower Karoo, Albany Thicket (Lady Grey and Ongeluksnek Districts S to Steynsburg, Queenstown, Dordrecht, Graaff-Reinet and Fort Beaufort Districts).

Section *Uniolae* N.C.Visser & Spies ex H.P.Linder & Davidse

Plants with secund, spicate inflorescences.

Species 2 (Linder & Davidse 1997); 1 in EC.

uniolae (L.f.) Renvoize

Tufted perennial, 100–700 mm high; occasionally rhizomatous; stolons absent. **Leaf blade** up to 100–300 × 3–5 mm, usually rolled or expanded, sickle-shaped towards apex, stiff, glabrous, if rarely hairy, then hairs simple; ligule a fringed membrane to a fringe of hairs. **Inflorescence** a terminal, spike-like panicle, 8–70 mm long, distichous or with a few basal branches, usually secund, partly enclosed or exserted from uppermost leaf.

Spikelets 4–10 × 4 mm, laterally compressed, disarticulating above glumes; glumes shorter than spikelet, acute or acuminate, 5-nerved, glabrous or sparsely pubescent with tubercle-based hairs. **Florets** 5–9; lemma obtuse to acute, 5–9-nerved, entire, pubescent with club-shaped hairs in rows between nerves on lower $^1/_4$ or $^1/_2$ of back, rarely glabrous; palea acute, glabrous or hairy between keels, with long marginal hairs; anther 1.6–3.1 mm long. **Flowering time** Sept.–Dec. Found in a number of vegetation types on well-drained soils derived from granite, sandstone, shales or limestone on disturbed areas such as roadsides and fields; appears to be stimulated by fire and may be very common after scrub-fires; Albany Thicket, Eastern Fynbos-Renosterveld (Tsitsikamma to Uitenhage, Port Elizabeth and Humansdorp Districts).

TRICHONEURA Andersson

Species 7, Africa, Arabian Peninsula, United States of America; ± 2 in sthn Afr., widespread.

grandiglumis (Nees) Ekman

Rolling grass; *waaigras* (A); *joang-ba-tsela* (SS)

Tufted perennial, 220–630 mm high; culms slender; leaves mostly basal. **Leaf blade** 30–200 × 3–7 mm; ligule an unfringed membrane. **Inflorescence** 70–320 mm long, broadly pyramidal; composed of a number of racemes scattered along a central axis; racemes usually longer than $^1/_2$ central axis, stiff, straight, often spreading horizontally; spikelets ± their length apart. **Spikelets** 5–14 mm long, often purplish, laterally compressed, wedge-shaped; glumes ± equal to unequal, slightly shorter to as long as spikelet, 5–14 mm long (including awn), 1-nerved, awn up to 2 mm long. **Florets** 3–many, bisexual; lemma 3.5–8.5 mm long, rounded on back, 3-nerved, hairy, conspicuously ciliate along lateral nerves, 2-lobed, lobes awnless; awned from sinus; central awn fine, bristle-like, shorter than body of lemma, straight; anther 0.7–0.8 mm long. **Flowering time** Nov.–Apr. **Caryopsis** 1.5–2.5 mm long, oblong. On sandy soils on hillsides or open floodplains and in bushveld, sometimes in disturbed areas; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna (Aliwal North E to Lady Grey southwards, from Queenstown to Komga).

TRICHOPTERYX Nees

Species 5, Africa and Madagascar; 1 in sthn Afr., N, LIM, M, S, KZN, EC.

dregeana Nees

Vleigras (A)

Trailing perennial, up to 900 mm high, grows in a tangled mass. **Leaf blade** up to 500 × 4 mm, spreading, reflexed, light green; ligule a fringe of hairs. **Inflorescence** an open panicle, up to 140 mm long; pedicels free, minutely scabrid. **Spikelets** 4–7 mm long, laterally to not noticeably compressed; glumes and lower lemma bright brown, apices transparent; glumes unequal. **Florets** 2; lower floret male or sterile; lemma 3-nerved, not keeled, awnless; upper floret bisexual; lemma with 2 conspicuous lateral tufts of white hairs; 2-lobed, lobes finely awned, awns 2–3 mm long; central awn slender, 4–7 mm long, bent or ± straight, basal part twisted, upper part hair-like; anther 0.6–1.4 mm long. **Flowering time** Dec.–May. Vleis and wet places, shady crevices among rocks on hillsides; Indian Ocean Coastal Belt (Mkambati Nature Reserve).

TRIRAPHIS R.Br.

Species 7, Africa and Arabian Peninsula, 1 in Australia; 5 in sthn Afr., widespread.

andropogonoides (Steud.) E.Phillips

Broom needle grass; *besemgras*, *perdegras* (A)

Erect perennial, 0.38–1.22 m high; tillers loosely grouped; rootstock very well developed; rhizome long creeping; base dark brown to reddish. **Leaf blade** 200–400 × 2–6 mm; ligule a fringe of long hairs. **Inflorescence** a ± dense panicle, 120–300 mm long, branches stiff. **Spikelets** 5–10(–15) mm long (excluding awns), laterally compressed; glumes unequal, 2.0–4.5 mm long; shorter than spikelet, 1-nerved. **Florets** 5–15; lemma 2.6–5.0 mm long (excluding awns), long-hairy along nerves, deeply 3-lobed, lobes awned; lateral awns shorter than central awn; central awn 1.0–2.5 mm long, shorter than lemma, slender, straight; anther 1.2–2.3 mm long. **Flowering time** Oct.–May. Well-drained soil on rocky slopes or in deep sand in open grassland; Dry Highveld Grassland, Mesic Highveld Grassland, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Aliwal North E to Lady Grey District southwards, from Bedford to Greater Addo Elephant National Park and Uitenhage).

TRISTACHYA Nees

Species ± 22, tropical and sthn Afr., Madagascar, tropical America; 6 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, WC, EC.

leucothrix Nees

Trident grass; *rooisaadgras* (A)

Tufted perennial, 150–900 mm high; basal leaf sheaths silky pubescent to fulvously tomentose or covered with dense brown hairs. **Leaf blade** 50–400 × 2–6 mm; ligule a fringe of hairs. **Inflorescence** a panicle of 1–7 triads; triads mimicking a single spikelet, nodding; pedicels connate. **Spikelets** 24–45 mm long (excluding awn), narrowly lanceolate, laterally to not noticeably compressed; glumes unequal; with many tubercle-based hairs, rarely hairs absent; glumes unequal, lower glume $^{3}/_{4}$ as long as spikelet, acuminate; upper glume almost as long as spikelet. **Florets** 2; lower floret male, lemma with many tubercle-based hairs, rarely hairs absent, awnless, 5–7-nerved; upper floret bisexual, lemma glabrous, rarely obscurely pubescent near apex, acuminate, lobes awnless or rarely awned; central awn 50–100 mm long, geniculate, twisted below, usually longer than body of lemma; callus pungent; anther 5.0–6.0 mm long. **Flowering time** Oct.–Mar. Marshy grassland, mountain sourveld and on hillsides; Dry Highveld Grassland, Drakensberg Grassland, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Zastron E to Oribi Gorge southwards, from Queenstown to Port Edward, Somerset East, Kentani, Port Elizabeth and Humansdorp).

Specimens without tubercle-based hairs on glumes and lemma are found in Port St Johns District.

URELYTRUM Hack.

Species 7, tropical Africa; 1 in sthn Afr., N, B, LIM, NW, G, M, FS, KZN, NC, EC.

agropyroides (Hack.) Hack.

Centipede grass, quinine grass; *kinagras*, *varkstertgras* (A)

Coarse, hard, tufted perennial, 0.6–1.6 m high; bitter tasting. **Leaf blade** linear; auricles present; ligule an unfringed membrane. **Inflorescence** a spike-like, rigid raceme,

rarely subdigitate with 2 or 3 racemes, cylindrical or slightly flattened, obliquely jointed, disarticulating easily, scabrid to densely hairy; internodes stout, clavate, apex crateriform with lobed scarious rim; pedicels free of rachis; spikelets in pairs: one sessile, the other pedicelled. **Sessile spikelet** 7–8 mm long, dorsiventrally compressed; awnless; glumes ± equal, dissimilar; lower glume flattened on back, 2-keeled towards apex, wingless; upper glume boat-shaped, keeled. **Florets** 2; lower floret male, lemma hyaline, 2-nerved; upper floret bisexual, lemma less firm than glumes, entire; callus oblique, hairy, inserted into top of internode. **Pedicellate spikelet** smaller; lower glume awn 30–120 mm long (rarely awnless), rough, curved, flattened on lower part and characteristically curled at maturity so that inflorescence resembles bones of a fish. **Flowering time** Oct.–June. Open grassland and stony hillsides; Indian Ocean Coastal Belt (Mkambati Nature Reserve and Port Edward).

UROCHLOA P.Beauv.

Species ± 12; 6 in sthn Afr., widespread.

panicoides P.Beauv.

Garden urochloa, annual signal grass; *beesgras* (A); *bore-ba-ntja* (SS)

Tufted erect or prostrate annual, 100–900 mm high; often spreading cartwheel-like. **Leaf blade** 20–250 × 5–18 mm; ligule a fringed membrane to a fringe of hairs. **Inflorescence** of 2–7(–10), secund racemes, 10–90 mm long, scattered alternately on a central axis. **Spikelets** (2.5–)3.5–4.5(–5.5) mm long, dorsiventrally compressed, elliptic; glumes unequal, dissimilar; lower glume $< {}^{1}/_{2}$ as long as spikelet (rarely longer), apex broadly rounded or truncate, 3–5-nerved; upper glume 9-nerved, cross-veins often present, glabrous or pubescent. **Florets** 2; lower floret male or sterile, lemma sometimes with a fringe of stiff hairs near margins; upper floret bisexual, lemma indurated, rugulose, entire, awn 0.3–1.0 mm long, shorter than spikelet; anther 0.9–2.0 mm long. **Flowering time** Oct.–May. Prefers clay soils, in damp areas but even on hard bare ground; weedy, found in disturbed or overgrazed places, gardens and cultivated land; in all bioregions, except Mesic Highveld Grassland, Rainshadow Valley Karoo, Indigenous Forests (Aliwal District E to Griqualand East southwards, from Middelburg to Queenstown, Msikaba River Valley, Graaff-Reinet, Elliotdale, Patensie, East London and Humansdorp).

***VULPIA** C.C.Gmel.

Species ± 23, temperate regions, mostly Mediterranean; 4 naturalised in sthn Afr., M, FS, KZN, L, NC, WC, EC.

bromoides (L.) Gray

Squirrel's tail fescue

Loosely tufted annual, 50–600 mm high; culm solitary or many. **Leaf blade** 100–200 × 0.5–3.0 mm; ligule an unfringed membrane. **Inflorescence** a spike-like panicle, 20–120 × 15 mm, well exserted from uppermost leaf sheath; spikelets often almost perpendicular to central axis. **Spikelets** 7–14 × 2.1–3.5 mm (excluding awns), green or purple, laterally compressed; glumes unequal, shorter than spikelet, rounded on back; lower glume ${}^{1}/_{2}$–${}^{3}/_{4}$ as long as upper glume, without nerve or 1-nerved, linear-lanceolate; upper glume 3–10 mm long, acute or shortly awned, subulate-lanceolate, 3-nerved. **Florets** 3–10; lemma back rounded, scabrid, tipped with a scaberulous awn up to 12 mm long, as long as to longer than body of lemma; callus rounded; anther 0.3–0.6 mm long; ovary apex glabrous. **Flowering time** Aug.–Jan. In weedy and disturbed rocky places

such as roadsides and along streams; Mesic Highveld Grassland, Drakensberg Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Barkly East S to Naude's Neck, Tarkastad, Stutterheim, Uitenhage and Grahamstown).

muralis (Kunth) Nees

Loosely tufted annual, 60–700 mm high; culm solitary. **Leaf blade** 1–3 mm wide; ligule an unfringed membrane. **Inflorescence** a spike-like panicle, 20–160 mm long, well exserted from uppermost leaf sheath; spikelets usually appressed to central axis. **Spikelets** 5–10 × 1.5–2.7 mm (excluding awns), laterally compressed; glumes unequal, shorter than spikelet, rounded on back; lower glume $^1/_4$–$^1/_2$ as long as upper, without nerve or 1-nerved; upper glume 3–10 mm long, acute. **Florets** 2–many, bisexual; lemma back rounded, finely 5-veined, awn 5–12 mm long, as long as to longer than body of lemma; callus rounded; anther 0.3–0.7 mm long. **Flowering time** Sept.–Dec. Generally in dry habitats on calcareous or limestone soils and in disturbed areas such as road verges; Drakensberg Grassland, Eastern Fynbos-Renosterveld (Barkly East, Naude's Neck and Bloukrans Pass).

myuros (L.) C.C.Gmel.

Rat's tail fescue; *langbaardswenkgras* (A)

Tufted annual, 50–700 mm high; culms usually densely fascicled. **Leaf blade** 20–150 × 0.5–3.0 mm; ligule an unfringed membrane. **Inflorescence** a spike-like panicle, 50–120 mm long, partially enclosed in uppermost leaf sheath; spikelets usually appressed to central axis. **Spikelets** 6–10 × 1.5–2.5 mm (excluding awns), green or purplish, laterally compressed; glumes unequal, shorter than spikelet, rounded on back; lower glume 0.5–2.0 mm long, usually scale-like but can be nearly $^1/_2$ as long as upper glume, without nerve or 1-nerved; upper glume 3–6 mm long, acute, 1–3-nerved. **Florets** 3–7; lemma back rounded, scabrid, awn up to 15 mm long, scaberulous, as long as to longer than body of lemma; callus rounded; anther 0.3–1.0 mm long; ovary apex glabrous. **Flowering time** Sept.–Nov. Disturbed places in wet or damp areas but extending also to more arid regions; Drakensberg Grassland, Upper Karoo, Sub-Escarpment Grassland, Dry Highveld Grassland, Albany Thicket (Naude's Neck S to Middelburg, Queenstown, Tarkastad, Uitenhage and Grahamstown District).

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PONTEDERIACEAE

(Order Commelinales)

Compiled by F.M. Nonyane & C.L. Bredenkamp

EICHHORNIA Kunth

Species 7, tropical America and Africa; 2 (1 naturalised) in sthn Afr., N, B, LIM, NW, G, M, KZN, WC, EC.

***crassipes** (Mart.) Solms

Water hyacinth; *waterhiasint* (A)

Perennial herb, hydrophyte, 0.2–0.5 m high; rooting in mud or free-floating, roots many, long and feathery in floating plants. **Leaves** dimorphous; aerial ones obovate, spathulate or lanceolate, emergent with swollen, long petioles, orbicular; submerged ones linear, with petioles sheathing stems, shortly stipulate. **Inflorescence** an 8-flowered showy spike, raised above leaves. **Perianth** blue or mauve, funnel-shaped; tube curved; lobes 6, subequal. **Stamens** dimorphous; lower 3 exserted, with glandular-hairy filaments. **Ovary** ovoid; ovules many; style in sthn Afr. plants 25 mm long, glandular-hairy; stigma globose, glandular-lamellate. **Flowering time** Dec.– Feb. **Fruit** a 3-locular capsule, splitting longitudinally, becoming mucilaginous and disintegrating in water when ripe; seed apomictic, rarely produced, terete, truncate, 12-ribbed, rarely germinating. Aquatic habitats; origin Amazon basin, declared weed (Category 1); Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Mthatha SW to Uitenhage, Port Elizabeth and Alicedale).

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POTAMOGETONACEAE

(= ZANNICHELLIACEAE)

(Order Alismatales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

1a Perianth present, composed of 1–6 free segments; stamens 3 or more; fresh water or marsh plants ..... **Potamogeton**

1b Perianth absent or cupular, stamens 1 or 2; fresh water or marine plants, submerged:

2a Distal leaves distichous, never pseudowhorled, with an attached sheathing base; fruit smooth or warty, never ridged; rhizome creeping, sympodial, well differentiated ..... **Althenia**

2b Distal leaves in pseudowhorls, basal leaf sheaths (or stipules) free from leaf; fruit with spiny or warty ridge or ridges; rhizome creeping, not well differentiated ..... **Zannichellia**

ALTHENIA F.Petit

Species 3, or 1 polymorphic species, Mediterranean Coast, Atlantic Coast of Morocco, Portugal, Spain, France, Asia Minor, central Siberia; 1 in sthn Afr., N, B, LIM, NW, G, FS, NC, WC, EC.

filiformis F.Petit

Annual herb, hydrophyte, height depending on depth of water; rhizome branched, slender, with a deciduous, lanceolate, amplexicaul scale from each node; roots simple, densely covered with long root-hairs; stem simple, filiform. **Leaves** filiform-setaceous, up to 50 mm long; sheaths membranous, forming a forked appendage above. **Male flowers** solitary, on pedicel elongating for up to 4–5 mm during anthesis so that anther is just exserted; perianth a small 3-toothed cup, with 1-thecous anther sessile or subsessile; pollen globose. **Female flowers** usually 3; (1–)3-carpellate; carpels stipitate, narrowly ovoid, unilocular; stigma saucer-shaped. **Flowering time** Oct.–? **Fruit** a stipitate, cylindrical, slightly oblique drupelet. In brackish pools near sea; Eastern Fynbos-Renosterveld (Port Elizabeth to Humansdorp).

POTAMOGETON L.

Species ± 100, subcosmopolitan; 7 in sthn Afr., widespread.

crispus L.

Curled pondweed; *krulblaarfonteinkruid* (A)

Perennial herb, hydrophyte, height depending on depth of water, with ramified rhizomes; stem slender, 4-angled. **Leaves** all submerged, sessile, linear-lanceolate, 30–90 × 80–150 mm; apices obtuse, apiculate, margins finely serrate, undulate, often reddish. **Peduncle** 25–70 mm long, slender, narrowed upwards, usually curved. **Inflorescence** a few-flowered spike. **Flowering time** Nov.–? **Fruit** a 2–4 mm long drupe, ovoid-acum-

inate, laterally compressed; dorsal keel pectinate; ventral keel ± straight; beak as long as fruit, falcate, tapered. Common in fresh water in summer rainfall areas; Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Port St Johns to Komga).

pectinatus L.

Fennel-leaved pondweed; *skedefonteinkruid* (A)

Perennial herb, hydrophyte, forming large colonies, height depending on depth of water; rhizome persistent, forming winter buds; stem freely branching, terete, slender. **Leaves** submerged, usually curved outwards above sheath, linear to filiform, 40–120 × 1–2 mm; often bunched above and spreading in a fan-shaped manner; stipules attached to lamina, forming a folded sheath; apices acute or rounded and apiculate. **Spikes** with lower flowers widely spaced at base. **Flowering time** Aug.–Apr. **Fruit** a yellowish brown drupe, convex, beak short. In brackish and fresh water; Upper Karoo, Sub-Escarpment Grassland, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket (Aliwal North SE to Jamestown and Gxara River, southwards from Willowmore to Peddie).

pusillus L.

Fine-leaved pondweed; *fonteingras* (A)

Annual, occasionally perennial herb, hydrophyte, height depending on depth of water; stem branching from near base, internodes equal in length, slightly striate and compressed. **Leaves** submerged, firm, translucent, linear, 20–40 × 1–2 mm, apices obtuse. **Spikes** axillary; flowers 2–4 per whorl. **Flowering time** Oct.–Mar. **Fruit** a pale olive-green, obovoid drupe; beak short, straight. In fresh water; Sub-Escarpment Grassland, Upper Karoo, Sub-Escarpment Savanna, Rainshadow Valley Karoo, Albany Thicket (Matatiele to Middelburg, Port St Johns, Cradock, Komga, Steytlerville and Grahamstown).

schweinfurthii A.W.Benn.

Broad-leaved pondweed; *breëblaarfonteinkruid* (A)

Perennial herb, hydrophyte, height depending on depth of water; stem erect, terete. **Leaves** submerged or occasionally the upper floating, sessile, linear-lanceolate, 100–200 × 10–20 mm; apices attenuate, margins smooth, finely undulate, midrib prominent. **Scapes** swollen. **Spikes** many-flowered.. **Flowering time** June–Oct. **Fruit** an ovoid drupe, smooth, ventral side fairly straight, dorsal rounded, beak short, occasionally with lateral keels. Common in rivers; Indian Ocean Coastal Belt, Albany Thicket (Lady Grey to Mntafufu River and Uitenhage).

thunbergii Cham. & Schltdl.

Floating pondweed; *drywende fonteinkruid* (A)

Perennial herb, hydrophyte, height depending on depth of water; rhizomes ramified, woody, usually orange-brown, terete; stems erect, usually simple. **Leaves** either submerged or floating or aerial in terrestrial plants; petioled, length varying with depth of water; submerged lamina linear to linear-lanceolate, tapering at base and apex; floating lamina elliptic to ovate, obtuse to rounded at base, apices rounded to acute; aerial leaves with midrib prominent below. **Scape** arcuate, swollen. **Spikes** 50–100 mm long, cylindrical, many-flowered. **Flowering time** Jan., Feb. **Fruit** a rounded drupe, compressed, green to brown, convex side 3-carinate, keels terminating in 3 basal knobs, sides looping inwards to ventral keel which is indented or straight. On mudbanks and in deep water; Upper Karoo, Albany Thicket (Aliwal North S to Port Elizabeth and Alexandria).

trichoides Cham. & Schltdl.

Annual, occasionally perennial herb, a dense hydrophyte, height depending on depth of water; rhizome poorly developed or absent; stem thin, grooved, branched. **Leaves** all submerged, linear to setaceous, 40 × 1 mm, translucent, spreading, apices acuminate, midrib prominent. **Spikes** small, often curved above; petals with long claws; carpel 1 or rarely more, with large peltate stigma. **Flowering time** Jan.–? **Fruit** an ovoid drupe, ventral side ± straight, beak short. In fresh water ponds; Albany Thicket, Sub-Escarpment Grassland (Grahamstown District).

ZANNICHELLIA L.

Species ± 6 or 1 polymorphic species, cosmopolitan, in brackish pans in arid areas and in estuaries and lagoons; 1 in sthn Afr., N, B, LIM, NW, G, FS, NC, WC, EC.

palustris L.

Annual, occasionally perennial herb, monoecious, hydrophyte, forming dense mats resembling fine grass, height depending on depth of water; rhizome thin, branching; stem erect. **Leaves** 1–3 per node, linear, 20–50 × 1–2 mm, tapering above; sheaths tubular, membranous. **Flowers** unisexual, aggregated in axils of leaf whorls, surrounded by sheaths. **Male flower** with solitary filaments up to 20 mm long; anthers 4–8 locular, with glandular apical knob and small pustule at base; pollen globular. **Female flowers** arranged in pseudo-umbel; carpel ovoid, stipitate; style tubular; stigma spathulate. **Flowering time** Nov.–May. In fresh or brackish water; Upper Karoo, Sub-Escarpment Grassland, Albany Thicket (Middelburg to Jamestown and Port Elizabeth).

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PRIONIACEAE see JUNCACEAE

RESTIONACEAE

(Order Poales)

Compiled by R.A. Lubke & C.L. Bredenkamp

Family almost exclusively limited to Old World and southern hemisphere, ± 48 genera and 460 species. Most genera occurring in southwestern Africa (± 11 endemic genera and 180 endemic species to Cape Region) and southwestern Australia; 1 species in Hainan, Vietnam and 1 in Chile. Individuals also occur in Madagascar, New Zealand and Malaysia.

A new generic classification of the African Restionaceae, tribe Restioneae (subfamily Restionoideae) based on the phylogeny and extensive morphological data has been proposed by Linder and Hardy (2010). Concerning genera in the Eastern Cape, *Platycaulos* and *Restio* are redelimited, while *Calopsis* and *Ischyrolepis* are reduced to synonymy under *Restio*.

1a Culms branched; leaf sheaths persistent, rarely caducous (dropping off):
2a Plants large, stout up to 1.5 or 3.0 m high, clumped or tufted, with many branches, culms round; inflorescences large with many spikelets:
3a Branches in whorls at nodes along culms:
4a Spikelets many, in a large spathe enclosing inflorescence at tip of culm; leaf sheaths caducous; fruit a nutlet..... **Elegia capensis**
4b Spikelets solitary at ends of many lateral short branches; leaf sheaths persistent; fruit a capsule .... **Rhodocoma capensis**
3b Branches solitary at nodes:
5a Culms hollow; male inflorescence large and branched with many spikelets; female with solitary terminal spikelets at end of each culm..... **Cannomois virgata**
5b Culms solid or with a small cavity; male and female inflorescences large, branched panicles with many spikelets ..... **Restio paniculatus**
2b Plants various, if tufted, not copiously branched and with bushy branches at nodes, or indistinctly branched; inflorescences not exceptionally large with many spikelets:
6a Culms ± flattened, especially at apex; persistent leaf sheaths green, often with a narrow upper margin and stout mucro ..... **Platycaulos**
6b Culms not flattened, usually round in cross section; leaf sheaths various:
7a Plants exceedingly tangled, rarely in tussocks, forming large cushions; leaf sheaths and spathes with apices extending as a persistent hair-like mucro or awn; spikelets 1–several, often very small (< 60 mm long)..... **Anthochortus**
7b Plants various, but not tangled or in large cushions; leaf sheaths and spathes various; spikelets various, often large and conspicuous:
8a Spikelet bracts papery, silvery and shiny; found on streambanks and wet seeps on mountain sandstone ..... **Hydrophilus**
8b Spikelet bracts various, not silvery and shiny; habitat various, not necessarily in moist areas:
9a Inflorescences at apex of culms with many spikelets, enclosed in a large caducous spathe, floral parts and bracts dark brown to black in colour; coastal plants on limestone or sands..... **Elegia microcarpa**
9b Inflorescences various with few to many spikelets, but not enclosed in a large spathe at tip of culm, floral parts and bracts tan or brown, not black in colour; plants of a variety of habitats:
10a Male inflorescence cone-like; fruit a shiny black nutlet ..... **Mastersiella**
10b Male inflorescence various, not cone-like; fruit a nut or capsule, not black and shiny:
11a Leaf sheaths bicoloured, upper $^1/_2$–$^1/_3$ usually membranous or transparent; male flowers not in spikelets ..... **Willdenowia**
11b Leaf sheaths not differentiated into parts; male flowers in spikelets:
12a Fruit an indehiscent nut, flattened on one side ..... **Cannomois**
12b Fruit a capsule..... **Restio**
1b Culms unbranched; leaf sheaths persistent or caducous:
13a Leaf sheaths mostly caducous; inflorescence at tip of culm, golden; spikelets many, enclosed in a large spathe ..... **Elegia**
13b Leaf sheaths persistent; inflorescence of various colours; spikelets not enclosed in a large spathe:
14a Male spikelets pendulous:
15a Male spikelets pendulous and bell-shaped; plants < 1 m high; upper $^1/_3$ of leaf sheaths similar in colour and texture to the lower $^2/_3$..... **Staberoha**
15b Male spikelet pendulous and oblong; plants mostly large, tufted and > 1 m high; upper $^1/_2$ of leaf sheaths membranous or papery and may become lacerated with age:
16a Ovary trilocular, styles 3; fruit a dehiscent capsule..... **Rhodocoma**
16b Ovary unilocular, style 1; fruit an indehiscent nut ..... **Thamnochortus**
14b Male spikelets erect:
17a Female ovary with a single style..... **Staberoha stokoei**
17b Female ovary with 2 or 3 styles:
18a Male spikelets with very spiky bracts, or male spikelets shiny, orbicular or rounded, compact with tightly appressed bracts; nut indehiscent, round..... **Hypodiscus**
18b Male spikelets with bracts bony and not spiky or male spikelets shiny and rounded; nut indehiscent, flattened on one side ..... **Cannomois**

ANTHOCHORTUS Nees

Species 7, sthn Afr., WC, 1 in EC.

ecklonii Nees

Plants tangled, forming large cushions, 0.2–0.4 m high. **Culms** branched, ridged and striate, green. **Leaf sheaths** persistent, green with brown stripes, apices extending as a persistent hair-like mucro or awn. **Inflorescences**: male and female ones of 1–several, small spikelets; spathes with persistent, hair-like awn. **Bracts** cartilaginous or membranous, apices with very short awn or absent. **Female perianth** not flattened, longer than ovary, persistent. **Ovary** unilocular with 2 free, plumose, white styles. **Flowering time** Oct.–Jan. **Fruit** a soft nutlet, indehiscent. Moist slopes of high mountains; alt. 700–1 300 m; Eastern Fynbos-Renosterveld (Winterhoek Mts, Cockscomb).

CANNOMOIS P.Beauv. ex Desv.

Species 13, sthn Afr., WC, 4 in EC.

1a Culms stout and branched, hollow; plants spreading to form an erect bamboo-like tussock; 2–3 m high; male inflorescence large and branched with many spikelets

virgata (Rottb.) Steud.

Bellreed; *assegaai*, *bergbamboes*, *besemriet*, *olifantsriet*, *perdehoef* (A)

Plants short and spreading to an erect, bamboo-like tussock, 2–3 m high; rhizomatous. **Culms** stout and branched, hollow. **Leaf sheaths** persistent, wrapped around culm. **Male inflorescences** large, branched with 21–500 small spikelets. **Female spikelets** solitary at tip of each culm, fat and spindle-shaped with acute apex, up to 30 mm long. **Flowering time** Sept.–May. Common along streams and wet mountain slopes; Eastern Fynbos-Renosterveld (Cape Mts through Suurberg to Grahamstown).

1b Culms unbranched, hollow or with a small cavity; plants clumped or tufted; < 2 m high; male inflorescence not large and branched
2a Plants 0.5–1.5 m high; culms stout, 2.0–5.5 mm in diam. at base; male inflorescence compound, 70–200 mm long; 21–500 small spikelets per culm

scirpoides (Kunth) Mast.

Kouga cannomois; *dekriet* (A)

Plants clumped or tufted, 0.5–1.5 m; shortly rhizomatous. **Culms** unbranched, smooth or finely rugulose, green. **Leaf sheaths** closely convolute, acuminate or acute, persistent, wrapped around culm. **Male inflorescences** compound, with 21–500 small spikelets per culm; spathes overtopping the spikelets but deciduous. **Female spikelets** 2–5 per culm; spathes longer than the spikelets, obscuring spikelet, persistent, coriaceous; bracts taller than flowers, bony or coriaceous, apical margin membranous, awned. **Ovary** unilocular; styles plumose, 2, bases free. **Flowering time** Mar.–Oct. **Fruit** an indehiscent nut. On well-drained soils on sandstone mountain slopes of arid environments, alt. 500–1 600 m; Eastern Fynbos-Renosterveld (Uniondale to Kouga and Baviaanskloof Mts).

2b Plants up to 0.7 m high; culms more slender, 1.0–2.2 mm in diam. at base; male inflorescence simple, 10–100 mm long; with 2–20 or 11–100 spikelets per culm

nitida (Mast.) Pillans

Alpine cannomois

Plants tufted (tussocks often wider than high, often as cushions), 0.3–0.7 m high; rhizome short, culms hollow. **Culms** unbranched, hollow, smooth or finely rugulose, green. **Leaf**

sheaths closely convolute, apical margins coriaceous, hyaline shoulders absent, apex acute or obtuse. **Male inflorescences** simple with 2–20 spikelets per culm; spathes caducous, taller than spikelets; bracts 4–10 mm long with a distinct awn. **Female inflorescences** with 1 spikelet per culm; spathes shorter or as long as spikelets, persistent, cartilaginous; bracts bony, aristate, taller than flowers, erect or reflexed. **Ovary** unilocular; styles 2, plumose, white, bases free. **Flowering time** Sept. **Fruit** an indehiscent nut. An alpine species on sandstone; alt. 1 000–2 100 m; Eastern Fynbos-Renosterveld (Little Karoo to Willowmore District).

parviflora (Thunb.) Pillans

Common cannomois

Plants form large clumps, up to 0.6 m high; rhizomatous, forming long lines of culms, culms not solid, or cavity small. **Culms** unbranched. **Leaf sheaths** persistent, wrapped around culm. **Male inflorescences** simple, with 11–100 small spikelets per culm; spathes overtopping the spikelets, soon deciduous; bracts 2.0–3.5 mm long, awn minute or absent. **Female spikelets** 2–5 per culm; bracts bony and tightly curved into spindle-shaped spikelets. In dry sandy coastal sands or on mountains; alt. 100–1 300 m; Eastern Fynbos-Renosterveld (Uniondale to Willowmore District).

ELEGIA L.

Species 51, sthn Afr., WC, 13 in EC.

1a Culms branched; leaf sheaths persistent or caducous

capensis (Burm.f.) Schelpe

Horsetail restio; *besemriet*, *fonteinriet*, *kanet*, *katstert* (A)

Plants clumped, large, 1–3 m high; rhizomes branched. **Culms** branching or branches whorled at each node, round, smooth or striate; clusters of sterile branches present at nodes of fertile branches, giving a bushy appearance. **Leaf sheaths** > 1 per culm, caducous, flat and standing free from culm, mucro present. **Male inflorescences** with 501 or more spikelets; spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 51–100 spikelets; spathes longer than spikelets, caducous. **Ovary** unilocular; styles 3, white. **Flowering time** Oct.–Mar. **Fruit** an indehiscent nut. Common in seepages and along streams, forming large, dense stands, alt. 1–1 600 m; Eastern Fynbos-Renosterveld (from Joubertina District to Great Winterhoek Mts and Uitenhage).

microcarpa (Kunth) Moline & H.P.Linder

[= *Chondropetalum microcarpum* (Kunth) Pillans, *Elegia microcarpa* (Mast.) Moline & H.P.Linder**]**

Plants mat-forming, small, 0.1–0.3 m high; rhizomes long and slender. **Culms** branched, solitary at nodes, round or solid or with a small central cavity, smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** > 1 per culm, persistent, loosely convolute, with short erect mucro. **Male inflorescences** with 21–100 spikelets; spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 6–20 spikelets; spathes shorter than or as long as or longer than spikelets, persistent, cartilaginous. **Ovary** trilocular; styles 2, plumose, bases free. **Flowering time** Apr.–July. **Fruit** a dehiscent capsule. On coastal sands, common in dune-slacks, forming extensive carpets on limestone outcrops, alt. 5–50 m; Eastern Fynbos-Renosterveld (from Jeffreys Bay E to Blue Water Bay near Port Elizabeth and to Skoenmakerskop).

1b Culms unbranched; leaf sheaths mostly caducous (dropping off), occasionally persistent
2a Culms round in cross section and hollow; inflorescences almost square in outline; female flowers with 3 red styles

fistulosa Kunth

Plants tufted, 0.4–1.1 m high; without rhizomes or stolons. **Culms** unbranched, smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** > 1 per culm, persistent, loosely convolute, mucro small and erect. **Male inflorescences** with 50–500 spikelets or more; spathes persistent, taller than spikelets, cartilaginous. **Female inflorescences** with 6–50 spikelets; spathes longer than spikelets. **Ovary** unilocular; styles with bases free. **Flowering time** Apr.–Nov. **Fruit** an indehiscent nut; elaiosome absent.

On coastal sands, sandstone or granites, restricted to damp habitats, seeps and along stream margins, alt. 10–1 000 m; Eastern Fynbos-Renosterveld (Van Stadens River to Humansdorp).

2b Culms solid, rarely with small central cavity; inflorescences various; female flowers with white or pink styles
3a Culms flattened or compressed, or rarely round in cross section; leaf sheaths persistent or sometimes caducous, closely wrapped around culm; inflorescences short (< 85 mm long and up to 30 mm wide) and triangular-shaped, spathes hiding spikelets; flowering all year; in sandy soils of marshy areas.

asperiflora (Nees) Kunth

Plants clumped, mat-forming or tangled, 0.3–0.5 m high; rhizomes very short. **Culms** unbranched, round or compressed, solid or with a small central cavity; clusters of sterile branches absent. **Leaf sheaths** > 1 per culm, sometimes dropping off, with short erect mucro. **Male inflorescences** with 21–500 spikelets; spathes persistent, taller than spikelets, cartilaginous. **Female inflorescences** with 2–10 spikelets, spathes longer than spikelets, obscuring spikelet, cartilaginous. **Ovary** unilocular; styles 3, white. **Flowering time** Nov.–Mar. **Fruit** an indehiscent nut, triangular in cross section, brown; elaiosome absent. Common in seepages and damp habitats, alt. 5–1 700 m; Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld (Amatole Mts and Pirie S, from Swartberg Mts to Little Karoo and Langeberg).

3b Culms round in cross section; leaf sheaths mostly caducous, rarely persistent, loosely wrapped around culm; inflorescences usually longer and spathes often exposing spikelets; flowering seasonally; found in a variety of habitats
4a Plants large, tufted or clumped, 1–2 m high

equisetacea Mast.

Plants tufted, 1–2 m high; rhizomes and stolons absent. **Culms** unbranched or branches whorled at nodes; sterile branches often present at nodes in young plants. **Leaf sheaths** > 1 per culm with upper $^1/_3$ abruptly different in colour and texture from base and soon decaying; loosely convolute, margins entire, reddish brown with a few tan speckles. **Male inflorescences** with 50–500 or more spikelets; spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 6–50 spikelets; spathes longer and obscuring spikelets, persistent, cartilaginous. **Ovary** unilocular; styles 3, bases free. **Flowering time** Aug.–Oct. **Fruit** an indehiscent nut, ovary wall softer; elaiosome absent. Locally common in slight seepages and along streams, or on well-drained slopes, alt. 50–1 600 m; Eastern Fynbos-Renosterveld (Winterhoek Mts and Humansdorp).

thyrsifera (Rottb.) Pers.

Slanghoek elegia (A)

Plants large, clumped or tufted, 1–2 m high; rhizomes present. **Culms** unbranched, round (not compressed), solid or with small central cavity, smooth; sterile branches absent at nodes. **Leaf sheaths** > 1 per culm, caducous, loosely convolute, mucro absent or minute; upper $^{1}/_{3}$ similar in colour and texture to basal $^{2}/_{3}$. **Male inflorescences** with 50–500 or more spikelets, spathes caducous, as high as spikelets, chartaceous. **Female inflorescences** with 50–500 spikelets; bracts large 2–4.5 mm long, chartaceous, awn almost $^{1}/_{2}$ as long as bract; spathes longer than spikelets, caducous. **Ovary** unilocular; styles 3, white plumose, bases on a pillar. **Flowering time** Nov.–Jan. **Fruit** an indehiscent nut, triangular in cross section; elaiosome absent. Marshy habitats, along streams or in strong seepages, alt. 5–1 700 m; Eastern Fynbos-Renosterveld [Langeberg-Outeniqua Mts extending to Humansdorp (single record)].

thyrsoidea (Mast.) Pillans

Plants clumped, 1.0–1.5 m high; rhizomes spreading, unbranched. **Culms** unbranched, round (not compressed), solid or with a small central cavity, smooth or finely rugulose; sterile branches absent at nodes. **Leaf sheaths** > 1 per culm, caducous, loosely convolute; upper $^{1}/_{3}$ similar in colour and texture to the basal $^{2}/_{3}$. **Male inflorescences** with 50–500 spikelets, spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 6–20 spikelets; bracts small, 0.5–1.0 mm long, cartilaginous with a minute awn or awn absent; spathes longer than spikelets, persistent, cartilaginous. **Ovary** unilocular; styles 3, white and plumose, bases free. **Flowering time** Sept. **Fruit** an indehiscent nut, elliptical in cross section. Wet seaward-facing slopes, alt. 300–1 000 m; Eastern Fynbos-Renosterveld (Langeberg-Outeniqua Mts, extending to Storms River and Langkloof).

4b Plants tufted, clumped or mat-forming, mostly < 1 m high
5a Plants clumped or mat-forming, with spreading rhizomes; male spathes persistent or caducous
6a Plants small; culms up to 0.5 m high, slender, up to 1 mm in diam. at base

vaginulata Mast.

Plants mat-forming, 0.2–0.5 m high; rhizomes spreading, unbranched or sparsely branched. **Culms** unbranched, round (not compressed), solid or with a small central cavity, smooth or finely rugulose. Clusters of sterile branches absent. **Leaf sheaths** > 1 per culm, caducous, loosely convolute. **Male inflorescences** with 20–100 spikelets, spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 1–10 spikelets, spathes longer than spikelets, persistent, cartilaginous. **Ovary** unilocular; styles 3, white and plumose, bases free. **Flowering time** Oct.–Jan. **Fruit** an indehiscent nut. On coastal plains with impeded drainage, montane marshy areas, alt. 50–1 200 m; Eastern Fynbos-Renosterveld (Langeberg–Outeniqua Mts to Suurberg and Winterhoek Mts).

6b Plants larger and robust; culms 0.2–1.0 m high, thick, either 0.6–2.4 mm or 2–5 mm in diam. at base

juncea L.

Besemriet, *duineriet*, *vlerkiesriet* (A)

Plants clumped or mat-forming, 0.2–1.0 m high; rhizomes sparsely branched or unbranched. **Culms** 0.6–2.4 mm in diam. at base, unbranched, round (not compressed), solid or with small central cavity, smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** deciduous, loosely convolute, mucro minute or absent. **Inflores-**

cences oblong, spathes somewhat overlapping spikelets, often exposed. **Male inflorescences** with 21–500 spikelets, spathes persistent, taller than spikelets, cartilaginous. **Female inflorescences** with 11–50 spikelets; flowers 2.0–2.5 mm long, often > 10 flowers per node; spathes longer than spikelets, persistent. **Ovary** unilocular; styles 3, white and plumose, bases free. **Flowering time** Oct.–Feb. **Fruit** an indehiscent nut; elaiosome absent. On open slopes, in well-drained habitats and in slight seepages, alt. 0–1 750 m (mostly > 1 200 m); Drakensberg Grassland, Eastern Fynbos-Renosterveld (Stutterheim S, from Swartberg and Little Karoo to Langeberg and Outeniqua Mts and from Cockscomb Mts to Grahamstown).

racemosa (Poir.) Pers.

Rustling reed; *fluisterriet* (A)

Plants clumped, 0.4–1.0 m high; rhizomes unbranched. **Culms** 2–5 mm in diam. at base, unbranched, round (not compressed), solid or with small central cavity, smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** deciduous, loosely convolute, mucro minute. **Inflorescences** linear or tapering; spathes erect, overlapping and hiding spikelets. **Male inflorescences** with 50–500 spikelets, spathes persistent or caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 6–100 spikelets; flowers 3–4 mm long, often < 10 flowers per node; spathes longer than spikelets. **Ovary** unilocular, styles 2 or 3, white, pink or red, bases on a pillar. **Flowering time** Dec.–Feb. **Fruit** an indehiscent nut; elaiosome absent. Widespread on well-drained, sandstone slopes, alt. 100–1 800 m (mostly > 1 000 m); Eastern Fynbos-Renosterveld (Langkloof and Winterhoek Mts).

5b Plants tufted, rhizomes usually absent, if present very short and not spreading, male spathes always caducous
7a Leaf sheaths > 1 per culm, persistent, with no abscission line

filacea Mast.

Plants tufted, 0.2–0.8 m high; without rhizomes or stolons. **Culms** unbranched, round (not compressed), solid or with a small central cavity, smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** > 1 per culm, persistent, loosely convolute, mucro absent or minute. **Male inflorescences** with 21–500 spikelets, spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 2–20 spikelets, spathes longer than spikelets, **Ovary** unilocular; styles 3, bases free. **Flowering time** Oct.–Feb. **Fruit** an indehiscent nut; elaiosome absent. Wetlands, on montane sand plains, or on stony well-drained slopes, alt. 10–2 000 m; Eastern Fynbos-Renosterveld (Swartberg and Little Karoo, Langeberg and Outeniqua Mts to Humansdorp and Grahamstown).

7b Leaf sheaths deciduous or caducous, with an abscission line present

spathacea Mast.

Plants tufted, 0.3–0.8 m high; rhizomes and stolons absent. **Culms** unbranched, round (not compressed), smooth or finely rugulose; clusters of sterile branches absent. **Leaf sheaths** deciduous, loosely convolute, penicillate mucro absent or < 1.3 mm long. **Male inflorescences** with 50–500 or more spikelets, spikelets terete or angular; spathes caducous, taller than spikelets, cartilaginous. **Female inflorescences** with 11–20 spikelets, spathes persistent, longer than and obscuring spikelets. **Ovary** unilocular; styles 3, white and plumose, bases free. **Flowering time** Oct.–Feb. **Fruit** an indehiscent nut; elaiosome absent. Common on sandy plains, deeper soils and absent from rocky slopes, alt. 30–1 400 m; Eastern Fynbos-Renosterveld [Willowmore region (single record)].

tectorum (L.f.) Moline & H.P.Linder

Plants tufted, 0.5–1.0 m high; without rhizomes or stolons or with very short rhizomes. **Culms** unbranched, round, solid or with a small central cavity, smooth or finely rugulose. **Leaf sheaths** > 1 per culm, caducous, loosely convolute, with a penicillate mucro, 1.6–5.5 mm long. **Male inflorescences** with 21–500 spikelets, spikelets flattened; spathes caducous, taller than spikelets, cartilaginous. **Bracts** shorter than flowers. **Female inflorescences** with 20–500 spikelets, spathes longer than and not obscuring spikelets, caducous, cartilaginous. **Ovary** trilocular; styles 3, white and plumose, bases free. **Flowering time** Apr.–June. **Fruit** a dehiscent capsule with elliptical brown seeds. Very common in seasonally damp habitats on sandstone or coastal sand, alt. 10–600 m; Eastern Fynbos-Renosterveld [Clanwilliam to Port Elizabeth (Earn Cliff and Kraggakamma)].

HYDROPHILUS H.P.Linder

Species 1, sthn Afr., WC, EC.

rattrayi (Pillans) H.P.Linder

Plants forming tangled clumps, rhizomatous, often tangled with other plants. **Culms** sparsely branched. **Leaf sheaths** tightly wrapped around culms, persistent. **Inflorescences**: male and female ones with several white, papery spikelets per culm; spathes absent; bracts papery, silvery, shiny. **Female flowers**: inner tepals membranous, lateral ones keeled; ovary unilocular; styles 2, fused at base. **Flowering time** all year. **Fruit** a nutlet. On streambanks and wet seeps in sandstone, alt. 1 000–2 000 m; Drakensberg Grassland, Eastern Fynbos-Renosterveld (Hogsback and Amatole Mts S to Little Karoo Mts, Swartberg Mts and Blesberg).

HYPODISCUS Nees

Species 15, sthn Afr., NC, WC, 7 in EC.

1a Culms unbranched and striped or striate
2a Culms round in cross section

argenteus (Thunb.) Mast.

Plants clumped, 0.5–1.0 m high. **Culms** unbranched and striped, round in cross section. **Leaf sheaths** persistent, convolute. **Male inflorescences** 2–100 spikelets per culm, compound; spathes caducous, taller than spikelets. **Spikelets** erect on stiff pedicels or sessile, with 20–30 flowers; bracts silvery. **Female inflorescences** 1–5 spikelets per culm, compound; spathes longer than spikelets, persistent or caducous; spikelet sessile, reddish with 1 flower; perianth absent; ovary unilocular with 2 dark red plumose styles, free at base. **Flowering time** Mar.–Aug. **Fruit** an indehiscent round nut; elaiosome present. Well-drained, stony slopes, alt. 100–1 500 m; Eastern Fynbos-Renosterveld (Riversdale to Joubertina).

striatus (Kunth) Mast.

Plants in erect tussocks, 0.2–0.6 m high; rhizomatous. **Culms** simple, unbranched, striate, green or golden-speckled. **Leaf sheaths** persistent, closely convolute, apical margins coriaceous, hyaline shoulders absent. **Male inflorescences** 2–10 spikelets, spathes caducous, shorter than spikelets, cartilaginous; bracts as high as flowers, cartilaginous, brown. **Female inflorescences** with 1–5 spikelets, spathes shorter than spikelets, cartilaginous, persistent or caducous. **Spikelet** sessile, oblong or obovate, brown. **Ovary** uni-

locular; styles 2, plumose, white, free or fused at base forming a pillar. **Flowering time** Jan.–July. **Fruit** an indehiscent nut, nut cap and wall smooth. Widespread on arid fynbos margins, on bedrock sandstone, granites or silcretes, alt. 200–1 500 m; Eastern Fynbos-Renosterveld (Langeberg and Swartberg Mts eastwards to Willowmore, Joubertina, Baviaanskloof, Uitenhage, Elands River and Great Winterhoek Mts, and to Humansdorp).

2b Culms conspicuously flattened and may be spirally twisted

willdenowia (Nees) Mast.

Plants insignificant, spreading by long rhizomes. **Culms** forming long straight lines, or patchy, unbranched and striped, flattened and twisted, 0.2–0.5 m high. **Leaf sheaths** closely wrapped around culms, green, upper margin membranous, persistent. **Male and female inflorescences**: 1 spikelet per culm; spathes small. **Spikelets** spindle-shaped, with several flowers. **Bracts** longer than flowers. **Female perianth**: tepals membranous, longer than nut. **Ovary** unilocular; styles 2, plumose, joined at base. **Flowering time** May–Aug. **Fruit** a nut, overtopped by perianth; elaiosome present. Sandy, seasonally wet areas, alt. 0–1 200 m; Eastern Fynbos-Renosterveld, Albany Thicket (WC coastal plateau to Grahamstown and Kap River).

1b Culms unbranched, smooth
3a Culms flattened or round, hollow; male spikelets shiny, orbicular or rounded, compact with tightly appressed rounded or obtuse bracts

laevigatus (Kunth) H.P.Linder

Plants tufted, 0.3–1.0 m high; rhizomes present or absent. **Culms** unbranched, round, or compressed, distinctly hollow, smooth. **Leaf sheaths** persistent, closely convolute. **Male inflorescences** with 2–10 spikelets, compound. **Spikelets** erect on pedicels or sessile, orbicular. **Bracts** closely appressed, shiny; spathes persistent, taller than spikelets. **Female inflorescences** with 2–10 spikelets; spathes persistent, longer than spikelets. **Flowers** with chartaceous or membranous tepals. **Ovary** unilocular; styles 2, plumose, fused at base to form a pillar. **Flowering time** Feb.–May. **Fruit** an indehiscent nut; nut cap with several rows of ridges. Common on dry, hot, well-drained, stony slopes, alt. 100–1 500 m; Eastern Fynbos-Renosterveld (Swartberg and Little Karoo to Baviaanskloof and Great Winterhoek Mts, Kariega Catchment Basin).

3b Culms round in cross section, solid; male spikelets not rounded, acute or acuminate bracts open and spikelets often bristly and not shiny
4a Culms with single nodes and single leaf sheath at base or middle of culm

albo-aristatus (Nees) Mast.

Plants clumped, 0.3–0.5 m high; rhizomes short. **Culms** unbranched and smooth. **Leaf sheath** single at base or middle of culm, persistent. **Male and female inflorescences**: 2–10 spikelets per culm, compound; spathes persistent, shorter or longer than spikelets; bracts taller than flowers. **Male Spikelets** several-flowered. **Female spikelets** with single flower. **Ovary** unilocular; styles 2, plumose, free at base. **Flowering time** May–Sept. **Fruit** an indehiscent round nut, nut cap with 1–3 rows of teeth; elaiosome present. Well-drained, wet or dry mountain slopes, alt. 300–1 600 m; Eastern Fynbos-Renosterveld (Van Stadens Mts and Great Winterhoek Mtn to Port Elizabeth and Grahamstown, and to Humansdorp).

4b Culms with many nodes and leaf sheaths along the culm

aristatus (Thunb.) C.Krauss

Plants stout and tufted, from well-developed rhizomes, forming dark coloured tussocks, 0.3–1.2 mm high. **Culms** unbranched, smooth, 1–2 mm in diam. **Leaf sheaths** tightly wrapped around culms, persistent. **Male and female inflorescences**: 1–several spikelets per culm; spathes large, curved backwards. **Spikelets** compact, spiky, spindle-shaped; male many-flowered; female larger than male and with 1 terminal flower; having a bristly appearance when older. **Bracts** bony, acuminate, longer than flowers. **Female perianth** of membranous tepals. **Ovary** unilocular; styles 2, plumose, joined at base, projecting from top of spikelet. **Flowering time** Dec., Jan. **Fruit** a nut, smooth and shiny, dark brown to black; elaiosome pale green. Well-drained, sandy soil, alt. 0–1 500 m; Eastern Fynbos-Renosterveld (Kareedouw Mts, Humansdorp District, Baviaanskloof and Great Winterhoek Mts to Uitenhage and Port Elizabeth).

synchroolepsis (Steud.) Mast.

Plants in erect tussocks, 0.3–0.7 m high; rhizomes may be present. **Culms** simple, unbranched, smooth, 0.4–1.0 mm in diam. **Leaf sheath**s persistent, closely or loosely convolute. **Male inflorescences** with 2–10 bristly spikelets, compound; spathes persistent, as tall or taller than spikelets; bracts acuminate. **Female inflorescences** with 2–10 bristly spikelets, compound; spathes as long as or longer than spikelets, persistent, cartilaginous. **Ovary** unilocular with 2 white plumose styles fused at base to form a pillar. **Flowering time** Feb., Mar. **Fruit** an indehiscent nut, nut cap with several rows of ridges, wall smooth or tuberculate; elaiosome absent. Locally common on well-drained, stony slopes, alt. 500–1 600 m; Eastern Fynbos-Renosterveld (Swartberg and Little Karoo eastwards to Humansdorp, Hankey, Great Winterhoek Mts and Grahamstown).

MASTERSIELLA Gilg-Ben.

Species 3, sthn Afr., WC, 2 in EC.

Plants erect; culm bases purple, 1.2–2.8 mm in diam.; male bracts obtuse, acute or acuminate; inner female tepals highly reduced to 0.2–1.0 mm long; nut large, > 4 mm long

purpurea (Pillans) H.P.Linder

Plants tufted in neat erect tussocks, 0.5–1.5 m high. **Culms** branching or much branched, round. **Leaf sheaths** persistent, closely convolute. **Male inflorescences** with 2–10 spikelets, compound; spathes caducous, shorter than or as high as spikelets, spikelets spreading to somewhat reflexed. **Female inflorescences** with 2–10 spikelets; spathes persistent, shorter than or as long as spikelets, cartilaginous; tepals membranous and glabrous, as high as nut and wrapped around it, inner tepals linear or oblong. **Flowering time** Feb.–May. **Fruit** an indehiscent nut, nut cap and wall smooth. On lower slopes of mountains on well-drained soils with high summer rain, alt. 300–1 600 m; Eastern Fynbos-Renosterveld (Swartberg E of Blesberg, to Willowmore, Baviaanskloof, Great Winterhoek Mts and Witelsbos).

Plants decumbent, up to 0.6 m long; culm bases occasionally purple and 1.2–2.0 mm in diam.; male bracts rounded; outer female lateral tepals fully developed, 3–5 mm long; nut small, ≤ 4 mm long

spathulata (Pillans) H.P.Linder

Plants tufted with spreading culms, 0.2–0.6 m high; spreading rhizomes or stolons absent. **Culms** branching or much-branched, round or compressed near apex. **Leaf sheaths** persistent, closely convolute. **Male inflorescences** with 2–10 spikelets, spreading to

somewhat reflexed, compound; spathes caducous, shorter than or as high as spikelets. **Female inflorescences** with 1–5 spikelets, compound; female outer lateral tepals like other tepals, at least as high as nut, wrapped around it. **Flowering time** Sept.–Apr. **Fruit** an indehiscent nut, nut cap and wall smooth. Arid to mesic fynbos species on well-drained soils, sandstone on acid coastal sand, alt. 50–1 900 m; Drakensberg Grassland, Eastern Fynbos-Renosterveld (Naude's Neck to Amatole Mts S, from Kouga to Outeniqua, Baviaanskloof and Great Winterhoek Mts at Uitenhage).

PLATYCAULOS H.P.Linder

Species 12, sthn Afr., WC, 5 in EC.

1a Plants tufted; alpine species of the EC and KZN Drakensberg montane grassland

galpinii (Pillans) H.P.Linder & C.R.Hardy
(= *Restio galpinii* Pillans)

Plants 0.3–0.7 m high; stolons present. **Culms** branching, smooth or finely rugulose, green. **Leaf sheaths** closely convolute, persistent, apical margins narrowly membranous. **Male and female spikelets** 1 or 2–5 per culm, 5–12-flowered; spathes persistent, shorter than spikelets, coriaceous. **Female spikelets** oblong, in branched inflorescences, 10–20 mm long; bracts taller than flowers, margins ciliate. **Ovary** bilocular with 3 plumose styles, free to base. **Flowering time** July, Aug. **Fruit** a dehiscent capsule, with brown seeds. Grassy slopes on basalt rocks, montane grassland, alt. 2 100–2 750 m; Drakensberg Grassland, Sub-Escarpment Grassland (Naude's Neck Pass S, Maclear and Elliot Districts, Drakensberg Summit, Tsitsa footpath).

1b Plants of various habits; widespread fynbos species, not from northern regions
2a Plants small and tangled with stolons; culms compressed with narrow marginal ribs

anceps (Mast.) H.P.Linder

Plants tangled, 0.3–1.0 m high; with stolons. **Culms** branching, culms smooth or finely warty. **Leaf sheaths** persistent, closely convolute, green. **Male inflorescences** with 2–10 spikelets, compound. **Female inflorescences** with 1–10 spikelets; spikelet sessile, obovate, with 1 flower. **Ovary** unilocular. **Flowering time** Oct., Nov. **Fruit** a dehiscent capsule. On steep upper S-facing sandstone slopes, in seepages or on streambanks, alt. 450–1 500 m; Eastern Fynbos-Renosterveld (coastal Mts, Uniondale and Joubertina Districts, Outeniqua and Tsitsikamma Mts to Witelsbos Peak).

2b Plants stout and robust, clumped or tufted (not tangled); culms compressed, at least at apex but not ribbed
3a Male and female spikelets smaller, male spikelets up to 10 mm long and the female spikelets, usually < 25 mm (10–30 mm) long

callistachyus (Kunth) H.P.Linder

Plants clumped or tufted, 1.0–2.5 m high; rhizomes spreading, unbranched or sparsely branched. **Culms** branching, base 3.5–7.5 mm in diam., round in cross section, compressed near apex. **Leaf sheaths** persistent, closely convolute, green with hyaline shoulders, margins membranous, continuing behind straight awn. **Male inflorescences** with 2–10 spikelets, spathes persistent, shorter or as high as spikelets. **Female inflorescences** with 1 spikelet, spathes shorter than spikelets, persistent, coriaceous or cartilaginous, spikelets 10–25 mm long. **Ovary** bilocular with 3 plumose styles, free to base. **Flowering time** Mar., Apr. **Fruit** a dehiscent capsule; seeds white-ornamented. Deeper soils along streams, in rocky streambeds, alt. 30–1 800 m; Eastern Fynbos-Renosterveld (WC to Tsitsikamma Mts, Kareedouw, Assegaaibosch, Uitenhage, Port Elizabeth and to Humansdorp).

compressus (Rottb.) H.P.Linder

Steekriet (A)

Plants clumped, 0.8–1.0 m high; rhizome spreading, unbranched or sparsely branched. **Culms** branching, distinctly compressed, 1.4–3.0 mm in diam. at base, smooth or finely rugulose. **Leaf sheaths** persistent, closely convolute, green. **Male inflorescences** with 6–20 spikelets, compound. **Female inflorescences** with 1–10 spikelets; spikelet sessile, elliptical or obovate, with 3–10 flowers. **Ovary** bilocular. **Flowering time** Aug.–Nov. **Fruit** a dehiscent capsule. On sandstone in seeps and wet habitats or on streambanks, alt. 50–1 200 m; Eastern Fynbos-Renosterveld (Tsitsikamma to Witelsbos, Kareedouw Pass, Clarkson and Grahamstown, and to Humansdorp).

3b Male and female spikelets large, male spikelets up to 30 mm and female spikelets 25–45 mm long

major (Mast.) H.P.Linder

Plants tangled, rhizomes absent, up to 0.6 m high. **Culms** sparingly branched or branching, compressed or flattened, smooth or finely rugulose, green. **Leaf sheaths** persistent, green with a narrow upper margin and stout awn. **Male and female spikelets** several per culm, 1–many-flowered, spathes small. **Female spikelets** larger than male; perianth bony, lateral sepals keeled. **Ovary** 1- or 2-chambered with 3 plumose styles, free to base. **Flowering time** Mar. **Fruit** a dehiscent capsule, with white-ornamented seeds. Marshes, seeps on mountains and along permanent streams, alt. 150–1 500 m; Eastern Fynbos-Renosterveld (WC to Humansdorp).

RESTIO Rottb.

Species 159, common in southern WC to Zaire and Madagascar, KZN, NC, WC, 18 in EC.

1a Plants tufted, culms round, stout and bamboo-like, up to 3 m high; male and female inflorescences compound with many spikelets

paniculatus Rottb.
[= *Calopsis paniculata* (Rottb.) Desv.]

Seed koala; *besemgoed*, *besemriet*, *vleiriet* (A)

Plants tufted and stout, forming tussocks up to 3 m high; rhizomatous. **Culms** with lower parts bamboo-like, branched at nodes. **Leaf sheaths** persistent, closely convolute. **Male and female inflorescences**: compound, with many (50–500) spikelets on main branches. **Flowering time** May or June. Streamsides, marshy places, alt. 0–800 m; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Drakensberg Grassland, Eastern Fynbos-Renosterveld, Albany Thicket (Mjika to Kwadlambu River S, from Hogsback to Pirie Mts, Kouga Mts to Joubertina, Uitenhage, Port Elizabeth and Grahamstown).

1b Plants various, but if tufted, not bamboo-like, up to 1 m high; male and female inflorescences simple, spikelets few to many
2a Plants tufted or often prostrate with long spreading black shiny rhizomes; plants of coastal sand dunes

eleocharis Mast.
[= *Ischyrolepis eleocharis* (Mast.) H.P.Linder]

Katstertriet (A)

Plants tufted, often prostrate; rhizomes deep-seated, black and shiny. **Culms** much branched, with very fine warts, wrinkled or smooth, terminal branches straight or curved.

Leaf sheaths ± pointed, loosely wrapped around culms, persistent. **Male and female inflorescences**: 1 spikelet per culm; spathes absent. **Spikelets** compact, spindle-shaped; male with 1 or 2 flowers; female with 1 or 2(3) flowers. **Bracts** as tall as or taller than flowers, awned. **Ovary** unilocular; styles 2, joined at base to form a stylopodium. **Flowering time** most months. **Fruit** a dehiscent capsule. In stabilised sand dunes, mostly in Coastal Fynbos, alt. 0–50 m; Eastern Fynbos-Renosterveld, Albany Thicket (Gonubie Springs S, from Port Elizabeth to East London and from St Francis Bay to Skoenmakerskop).

2b Plants of various growth forms, but not with long black rhizomes, and of many habitats but seldom or rarely on sand dunes
3a Plants tufted or mat-forming, compact without rhizomes or stolons; fruit an indehiscent nut

andreaeanus (Pillans) H.P.Linder & C.R.Hardy [= *Leptocarpus andreaeanus* Pillans, *Calopsis andreaeana* (Pillans) H.P.Linder]

Plants tufted, 0.3–1.0 m high. **Culms** branched, smooth or finely rugulose. **Leaf sheaths** persistent, pale brown, upper margins membranous. **Inflorescences**: male and female ones of 2–10 small spikelets; spathes persistent, shorter than spikelets. **Male spikelets** erect; bracts cartilaginous, taller than flowers. **Female spikelets** sessile; bracts cartilaginous, taller than flowers. **Flowers**: tepals cartilaginous, keels of lateral sepals sparsely hairy. **Ovary** unilocular; styles 3, plumose, white or pink. **Flowering time** Mar.–May. **Fruit** an indehiscent nut. On well-drained sandstone, an arid zone species; alt. 500–1 500 m; margin of Eastern Fynbos-Renosterveld (Swartberg Mts, Blesberg, Willowmore, Antoniesberg and Witteberg Mts).

vimineus Rottb.

Plants tufted or mat-forming, straggly, untidy, 0.3–1.0 m high; rhizomes absent. **Culms** sparsely branched. **Leaf sheaths** persistent, flat and loosely wrapped around culm, pale brown, coriaceous, tip extended as an awn. **Male and female inflorescences** with 1–several spikelets per branch and small spathes. **Spikelets** with several flowers. **Bracts** cartilaginous, longer than flowers. **Ovary** unilocular; styles 3, plumose, free to base. **Flowering time** Apr.–Oct. **Fruit** an indehiscent nut. Found in various soils, alt. 50–1 400 m; Eastern Fynbos-Renosterveld (WC to Walmer, Port Elizabeth).

3b Plants various, with or without rhizomes or stolons; fruit a dehiscent capsule
4a Ovary 1- or 2-chambered and 2 styles basally fused with a persistent peg on the fruit (subgenus Ischyrolepis*)*
5a Plants tufted or clumped, without rhizomes or stolons
6a Plants small and slender, up to 650 mm high; culms slender, up to 1.5 mm in diam. at base; clusters of sterile branches at nodes on older culms

capensis (L.) H.P.Linder & C.R.Hardy [= *Schoenus capensis* L., *Ischyrolepis capensis* (L.) H.P.Linder, *Restio dichotomus* L., *Thamnochortus dichotomus* (L.) Spreng.]

Plants tufted, often prostrate, 150–650 mm high; rhizomes and stolons absent, mats of sterile growth at base. **Culms** branched, warty, often with sterile branches at nodes on older culms, 0.5–1.5 mm in diam. **Leaf sheaths** flat or loosely wrapped around culms, persistent. **Male and female inflorescences**: 1 or 2 spikelets per culm; spathes

absent. **Spikelets** compact, spiky, spindle-shaped, ± 10 mm long; male with 2–many flowers; female larger than male. **Bracts** with membranous margins and recurved awns. **Female perianth**: tepals bony, lateral sepals keeled. **Ovary** unilocular; styles 2, stylopodium present. **Flowering time** most months. **Fruit** a dehiscent capsule. Sandy, gravelly or shaly soils, alt. 0–1 500 m; Eastern Fynbos-Renosterveld (WC to Humansdorp District, Hankey, Port Elizabeth and Bushman's River).

triflora Rottb.
[= *Ischyrolepis triflora* (Rottb.) H.P.Linder]

Plants clumped or tufted, 0.25–0.50 m high; without spreading rhizomes or stolons. **Culms** branching, round, branch axil indumentum absent; solid or with a small central cavity, 0.6–1.4 mm in diam., roughly warty; clusters of sterile branches present at nodes of fertile branches. **Leaf sheaths** > 1 per culm, closely wrapped around culm. **Male inflorescences** with 2–10 slender, somewhat curved, acute spikelets; spathes persistent, shorter than spikelets, coriaceous or cartilaginous; bracts minutely awned or awn absent. **Female inflorescences** with 1–10 spikelets, sessile, narrowly elliptic, 5–25 mm long. **Ovary** unilocular; styles 2, plumose, white, stylopodium present. **Flowering time** Jan.–July. **Fruit** a dehiscent capsule; seed white, smooth. Southern mountains, soils gravelly, shaley or silcrete derived, associated with renosterbos, alt. 50–300 m; Eastern Fynbos-Renosterveld (WC to Port Elizabeth, Alicedale and Grahamstown).

6b Plants large and stout, up to 1 m high; culms stout, 1.8–4.0 mm in diam. at base; clusters of sterile branches at nodes of fertile branches absent

hystrix Mast.
[= *Ischyrolepis hystrix* (Mast.) H.P.Linder]

Virginia reeds

Plants tufted, 0.5–1.0 m high; spreading rhizomes absent. **Culms** branching, round, solid or with a small central cavity, smooth or finely rugulose, 1.8–4.0 mm in diam. **Leaf sheaths** closely convolute, > 1 per culm, persistent. **Male inflorescences** 2–50 spikelets per culm; spathes persistent, shorter than spikelets, cartilaginous. **Female inflorescences** 2–20 spikelets per culm; spathes shorter than spikelets, persistent, cartilaginous. **Spikelets** sessile or pedicellate, 7–25 mm long; several to many-flowered. **Bracts** taller than flowers, awn < $^1/_2$ length of bract body. **Ovary** unilocular; styles 2, plumose, white, pink or red, stylopodium present. **Flowering time** July–Sept. **Fruit** a dehiscent capsule. Southern mountains, well-drained soils, from stony, gravelly slopes to deeper, organic soils, alt. 300–1 900 m; Eastern Fynbos-Renosterveld [Western Cape to Kouga Mts near Smutsberg (single record)].

5b Plants mat-forming, tangled or clumped, with rhizomes or stolons
7a Species of alpine regions, alt. 1 000–3 000 m; plants often mat-forming or tangled

distractus Mast.
[= *Ischyrolepis distracta* (Mast.) H.P.Linder]

Plants mat-forming or tangled, 0.2–0.4 m high; stolons present, rhizomes absent. **Culms** branching, solid or with a small central cavity, finely warty, green; terminal parts of culms flexuose, axils of branches hairy. **Leaf sheaths** > 1 per culm, persistent, closely or loosely wrapped around culms. **Male inflorescences** with 2–10 spikelets per culm; spathes persistent, shorter than or as high as spikelets. **Female inflorescences**: spikelets (1)2–5, globose, 6–10 mm long; spathes shorter than spikelets, persistent, cori-

aceous or cartilaginous. **Ovary** unilocular; styles 2, plumose, white, stylopodium present. **Flowering time** Oct.–Dec. **Fruit** a dehiscent capsule. Alpine species, often dominant on rocks, shale-bands, pebbly sites or deep sandy plains, alt. 1 000–2 400 m; Dry High-veld Grassland, Drakensberg Grassland (Little Karoo to Graaff-Reinet District, Nardousberg and Hogsback).

schoenoides Kunth

[= *Ischyrolepis schoenoides* (Kunth) H.P.Linder]

Plants mat-forming, 150–450 mm high; stolons present. **Culms** branching, axils of branches glabrous; round (not compressed), solid or with a small central cavity; smooth or punctate. **Leaf sheaths** > 1 per culm, persistent, closely convolute. **Male inflorescences** with 2–20 spikelets; spathes persistent, like floral bracts or shorter than spikelets, coriaceous. **Female inflorescences** (1)2–5 spikelets; spathes shorter than spikelets, persistent; spikelets 10–18 mm long; bracts taller than flowers, awn < $^1/_2$ length of bract body. **Ovary** bilocular; styles 2, plumose, bases free. **Fruit** a dehiscent capsule; seeds brown. Near seeps, edges of small pools, or on shallow sandstone or basalt soils, mat-forming, montane grassland, alt. 1 500–3 000 m; Drakensberg Grassland, Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld (Drakensberg Mts, Kopshorn between Barkly East and Elliot E to Mkambati Nature Reserve and S to Antoniesberg).

7b Species not necessary alpine, alt. 0–1 500 m; plants may be mat-forming, but often tufted
8a Plants mat-forming, with stolons, sparingly branched; a rare species found in plains of river valleys, near streams or along streambeds

helenae Mast.

[= *Ischyrolepis helenae* (Mast.) H.P.Linder]

Plants mat-forming, 0.5–0.8 m high; stolons present. **Culms** sparingly branched, round (not compressed), solid or with a small central cavity; branch axils glabrous or hairy; clusters of sterile branches at nodes of fertile branches absent. **Leaf sheaths** > 1 per culm, persistent, closely convolute. **Male inflorescences** with 2–20 spikelets per culm; spathes persistent, shorter than spikelets, cartilaginous. **Female inflorescences** with 1–5 spikelets per culm; spathes shorter than spikelets, persistent, cartilaginous; spikelets sessile, 7–25 mm long; with several to many flowers. **Bracts** taller than flowers, awns minute or absent. **Ovary** unilocular with 2 plumose styles joined at base to form a stylopodium. **Flowering time** Feb.–Apr. **Fruit** a dehiscent capsule. Rare, found on sandy plains in river valleys at base of mountains and near streams, alt. 10–500 m; Eastern Fynbos-Renosterveld [WC to Langkloof, Humansdorp Region (single record)].

8b Plants tufted, straggly, or tangled, branched; common species found on stony or rocky drier lower slopes of mountains in arid fynbos or on sandy soils on well-drained rocky slopes

gaudichaudianus Kunth

[= *Ischyrolepis gaudichaudiana* (Kunth) H.P.Linder]

Plants tangled, without rhizomes, 0.3–1.2 m high; stolons present or absent. **Culms** much-branched, smooth, finely rugulose or finely warty. **Leaf sheaths** flat or loosely wrapped around culms, persistent. **Male and female inflorescences**: 1 or 2 spikelets per culm; spathes absent. **Spikelets** compact, 4–8 mm long (female spikelets small, ± 4 mm long), several to many-flowered. **Bracts** with minute awns or awns absent. **Ovary** unilocular; styles 2, stylopodium present. **Flowering time** most months. **Fruit** a dehiscent capsule. Drier, lower slopes of mountains, stony or rocky slopes in arid fynbos, alt. 200–1 200 m; Eastern Fynbos-Renosterveld, Albany Thicket (widespread in NC and WC, to Humansdorp, Somerset East and Alicedale).

sieberi Kunth
[= *Ischyrolepis sieberi* (Kunth) H.P.Linder]

Besemriet (A)

Plants tufted, straggly, very variable, up to 0.6 m high; with rhizomes, stolons absent or present. **Culms** sparsely branched, finely warty. **Leaf sheaths** tightly wrapped around culms, yellow speckled, with 2 transparent pointed shoulders, persistent. **Male and female inflorescences** with several spikelets per culm; spathes absent. **Male spikelets** cylindrical, thin, pointed at apex and slightly curved, with several flowers. **Female spikelets** spindle-shaped with several flowers, large, 6–20 mm long. **Bracts** with awn $< {}^{1}/_{2}$ length of bract body. **Perianth**: tepals hairy, outer lateral sepals keeled. **Ovary** bilocular; styles 2, stylopodium present. **Flowering time** most months. **Fruit** a dehiscent capsule, with ridged seeds. Sandy soils on well-drained, rocky slopes, dominant after fire, alt. 0–1 500 m; Eastern Fynbos-Renosterveld (widespread from NC and WC to Suurberg and Grahamstown).

4b Ovary 1–3-chambered and 3 styles, free to base (remainder of tribe Restioneae)
9a Plants stout and up to 1 m high; culms square in cross section, 1.5–3.5 mm in diam. at base; inflorescences complex and branching

tetragonus Thunb.

Plants clumped, with rhizomes, unbranched or sparsely branched, 0.5–1.0 m high. **Culms** branching or sparingly branched, square, smooth or finely warty, 1.5–3.5 mm in diam. at base. **Leaf sheaths** persistent, closely convolute, shoulders hyaline, margins membranous, continuing behind awn. **Male inflorescences** with 11–50 spikelets; spathes persistent, like the floral bracts, chartaceous or cartilaginous. **Female inflorescences** with 21–100 spikelets; spathes shorter than spikelets, persistent, coriaceous. **Spikelet**: pedicel simple or branching, 6–10 mm long. **Bracts** shorter than or as high as flowers. **Ovary** unilocular; styles 3, plumose, white, with bases free. **Flowering time** July, Aug. **Fruit** a capsule, sometimes dropping with seed. A lowland species found on richer soils, in seepages, damp hollows or near streams, alt. 50–300 m; Eastern Fynbos-Renosterveld, Albany Thicket (WC to Bedford and Port Elizabeth).

9b Plants more slender and often < 1 m high; culms round in cross section; inflorescences not large and complex
10a Culms roughly warty, often white-dotted (rough when scratched over by a finger nail); male spikelets often curved

scaberulus N.E.Br.

Plants clumped, 0.2–2.0 m high; rhizomes or stolons absent. **Culms** much branched from base or branches whorled at each node, finely or roughly warty. **Leaf sheaths** closely convolute, persistent, green to brown, apical margins narrowly membranous, with long hyaline shoulders that are not lacerated; mucro acute, erect, as long as body of sheath. **Inflorescence** with up to 5 spikelets per culm; spathes persistent, shorter than spikelets, coriaceous. **Female spikelets** 2–4 mm long. **Bracts** shorter or as high as flowers, margins shallowly lacerated or toothed. **Ovary** bilocular; styles 3, plumose, free to base. **Flowering time** Apr., May. **Fruit** a dehiscent capsule; seeds brown or white. Moist slopes, soils sandy, in sunlight or along stream margins in riverine forest, alt. 150–550 m; Eastern Fynbos-Renosterveld (Tsitsikamma and Langkloof Mts to Knysna, Joubertina and Witelsbos Peak).

triticeus Rottb.

Plants clumped or tufted, 0.2–0.5 m high; spreading rhizomes, stolons present or absent. **Culms** branching, roughly warty, often white-dotted, with clusters of sterile branches at base of plants. **Leaf sheaths** closely or loosely convolute, large hyaline shoulders present; membranous margins continuing behind straight and erect awn, decaying to give a lacerated appearance. **Male inflorescences** with 2–50 spikelets. **Female inflorescences** with 1–20 spikelets; spathes shorter than spikelets, persistent, coriaceous. **Spikelets** sessile, oblong, rounded or obtuse, 7–20 mm long. **Ovary** unilocular; styles 3, plumose, white, bases free. **Flowering time** Feb.–Apr. **Fruit** a dehiscent capsule. Common on lower, well-drained slopes and lowlands, stony or gravelly soils, coastal grassland or coastal fynbos, alt. 10–750 m; Eastern Fynbos-Renosterveld, Albany Thicket (Swartberg Mts eastwards to Willowmore, Tsitsikamma, Baviaanskloof, Suurberg, Uitenhage, Port Elizabeth and Grahamstown).

10b Culms smooth or finely warty but not white-dotted; male spikelets not curved
11a Plants mat-forming or isolated shoots; culms much-branched; female bracts as long as or shorter than flowers

sejunctus Mast.

Plants with underground, spreading stems resulting in a lawn-like growth, 0.2–0.6 m high. **Culms** smooth or finely warty. **Leaf sheaths** closely convolute or loosely convolute, persistent, apical margins narrowly membranous or broadly membranous, hyaline shoulders high, acute. **Male spikelets** 1–10 per culm, 5–12-flowered; spathes persistent, coriaceous. **Female spikelets** 1–5 per culm, sessile, 4.5–10.0 mm long. **Ovary** trilocular; styles 3, plumose, free to base. **Flowering time** Apr.–June. **Fruit** a dehiscent capsule, with brown seeds. Widespread on sandstone, common among rocks and in cool cliffs at higher altitudes, alt. 600–2 200 m; Sub-Escarpment Grassland, Albany Thicket, Drakensberg Grassland, Eastern Fynbos-Renosterveld (Mhlanfane Forest Station near Mthatha S, from Somerset East to Hogsback and from Great Winterhoek Mts to Suurberg Pass, Uitenhage and Grahamstown).

11b Plants tufted, with very short rhizomes or plants compact with single isolated shoots; culms unbranched or sparingly branched; female bracts longer than flowers or twice as long as flowers

strictus N.E.Br.

Plants tufted, 0.2–0.5 m high; rhizomes very short. **Culms** slender, 0.7–1.5 mm in diam. at base, unbranched or sparingly branched, smooth. **Leaf sheaths** closely convolute, brown, apical margins narrowly membranous, hyaline shoulders high, acute. **Inflorescences** with 1–5 spikelets. **Male inflorescences** with persistent spathes, like floral bracts but with awn longer, coriaceous; fertile bracts cartilaginous, upper margin membranous. **Female inflorescences** with spathes shorter than spikelets, persistent, coriaceous or membranous. **Spikelet** sessile, 10–20 mm long. **Ovary** bilocular; styles 3, plumose, bases free. **Flowering time** Sept. **Fruit** a dehiscent capsule; seeds grey. Well-drained, stony slopes or seeps with heavier soils, alt. 600–1 600 m; Eastern Fynbos-Renosterveld [WC, along inland margins of mountains to extreme east of Swartberg Mts (single record)].

[E]vallis-simius H.P.Linder

Plants single, isolated shoots, 0.5–1.0 m high; compact, without spreading rhizomes or stolons. **Culms** stout, 2.5–5.0 mm in diam. at base, branching, smooth, olivaceous. **Leaf sheaths** closely convolute, apical margins narrowly membranous, hyaline shoulders absent or membranous margins continuing behind awn. **Inflorescences** with 2–20

spikelets. **Male inflorescences** with sheath-like spathes; fertile bracts cartilaginous without membranous margins. **Female spikelet** sessile, 10–20 mm long. **Ovary** bilocular; styles 3, plumose, white, free to base. **Flowering time** May. **Fruit** a dehiscent capsule; seed smooth and shiny. Well-drained, S-facing slopes, alt. ± 1 000 m; Eastern Fynbos-Renosterveld [Baviaanskloof, Cockscomb (single record)].

RHODOCOMA Nees

Species 8, sthn Afr., WC, 5 in EC.

1a Plants huge, culms and tussocks up to 1.5 m or more high; culms 3–7 mm in diam. at base
2a Culms all with whorls of branches, all of which are fertile, up to 1.5 m high

capensis Nees ex Steud.

Plants bushy, in large clumps, up to 1.5 m high. **Culms** branched, with many short branches in whorls at nodes along the main culm. **Leaf sheaths** persistent, closely convolute dark brown, apical margins membranous, becoming lacerated. **Male and female spikelets** at tip of each upper branch, many-flowered. **Female flower** with trilocular ovary; styles 3, deep pink, free. **Flowering time** Sept.–Nov. **Fruit** a dehiscent capsule. Arid, inland margins of Cape Fold Mts, sandstone, quartzite, shale, or loamy soils of valley bottoms; along streams or in seeps, alt. 900–1 500 m; Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Aberdeen District S, from Blyde-, Aasvoël-and Smutsberg in Willowmore District to northern side of Baviaanskloof and Great Winterhoek Mts and from Greater Addo Elephant National Park to Uitenhage and Grahamstown).

2b Culms lacking whorls of fertile branches at nodes, 2–3 m high

gigantea (Kunth) H.P.Linder

Koala fern, mikado stems; *dekriet*, *olifantsriet* (A)

Plants tufted, 2–3 m high. **Culms** unbranched, smooth or finely rugulose; clusters of sterile branches at nodes of fertile branches. **Leaf sheaths** closely convolute, apical margins broadly chartaceous and soon decaying. **Male and female inflorescences**: many on branchlets on terminal nodes. **Male spikelets** pendulous on flexible pedicels. **Female spikelet** 5–7 mm long, 1-flowered and with 3–6 sterile bracts. **Ovary** trilocular; styles 3, white, plumose, free. **Flowering time** June, July. **Fruit** a capsule. Deeper sandstone, granite or shale soils, on wet coastal slopes of mountains, alt. 100–400 m; Eastern Fynbos-Renosterveld (coastal mountains from George to Port Elizabeth, and from Witelsbos to Humansdorp District).

1b Plants clumped or tufted, up to 0.5 or 0.8 m high; culms 0.5–2.0 mm in diam. at base
3a Spathes, large and showy, persistent, not frayed with age; alpine species, alt. 1 600–2 000 m; species found only in western part of EC

alpina H.P.Linder & Vlok

Plants clumped, rhizomes unbranched or sparsely branched, forming small patches, 0.3–0.5 m high. **Culms** unbranched, smooth or finely rugulose. **Leaf sheaths** persistent, closely wrapped around the culm, brown with yellow speckling, margins broadly chartaceous and becoming lacerated. **Male and female inflorescences**: 6–20 on branchlets on terminal nodes. **Spathes** persistent, as high as or taller than spikelets. **Bracts** papery. **Male spikelets** pendulous, spindle-shaped, erect when young. **Female spikelets** clustered at nodes, 1-flowered with 4 sterile bracts. **Flower** with cartilaginous perianth. **Ovary** trilocular; styles 3, plumose white or pink, free. **Flowering time** Jan., Feb.

Fruit a dehiscent capsule. Alpine species, on exposed summits, well-drained, stony soil, alt. 1 600–2 000 m; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Little Karoo and Swartberg Mts to western part of EC).

3b Spathes small, frayed with age; non-alpine species, found at alt. < 1 600 m

fruticosa (Thunb.) H.P.Linder

Kanet (A)

Plants in large clumps, up to 0.8 m high; spreading from rhizomes, forming patches of 0.3–1.0 m in diam. **Culms** unbranched, slender, 1–2 mm in diam. at base, blue-green. **Leaf sheaths** persistent, closely wrapped around the culm, upper half membranous, becoming lacerated. **Male and female inflorescences**: many on nodes of terminal branchlets. **Spathes** small, frayed with age. **Bracts** papery. **Male spikelets** pendulous, spindle-shaped, erect when young. **Female spikelets** clustered at nodes. **Flower** with cartilaginous perianth. **Ovary** trilocular; styles 3, plumose, free. **Flowering time** Apr.–July. **Fruit** a dehiscent capsule. Sandstone and lateritic soils, alt. 200–1 600 m; Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (KZN Drakensberg S to Graaff-Reinet, from Willowmore to Joubertina, Baviaanskloof to Great Winterhoek Mts, Suurberg to Grahamstown and to Witelsbos).

gracilis H.P.Linder & Vlok

Plants tufted, 500–700 m high; tufts 0.05–0.20 m in diam. at base. **Culms** very slender, 0.5–2.0 mm in diam. at base, rarely branching; smooth or finely rugulose. **Leaf sheaths** persistent, closely wrapped around the culm, upper margins broadly chartaceous and soon decaying. **Male and female inflorescences**: many on branchlets on terminal nodes. **Spathes** persistent, but frayed with age. **Bracts** papery. **Male spikelets** pendulous, erect when young. **Female spikelets** clustered at nodes. **Flower** with bony, glabrous and smooth perianth. **Ovary** trilocular; styles 3, plumose, free. **Flowering time** Mar.–June. **Fruit** a dehiscent capsule. Moist, sandstone or conglomerate loamy soils, on slight seepages, alt. 300–600 m; Eastern Fynbos-Renosterveld (Langeberg- and Outeniqua Mts, just into EC and Antoniesberg Mtn).

STABEROHA Kunth

Species 9, sthn Afr., WC, 2 in EC.

Plants from 0.25–0.50 m high; male spikelets pendulous, bell-shaped, with 20–40 flowers; female tepals winged with finely lacerated or lobed margins, wings as wide or wider than body; styles 2; widespread WC species

cernua (L.f.) T.Durand & Schinz

Plants tufted, 0.25–0.50 m high. **Culms** unbranched, round. **Leaf sheaths** persistent, closely convolute, margins entire, upper $^{1}/_{3}$ similar in colour and texture to lower $^{2}/_{3}$. **Male and female inflorescences**: 1–few spikelets on branchlets of terminal culms; spathes small with acuminate apex. **Bracts** hard. **Male spikelets** pendulous, bell-shaped. **Female spikelets** erect. **Flower** with lacerated, keeled or winged lateral sepals, wings as wide as body or wider than body. **Ovary** unilocular; styles 2, white, flattened, bases free. **Flowering time** any month. **Fruit** an indehiscent nutlet. On rocky soils, well-drained slopes, alt. 0–2 100 m; Eastern Fynbos-Renosterveld (WC, Swartberg and Kouga Mts, just into western part of EC).

Plants < 0.25 m high; male spikelets erect, with 10–15 flowers; female tepals keeled or winged, wings narrower than body, style 1; restricted to alpine areas in Swartberg Mts

stokoei Pillans

Plants tufted, 100–250 mm high. **Culms** unbranched, round. **Leaf sheaths** persistent, loosely convolute, margins entire, upper $^{1}/_{3}$ similar in colour and texture to the lower $^{2}/_{3}$. **Male and female inflorescences**: 1–few spikelets on branchlets of terminal culms; spathes persistent, shorter than spikelets. **Bracts** hard. **Male spikelets** erect on stiff pedicels or sessile. **Female spikelets** erect. **Flower** with outer lateral tepals keeled or winged, wings entire, narrower than body. **Ovary** unilocular; style single, white, flattened. **Flowering time** Apr. **Fruit** an indehiscent nutlet. Rocky summits of ridges, N-facing slopes and on S-facing ledges, alt. 1 800–2 200 m; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (WC and EC, a narrow, rare endemic, restricted to a few peaks of the Great Swartberg Range).

THAMNOCHORTUS P.J.Bergius

Species 32, sthn Afr., NC, WC, 5 in EC.

1a Culms with a velvety pubescence, silvery grey in colour
2a Plants mat-forming, always < 1 m high, large plant (basal diam. 0.3–1.0 m), with thin rhizomes (1–3 mm in diam.) looping up with culms from the upper loops, sterile branches from nodes of fertile culms present while flowering; sterile branches form tight clusters

fruticosus Berg.

Besemriet (A)

Plants mat-forming, 0.25–0.60 m high; with rhizomes looping up, with clusters of culms on loops. **Culms** unbranched, velvety pubescent, silvery grey; clusters of compact sterile branches at nodes. **Leaf sheaths** closely convolute, red-brown with yellow speckles, apical margins narrowly membranous or broadly membranous, hyaline shoulders absent. **Male inflorescences** with up to 50 spikelets; spathes persistent, upper margins lacerated; spikelets pendulous on flexible pedicels; bracts taller than flowers, hyaline or chartaceous. **Female inflorescences** with 2–20 spikelets; spathes persistent, chartaceous, shorter than or as long as spikelets. **Spikelets**: pedicel simple or branched, 10–25 mm long; outer lateral tepals keeled or winged. **Ovary** unilocular; style single, plumose, white. **Flowering time** July–Nov. **Fruit** an indehiscent nut with persistent oblong winged dispersal unit. Widespread on sandy slopes, more rare on stony slopes, in marshy areas, well-drained habitats and coastal grassland, alt. 0–1 200 m; Eastern Fynbos-Renosterveld (WC or EC coastal or inland mountains).

2b Plants tufted, often > 1 m high, small plant (basal diam. 50–300 mm), mostly without rhizomes, if present, rhizomes thick (4–6 mm in diam.), without loops, sterile branches from nodes of fertile culms present while flowering or post flowering; sterile branches expanded and not in tight clusters

cinereus H.P.Linder

Silverreed; *silwerriet* (A)

Plants tufted, 0.8–4.0 m high; rhizome very short. **Culms** unbranched, velvety pubescent, silvery grey; without rigid leaf blades; sterile branches from nodes of fertile culms present while flowering. **Leaf sheaths** closely convolute, apical margins chartaceous and decaying, hyaline shoulders high, acute. **Male inflorescences** with up to 100 spikelets; spathes persistent, upper margins lacerated. **Spikelets** pendulous on flexible pedicels.

Bracts taller than flowers, hyaline. **Female inflorescences** with 6–50 spikelets; spathes persistent, chartaceous, longer than spikelets. **Spikelets** 20–40 mm long; pedicels simple or branched. **Ovary** unilocular; single style plumose, white. **Flowering time** Apr.–Sept. **Fruit** an indehiscent nut. Common on S-facing slopes, well-drained soils, seepages, stream margins, riverine woodland, alt. 10–2 100 m; Eastern Fynbos-Renosterveld, Albany Thicket (Langkloof to Tsitsikamma Park, Kareedouw to Cockscomb, Groendal Wilderness Reserve to Van Stadens Mts and Bathurst, and to Humansdorp).

rigidus Esterh.

Plants tufted, 0.5–1.0 m high; rhizomes absent. **Culms** unbranched, velvety pubescent, silvery grey; leaf blades rigid, clusters of sterile branches at nodes of fertile branches present after flowering. **Leaf sheaths** closely convolute, apical margins chartaceous and decaying, hyaline shoulders absent. **Male inflorescences** with 11–100 spikelets; spathes persistent, upper margins lacerated. **Spikelets** pendulous; pedicels flexible. **Bracts** taller than flowers, hyaline. **Female inflorescences** spikelets 11–20; spathes persistent, chartaceous, longer than spikelets. **Spikelets**: pedicels simple or branched, 10–25 mm long; outer lateral tepals keeled or winged. **Ovary** unilocular; style single, plumose, white. **Flowering time** July–Nov. **Fruit** an indehiscent nut, dispersal unit persistent, orbicular-winged. Well-drained slopes, stony or rocky soils in exposed habitats, alt. 800–1 300 m; Eastern Fynbos-Renosterveld (Willowmore District, Blydeberg and Aasvoëlberg, Witteberg to Miller Station and Kouga Mts to Cockscomb).

1b Culms not velvety pubescent, smooth and olive-green in colour
3a Plants may reach 1.2 m high; fertile culms with clusters of sterile branches at nodes; leaf sheath of sterile branches lacerated; male spikelets large, 5–10 mm long; female inflorescence with few, < 10 spikelets; plants of coastal sands or in grasslands

glaber (Mast.) Pillans

Plants clumped or tufted, 0.4–1.2 m high; rhizomes branched or unbranched. **Culms** unbranched, smooth, olive-green, clusters of sterile branches at nodes. **Leaf sheaths** closely convolute, red-brown, yellow-speckled, apical margins broadly chartaceous and decaying, hyaline shoulders absent. **Male inflorescences** with up to 100 spikelets; spathes persistent, upper margins lacerated. **Spikelets** pendulous on flexible pedicels. **Bracts** taller than flowers, hyaline or chartaceous. **Female inflorescences** with 2–10 spikelets; spathes persistent, chartaceous, shorter or as long as spikelets. **Spikelets**: pedicels 20–50 mm long; outer lateral tepals keeled or winged. **Ovary** unilocular; style single, plumose, white. **Flowering time** Aug., Sept. **Fruit** an indehiscent nut, with persistent oblong-winged dispersal unit. Alkaline coastal sands, rocky sites, grassy coastal bluffs, alt. 50–200 m; Indian Ocean Coastal Belt, Eastern Fynbos-Renosterveld, Albany Thicket [Kentani District, Qolora River Mouth S, from Assegaaibos (Humansdorp District) to Port Elizabeth, Alexandria, Bathurst, Port Alfred and East London].

3b Plants often in large tufts, 1–2 m high; fertile culms without clusters of sterile branches at nodes; leaf sheath of sterile branches entire; male spikelets small, < 5 mm long; female inflorescence with many (up to 50 or 100) spikelets; plants of limestone or coastal forelands

insignis Mast.

Dekreed, thatch reed; *mannetjiesriet*, *Albertinia dekriet*, *dekriet* (A)

Plants tufted, 1–2 m high; without spreading rhizomes or stolons. **Culms** long, straight, unbranched, smooth, olive-green. **Leaf sheaths** closely convolute, apical margins broadly

chartaceous and soon decaying, mucro absent or minute. **Male inflorescences** with 21–100 spikelets; spathes persistent, upper margins lacerated and decaying. **Female inflorescences** with 11–50 spikelets; spathes shorter or as long as spikelets, persistent, chartaceous. **Spikelets** 15–45 mm long. **Ovary** unilocular; styles plumose, white. **Flowering time** Mar., Apr. **Fruit** an indehiscent nut, with orbicular-winged dispersal unit. Coastal forelands, on well-drained sands, found in dune slacks, rarely directly on limestone; Eastern Fynbos-Renosterveld (WC coastal plains, naturalised populations at Cape St Francis from thatching industry).

sp. A

Plants tufted, 0.6–1.3 m high; without spreading rhizomes or stolons, or with very short rhizome. **Culms** unbranched, smooth, olive-green. **Leaf sheaths** closely convolute, apical margins broadly chartaceous and soon decaying, mucro absent or minute. **Male inflorescences** with 21–50 spikelets; spathes persistent, upper margins lacerated and decaying; spikelets pendulous on flexible pedicels. **Female inflorescences** with 2–4 spikelets; spathes longer than spikelets, persistent, chartaceous. **Spikelets** 13–16 mm long. **Flowers** minute. **Ovary** unilocular; style 1, plumose, white. **Flowering time** Mar., Apr. **Fruit** an indehiscent nut, with orbicular, narrower than long, winged dispersal unit. Steep dune with limestone blocks, well-drained sites, alt. 10–50 m; Eastern Fynbos-Renosterveld (Sundays River Mouth).

WILLDENOWIA Thunb.

Species ± 12, sthn Afr., NC, WC, 2 in EC.

Plants tufted; male spathes coriaceous; female tepals chartaceous or membranous, not widening towards the base and touching at base; a WC species, occurring in western-most part of EC only

glomerata (Thunb.) H.P.Linder

Plants forming untidy tussocks, 0.3–1.5 m high; shortly rhizomatous. **Culms** sparingly branched or branching, smooth. **Leaf sheaths** persistent, closely or loosely wrapped around culm, bicoloured, brown, upper $^1/_3$ membranous and decaying, different from base. **Male inflorescences**: flowers not grouped into spikelets; spathes caducous, taller than spikelets, coriaceous, expanded and awn-bearing. **Female inflorescences** with (1)2–5 spikelets; spathes longer than spikelets, persistent or caducous, coriaceous. **Spikelets** sessile, 12–25 mm long; flowers solitary; bracts 5–8; tepals chartaceous or membranous, not wider and touching at base. **Ovary** unilocular; styles 2, plumose, white, bases free. **Flowering time** Mar.–Sept. **Fruit** an indehiscent nut; elaiosome green. Dry stony slopes and well-drained soils, alt. 200–1 000 m; Eastern Fynbos-Renosterveld (northern foot of Outeniqua Mts near Joubertina, northern slopes of Suuranysberge N of Kareedouw).

Plants clumped or tangled; male spathes cartilaginous; female tepals chartaceous or membranous, widening towards the base and overlapping; species extending into EC along mountains and coastal sands

teres Thunb.

Plants clumped or tangled, very shortly rhizomatous, 0.3–1.0 m high. **Culms** sparingly branched or branching, smooth or finely rugulose. **Leaf sheaths** persistent, closely or loosely wrapped around culm, bicoloured, brown, upper $^1/_3$ membranous and decaying, different from base. **Male inflorescences**: flowers not grouped into spikelets; spathes caducous, taller than spikelets, coriaceous, expanded. **Female inflorescences** with

(1)2–5 spikelets; spathes longer than spikelets, persistent or caducous, coriaceous. **Spikelets** sessile, 10–25 mm long; flowers solitary; bracts 3–8; tepals chartaceous or membranous, wider towards base and overlapping. **Ovary** unilocular; styles 2, plumose, white, pink or red, bases free. **Flowering time** July–Oct. **Fruit** an indehiscent nut; elaiosome green. Widespread on well-drained habitats, dry stony mountain slopes, sandy plains along coast, alt. 200–1 000 m; Eastern Fynbos-Renosterveld (WC to Langkloof and Winterhoek Mts).

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RUPPIACEAE

(Order Alismatales)

Compiled by A. Khumalo & Z.L. Magwaza

RUPPIA L.

Tasselweed

Species 2 or ± 7, depending on interpretation, 2 recognised in sthn Afr., perhaps only ecological modifications, N, FS, KZN, NC, WC, EC.

cirrhosa (Petagna) Grande

Spiral tasselweed

Perennial herb, graminoid, hydrophyte; height depending on depth of water; branches up to 750 mm long. **Leaves** alternate, apices obtuse or rounded, sheaths narrow. **Scape** long, spirally coiled; green or light green. **Flowers** exserted during anthesis. **Flowering time** Jan., Feb. **Fruit** a drupe or nutlet, oblique. Common in brackish water and sandy soil; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage to Port Elizabeth and Humansdorp District).

maritima L.

Beaked tasselweed

Perennial herb, graminoid, hydrophyte; height depending on depth of water. **Leaves** alternate, opposite at top, apices acute; sheaths narrow. **Scape** usually short, twice as long as fruiting pedicels, bright green. **Flowers** bisexual, naked, protandrous; stamens opposite; carpels usually 4. **Flowering time** Jan., Feb. **Fruit** a drupe or nutlet, oblique. Common in brackish water, sandy saline ponds, can tolerate wide range of salinity but less frequent in high salinity; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Komga District SW to Coega River Bridge, Bathurst and Tsitsikamma).

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RUSCACEAE

(= DRACAENACEAE, ERIOSPERMACEAE)

(Order Asparagales)

Compiled by R.R. Klopper

Rootstock a tuber; flowers < 10 mm long; fruit a capsule with woolly seeds; plants usually leafless at flowering ..... **Eriospermum**
Rootstock a rhizome; flowers > 20 mm long; fruit a fleshy berry; plants leafy at flowering:
Trees or shrubs; leaves in dense apical rosettes or cauline, usually herbaceous; inflorescence paniculate .. .. **Dracaena**
Rhizomatous herbs, rarely short-stemmed; leaves basal, distichous, usually thick and fibrous; inflorescence a dense cylindrical raceme ..... **Sansevieria**

DRACAENA L.

Species ± 60, in warmer regions of the world, notably Africa and SE Asia; 3 in sthn Afr., LIM, M, S, KZN, EC.

aletriformis (Haw.) Bos

Single-stemmed or sparsely branched tree, up to 5 m high. **Leaves** crowded apically, lanceolate, bright to greyish green, with conspicuous white cartilaginous margins. **Inflorescences** dense panicles, green, erect. **Flowers** greenish white, tufted. **Flowering time** Dec.–Feb. Coastal bush and montane forest; Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Indigenous Forests, Albany Thicket (Elliotdale to Mtentu River just N of Port Grosvenor S, from Alice to Kentani and from Grahamstown to Port Alfred).

ERIOSPERMUM Jacq. ex Willd.

Cottonseed

Species 102, tropical and sthn Afr.; ± 100 in sthn Afr., widespread, but mostly WC.

1a Tepals equal to subequal
2a Filaments oblong-ovate, erect, forming ring around ovary

bifidum R.A.Dyer

Tuberous geophyte. **Tuber** pyriform to irregularly cylindrical, skin tough, light brown, interior white, growing point basal. **Leaf** hysteranthous, erect; lamina narrowly lanceo-

late or orbicular-cordate, glabrous. **Inflorescence** up to 300 mm high, subcorymbose to broadly cylindrical, with ± 50 flowers. **Pedicels**: lowest up to 40 mm long, upper much shorter. **Flowers** star-shaped. **Tepals** equal to subequal, elliptic to obovate, green to yellowish green with dark maroon midnerve. **Stamens** with oblong filaments, apex bifid, yellow to bright orange; anthers orange. **Ovary** green, as long as white style. **Flowering time** Jan.–Apr. Arid scrub on shaley flats or hillsides; Rainshadow Valley Karoo, Albany Thicket (W of Willowmore and Jansenville, Great Winterhoek Mts NW of Port Elizabeth, Grahamstown area).

[E]**bracteatum** Archibald

Tuberous geophyte. **Tuber** irregularly lobed, skin smoothish, light brown, interior white, growing point basal to lateral. **Leaf** hysteranthous, prostrate, orbicular-cordate, glabrous. **Inflorescence** up to 240 mm high, dense, conical, obtuse, with 20–30 flowers. **Pedicels** 10–12 mm long, elongating in fruit to ± 15 mm. **Flowers** star-shaped. **Tepals** subequal, outer broadly lanceolate to spathulate, inner elliptic with extended base, yellowish cream-coloured with maroon stippling on outside and greyish green midnerve. **Stamens** with lanceolate, cream-coloured filaments; anthers yellow. **Ovary** green, shorter than white or green style. **Flowering time** Jan.–Apr. Semi-arid scrub in hard clayey soil derived from dolerite and shale; Albany Thicket (Grahamstown area).

brevipes Baker

Perdeklou (A)

Tuberous geophyte. **Tuber** irregularly shaped, skin thin, light brown, interior white, growing point lateral. **Leaf** hysteranthous, suberect or almost prostrate, broadly ovate-cordate, sparsely pubescent. **Inflorescence** up to 320 mm high, compact, spike-like, with up to 70 flowers. **Pedicels** ± 6(–12) mm long. **Flowers** cup-shaped. **Tepals** subequal, broadly spathulate, white with narrow green midnerve sometimes overlaid with red streaking. **Stamens** with broadly spathulate to obovate, apiculate, white filaments; anthers yellow. **Ovary** green, as long as white style. **Flowering time** Jan.–Mar. Quartzite slopes and sandy soils in grassland or Fynbos; Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Kei River Mouth SW, from E of Jeffreys Bay to Port Elizabeth, Grahamstown and East London, and to Humansdorp).

cernuum Baker

Perdeklou (A)

Tuberous geophyte. **Tuber** pyriform to subglobose, skin pale brown, interior white, growing point lateral. **Leaf** hysteranthous, erect, narrowly lanceolate to elliptic, glabrous. **Inflorescence** up to 350 mm high, subspicate, usually secund, with up to 20 flowers. **Pedicels** 2–3 mm long. **Flowers** cup-shaped. **Tepals** subequal, outer slightly spreading, elliptic, inner broadly oblanceolate, white with narrow green midnerve and fine red striations on outer tepals towards apex. **Stamens** with narrowly rectangular, apiculate filaments. **Ovary** white with red flecks, shorter than or as long as white style. **Flowering time** Feb.–Apr. Damp, soils derived from sandstone; Eastern Fynbos-Renosterveld (WC border at Toorwater Poort).

cooperi Baker

Tuberous geophyte. **Tuber** oblong to roundish, skin thin, light brown, interior white, growing point lateral. **Leaf** hysteranthous, erect, broadly ovate-cordate, glabrous or sparsely to densely pubescent abaxially. **Inflorescence** up to 600 mm high, narrowly cylindrical, with 50–90 flowers. **Pedicels** 3–40 mm long. **Flowers** cup-shaped. **Tepals**

equal to subequal, outer erecto-patent, elliptic, inner more erect, spathulate, white to very pale green with dark green midnerve, or outer tepals uniformly dark green or brown. **Stamens** with ovate to broadly lanceolate, white filaments; anthers yellow. **Ovary** green, slightly longer than yellow style. **Flowering time** Oct.–Dec. Rocky areas in damp grassland, lightly wooded areas, pine plantations or damp streamsides and swampy coastal flats of peat soil; Drakensberg Grassland, Sub-Escarpment Grassland, Indian Ocean Coastal Belt, Sub-Escarpment Savanna (Maclear to Mkambati Nature Reserve S, from Hogsback to Stutterheim and Kentani).

[E]occultum Archibald

Tuberous geophyte. **Tuber** irregularly branched, skin light greyish brown, interior white, growing point lateral. **Leaf** hysteranthous, suberect, broadly ovate-cordate, glabrous. **Inflorescence** up to 600 mm high, compact, cylindrical, with up to 60 flowers. **Pedicels** up to 7 mm long. **Flowers** cup-shaped, barely opening. **Tepals** subequal, outer elliptic, inner spathulate, white with a faint narrow green midnerve. **Stamens** with lanceolate, white filaments. **Ovary** bright green, longer than white style. **Flowering time** Dec.–Feb. Moist black sandy soil formed from Witteberg quartzite, amongst clumps of tussock grass; Albany Thicket, Eastern Fynbos-Renosterveld (southern slopes of Suurberg Mtn range between Ann's Villa and Zuurberg Inn).

porphyrium Archibald

Tuberous geophyte. **Tuber** cylindrical or irregularly shaped, skin dark brown, interior white, growing point lateral. **Leaf** hysteranthous, prostrate, broadly ovate-cordate, glabrous. **Inflorescence** up to 700 mm high, dense, narrowly cylindrical to conical, with up to 60 flowers. **Pedicels** up to 14 mm long. **Flowers** star-shaped. **Tepals** subequal, cream-coloured or pale green with green midnerve overlaid with purple streaking. **Stamens** with lanceolate, white filaments. **Ovary** green, as long as white style. **Flowering time** Dec.–May. Clayey soils or on red sandy loam, in flattish areas between low bushes or in grassland; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Eastern Fynbos-Renosterveld, Albany Thicket (Queenstown S, from Jansenville to Cradock, Butterworth and Kei River Mouth, and Kareedouw to Alexandria).

zeyheri R.A.Dyer

Tuberous geophyte. **Tuber** pyriform, skin tough, brown, interior white, growing point basal. **Leaf** hysteranthous, prostrate and appressed, orbicular, deeply cordate with lobes overlapping, glabrous. **Inflorescence** up to 500 mm high, dense, subspicate to narrowly cylindrical, with up to 70 flowers. **Pedicels**: lowest up to 8 mm long. **Flowers** star-shaped. **Tepals** subequal, outer elliptic attenuate, inner oblanceolate, whitish or pale yellowish green with a darker green midnerve and red streaking at apex. **Stamens** with oblong apiculate, white filaments; anthers yellow. **Ovary** dark green, longer than white style. **Flowering time** Dec.–Mar. Semi-arid areas, stony hillsides or flats, on clayey soils; Eastern Fynbos-Renosterveld, Albany Thicket (Baviaanskloof, Kirkwood, Port Elizabeth, Alexandria and Grahamstown area).

2b Filaments subulate, spreading

[E]ciliatum P.L.Perry

Tuberous geophyte. **Tuber** pyriform, skin dark brown, interior white, becoming pink with age, growing point basal. **Leaf** hysteranthous, prostrate, broadly ovate to orbicular-cordate, almost glabrous, margins ciliate. **Inflorescence** up to 240 mm high, lax, often secund, with up to 10 flowers. **Pedicels** up to 8 mm long. **Flowers** spreading to recurved.

Tepals subequal, outer narrowly elliptic, inner slightly shorter and wider, apex hooded, bright yellow with a green midnerve. **Stamens** with yellow filaments. **Ovary** yellow, as long as yellow style. **Flowering time** Feb., Mar. Sandy soil between fynbos shrubs; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld (Baviaanskloof, Willowmore, Steytlerville and to Humansdorp and Van Stadens Mts).

corymbosum Baker

Tuberous geophyte. **Tuber** pyriform to globose, skin thin, light brown, interior white, growing point apical or less often lateral. **Leaf** hysteranthous, erect to suberect, elliptic to ovate-cordate, glabrous. **Inflorescence** up to 150 mm high, compact, corymbose, with up to 30 flowers. **Pedicels** up to 10 mm long. **Flowers** spreading to recurved. **Tepals** subequal, outer linear to narrowly elliptic, inner narrowly oblanceolate, pale to bright yellow with green midnerve. **Stamens** with orange-yellow filaments. **Ovary** green, slightly shorter than yellow style. **Flowering time** Nov.–Feb. Calcareous sandy soils, silty flats or hill slopes; Upper Karoo, Sub-Escarpment Grassland (Steynsburg, Queenstown and Cradock areas).

dielsianum Poelln.

Tuberous geophyte. **Tuber** pyriform to roundish or oval, skin rough, light brown, interior pink, growing point basal or lateral. **Leaf** hysteranthous, suberect to erect, broadly ovate-cordate to elliptic or narrowly lanceolate, densely tomentose. **Inflorescence** up to 240 mm high, lax, with 15–45 flowers. **Pedicels** up to 20 mm long. **Flowers** bell-shaped to spreading. **Tepals** subequal, narrowly elliptic to lanceolate, outer slightly narrower than inner, white with pale green midnerve and faint red streaking on underside. **Stamens** with white filaments; anthers yellow or pale mauve. **Ovary** green, slightly shorter than or equal to white style. **Flowering time** Jan.–Apr. Coastal fynbos in damp areas; Eastern Fynbos-Renosterveld (Joubertina, Port Elizabeth and to Humansdorp).

mackenii (Hook.f.) Baker

Tuberous geophyte. **Tuber** globose to subglobose, becoming irregularly shaped, skin rough, dark brown, interior deep pink to maroon-red, growing point apical. **Leaves** synanthous, 2–5, erect to suberect, broadly ovate, glabrous. **Inflorescence** up to 400 mm high, cylindrical to narrowly conical, with up to 50 flowers. **Pedicels**: lowest up to 25 mm long, upper shorter. **Flowers** bell-shaped. **Tepals** equal, ligulate, bright yellow with green midnerve. **Stamens** with yellow filaments; anthers yellow. **Ovary** pale green, shorter than white style. **Flowering time** Nov.–Feb. Rocky grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Mthatha to Mkambati Nature Reserve and Kei River Mouth).

paradoxum (Jacq.) Ker Gawl.

Tuberous geophyte. **Tuber** oblong to irregularly shaped, skin greyish brown, interior pink to maroon-red in old parts, growing point basal to lateral. **Leaf** hysteranthous, erect, ovate-cordate, almost glabrous abaxially, pubescent adaxially, with single, profusely branched, pubescent enation. **Inflorescence** up to 11 mm high, densely conical to cylindrical, with up to 40 flowers. **Pedicels** up to 6 mm long. **Flowers** spreading, large. **Tepals** subequal, outer ligulate, inner narrowly spathulate, white with a light green midnerve covered in few red streaks. **Stamens** with white filaments. **Ovary** bright green, shorter than white style. **Flowering time** Apr., May. Sandy flats among fynbos vegetation or on clayey soils amongst karroid shrubs; Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (W of Willowmore to Steytlerville and Suurberg near Sundays River).

1b Tepals dimorphic
3a Leaves with enations

[E]**appendiculatum** A.V.Duthie

Tuberous geophyte. **Tuber** irregularly lobed or unlobed, skin pale brown, interior translucent purplish red, growing point basal. **Leaf** hysteranthous, prostrate and closely appressed, ovate to orbicular-cordate, glabrous; adaxial surface with few to several, simple terete enations mainly towards margins, crowned with stellate tuft of white hairs, margins with similar tufts of hairs. **Inflorescence** up to 90 mm high, with 3 flowers. **Pedicels** up to 6 mm long. **Flowers** two-dimensional. **Tepals** dimorphic, outer elliptic to oblanceolate, inner spathulate, apex pinched-in and fimbriate, white with a pale green midnerve. **Stamens** with broadly ovate, white filaments. **Ovary** pale green, slightly longer than style. **Flowering time** Mar. Habitat?; Rainshadow Valley Karoo (Steytlerville area).

dregei Schönland

Heuningblommetjie (A)

Tuberous geophyte. **Tuber** pyriform to irregularly shaped, skin pale brown, interior pink to maroon-red, growing point basal. **Leaf** hysteranthous, erect, ovate to orbicular-cordate, densely woolly abaxially, often glabrous adaxially, with tufted enations arising from centre of lamina, covered with stellate clusters of long curly hairs. **Inflorescence** up to 140 mm high, dense, cylindrical or narrowly conical, with up to 30 flowers. **Pedicels**: lowest up to 8 mm long, upper shorter. **Flowers** triangular. **Tepals** dimorphic, outer suberect to spreading, elliptic, inner erect, spathulate, apex crisped, white with conspicuous green midnerve sometimes overlaid with red streaking. **Stamens** with subequal, broadly ovate, pale yellow filaments. **Ovary** pale green, ± as long as white style. **Flowering time** Mar. Rocky areas in clayey soil and red sand with reeds and grasses; Albany Thicket (Port Elizabeth, Alexandria and Grahamstown).

3b Leaves without enations

capense (L.) Thunb.

Elephant's ear; *olifantsoor*, *bobbejaanoor* (A)

Tuberous geophyte, often clump-forming. **Tuber** pyriform to irregularly shaped, skin brown, corky, interior maroon-red, growing point basal to lateral. **Leaf** hysteranthous, suberect, ovate, glabrous. **Inflorescence** up to 500 mm high, lax, with up to 70 flowers. **Pedicels** 30–60 mm long. **Flowers** triangular. **Tepals** dimorphic, outer spreading, narrowly elliptic, apex acute, inner erect, spathulate, apex crisped laciniate, light golden-yellow, with white margins and apex and green midnerve. **Stamens** with ovate, white filaments, often with purple spots, occasionally orange; anthers yellow. **Ovary** green with slight red spotting, slightly longer than white style. **Flowering time** Nov.–Feb. Clayey soils; Lower Karoo, Rainshadow Valley Karoo, Eastern Fynbos-Renosterveld, Albany Thicket (Rietbron and Aberdeen S, from Willowmore to Hankey, Port Elizabeth, Grahamstown and East London).

cordiforme Salter

Tuberous geophyte. **Tuber** irregularly shaped and warty, skin dark brown, interior pale to deep pink, growing point basal to lateral. **Leaf** hysteranthous, suberect to prostrate, broadly ovate to orbicular-cordate, glabrous or occasionally hirsute abaxially. **Inflorescence** up to 400 mm high, subspicate, secund, with up to 26 flowers. **Pedicels** up to 9 mm long. **Flowers** triangular. **Tepals** dimorphic, outer spreading, elliptic, acute, apex recurved, inner erect, broadly spathulate, apex crisped fimbriate, cream-coloured with

a broad midnerve or overlaid with red streaking. **Stamens** with ovate filaments, gradually tapering towards pale green or yellow anthers. **Ovary** green, as long as white style. **Flowering time** Jan., Feb. Quartzitic sandy soils in Fynbos; Eastern Fynbos-Renosterveld, Albany Thicket (Port Elizabeth, Alexandria and Grahamstown areas).

dissitiflorum Schltr.

Tuberous geophyte. **Tuber** globose, becoming irregularly cylindrical, skin tough, corky, dark brown, interior deep pink, growing point basal or lateral. **Leaf** hysteranthous, erect, elliptic to narrowly or broadly lanceolate, glabrous. **Inflorescence** up to 420 mm high, lax, with up to 35 flowers. **Pedicels**: lowest 5–40 mm long, upper shorter. **Flowers** circular to triangular. **Tepals** dimorphic, outer suberect, elliptic to lanceolate, inner erect, broadly spathulate, apex crisped and pinched-in, white with a green midnerve overlaid with reddish brown streaking. **Stamens** with subequal, broadly ovate, white filaments; anthers green. **Ovary** green, ± as long as white style. **Flowering time** Jan.–Apr. Quartzitic sandy soils; Sub-Escarpment Grassland, Eastern Fynbos-Renosterveld, Sub-Escarpment Savanna, Albany Thicket [Queenstown area S, from Joubertina to Rocklands (W of Port Elizabeth) and to Grahamstown].

[E]**dyeri** Archibald

Tuberous, clump-forming geophyte. **Tuber** irregularly shaped, skin horny, dark greyish brown, interior maroon-red, growing point basal to lateral. **Leaf** hysteranthous, prostrate, orbicular-cordate, covered with very fine soft hairs, margins ciliate. **Inflorescence** up to 500 mm high, very lax, with up to 40 flowers. **Pedicels**: lowest up to 38 mm long, upper ± 14 mm. **Flowers** triangular. **Tepals** dimorphic, outer half-spreading, elliptic, inner erect, broadly spathulate, apex pinched-in and fimbriate, white with green midnerve overlaid with faint red streaking. **Stamens** with broadly ovate filaments, apex narrowing and arched, white; anthers very pale green. **Ovary** green, longer than style. **Flowering time** Dec.–Mar. Sandy soils mainly in Fynbos; Eastern Fynbos-Renosterveld, Albany Thicket (Steytlerville District E to Port Elizabeth and Alexandria).

ornithogaloides Baker

Tuberous, clump-forming geophyte. **Tuber** pyriform, becoming irregularly shaped, skin light brown, interior pale pink, growing point basal to lateral. **Leaf** hysteranthous, prostrate but not appressed, ovate to orbicular-cordate, glabrous, margins ciliate. **Inflorescence** up to 200 mm high, lax, outline irregular, with 9 or 10 flowers. **Pedicels** up to 5 mm long. **Flowers** bell-shaped to triangular. **Tepals** dimorphic, outer spreading, elliptic, inner erect, spathulate, apex fimbriate with sides pinched together and retrorse, white with dark green midnerve overlaid with indigo-blue. **Stamens** with dimorphic filaments, outer broadly lanceolate, green; anthers green. **Ovary** green, as long as very pale yellow style. **Flowering time** Nov., Dec. Damp rocky slopes or flats on Cave Sandstone or on peaty soils; Drakensberg Grassland, Sub-Escarpment Grassland (Sehlabathebe and Kokstad areas to Barkly Pass and Maclear District).

[E]**orthophyllum** (Archibald) P.L.Perry

Tuberous geophyte. **Tuber** pyriform to irregularly cylindrical, skin dark greyish brown, interior pale to deep pink, growing point basal to lateral. **Leaf** hysteranthous, erect, lanceolate to elliptic, glabrous. **Inflorescence** up to 375 mm high, lax, conical, with 10–21 flowers. **Pedicels**: lowest up to 40 mm long. **Flowers** triangular. **Tepals** dimorphic, outer half-spreading, lanceolate, apex involute, inner erect, broadly spathulate, white with a dark green midnerve overlaid with purple streaking. **Stamens** with

subequal, broadly ovate, orange or white filaments; anthers pale purple. **Ovary** green, as long as style. **Flowering time** Jan., Feb. Red or quartzitic sandy soils over limestone or silcrete; Drakensberg Grassland (between Rhodes and Maclear area and Juanasberg near Seymour).

SANSEVIERIA Thunb.

Species ± 60, mostly tropical Africa and Asia; at least 6 in sthn Afr., widespread, except L and WC.

aethiopica Thunb.

Bowstring hemp; *wildedatel*, *wildewortel* (A)

Rhizomatous, perennial succulent, up to 0.75 m high. **Leaves** V-shaped, half folded, rough, with irregular, transverse, light and dark bands, margins red with colourless membranous edge. **Inflorescences** simple racemes, erect, dense. **Flowers** variable in colour, white, purple or cream-coloured with purple margins. **Flowering time** Nov.–Feb. Dry open bush and savanna, well-drained sandy or rocky soil; Upper Karoo, Albany Thicket, Rainshadow Valley Karoo (Graaff-Reinet and Cradock S to Steytlerville, Grahamstown and Alexandria).

hyacinthoides (L.) Druce

Pile root; *aambeiwortel*, *ghaiwortel* (Khoi) (A); *isikholokotho* (X, Z)

Acaulescent, perennial succulent, up to 0.5 m high, spreading from branched rhizomes. **Leaves** sword-shaped, leathery, smooth, with irregular, transverse, grey bands, margins red and pale with membranous edge. **Inflorescences** simple racemes, erect, dense. **Flowers** cream-coloured or pale mauve, irregularly clustered. **Flowering time** Nov.–Apr. Dry bush and scrub, well-drained sandy or rocky soil; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket (Cofimvaba S, from Fort Beaufort to Willowvale District, and from Addo to Port Elizabeth, Grahamstown and East London).

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SMILACACEAE

(Order Liliales)

Compiled by Z.L. Magwaza

SMILAX L.

Species ± 300; 1 in sthn Afr., LIM, M, S, KZN, EC.

anceps Willd.

Iyala (Z)

Perennial shrub or climber, 0.8 m high; dioecious. **Leaves** alternate, shortly petiolate with a pair of spiral tendrils near base of petiole (an extension of leaf sheath); blade ovate to oblong, entire, rounded with recurved mucro; dark green, glabrous, shiny. **Inflorescence** axillary umbellate, umbels globose. **Tepals** 3 + 3, free, petaloid, obtuse, recurved. **Female flowers** yellow-green; staminodes 6, filiform; ovary superior, 3-locular, ovules 1 or 2, axile; style short or absent; stigmas 3. **Male flowers**: stamens free 6(–15); anthers oblong, shorter than filaments; ovary 0. **Flowering time** Dec.–Mar. **Fruit** on berry. Forest, grassveld next to mangrove swamp; Indigenous Forests, Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Umtamvuna Nature Reserve to Pondoland and Port St Johns).

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STRELITZIACEAE

(Order Zingiberales)

Compiled by Z.L. Magwaza

STRELITZIA Aiton

Species 5, Zimbabwe and eastern sthn Afr., LIM, M, S, KZN, WC, EC.

alba (L.f.) Skeels

Cape wild banana; *Kaapse wilde-piesang* (A)

Perennial shrub, up to 6 m high; stem simple, with tuft of leaves at apex. **Leaves** distichous, petiolate, oblong, up to 2 000 × 450–600 mm. **Peduncle** ± 150 mm long, compressed. **Bracts** claret, completely surrounding peduncle, withering at apex. **Spathe** deflexed, glaucous, 250–300 mm long; apices tapering; many-flowered. **Sepals** 3, white; lowest linear-lanceolate, ± keeled below, concave or navicular above; laterals shorter,

channelled above, strongly keeled below. **Petals** white; upper lanceolate, cuspidate; apices withering; lower longer, navicular, with margins inflexed and only overlapping at base. **Stamens** with straight filaments. **Ovary** triangular; style ± 100 mm long; stigma viscid, tapering; anthers cuspidate. **Flowering time** June–Nov. **Seeds** with tuft of yellow, later turning red hairs. In forests; Eastern Fynbos-Renosterveld (WC border, De Vasselot Nature Reserve).

[E]**juncea** Link

Perennial herb, up to 2 m high; stem subterranean. **Leaves** oblong-lanceolate, ± 220 × 76 mm, deltoid at base, margins brown; petioles slender. **Spathe** 150 mm long, green with red edges. **Sepals** bright orange, lanceolate, ± 100 mm long. **Petals** blue; lower 50 mm long, with rounded basal auricles; upper broadly ovate, ± 10 mm long, mucronate. **Ovary** with style branches exserted. **Flowering time** July–Nov. On gentle hillsides; Albany Thicket, Eastern Fynbos-Renosterveld (Uitenhage to Port Elizabeth and Humansdorp).

nicolai Regel & Körn.

Natal wild banana; *Natalse wilde-piesang* (A); *ikhamanga* (X); *isisgude*, *inkamanga* (Z)

Perennial shrub, 3–6 m high; stem simple, with tuft of leaves at apex. **Leaves** petiolate, oblong to ovate, up to 1.5 m × 600 mm, usually rounded at base or rarely cordate, shiny. **Peduncle** 300–450 mm long. **Bracts** lanceolate, glaucous. **Spathes** rarely up to 5 in sequence, claret, glaucous, 400–450 mm long, exuding mucilage; apices green, attenuate. **Flowers** light mauve to white. **Sepals** white-tinged with mauve towards base; lower shorter, navicular, keeled at base; upper linear-lanceolate, ± keeled below; perianth tube up to 30 mm long. **Petals** unequal; lower navicular; margins inflexed and meeting over centre; upper cuspidate. **Stamens** with slightly coiled filaments. **Ovary** triangular. **Flowering time** Oct.–Jan. **Seeds** with tuft of orange hairs. Coastal dunes; Indian Ocean Coastal Belt (Port St Johns District).

reginae Aiton

Crane flower; *kraanvoëlblom* (A)

Perennial herb, up to 2.6 m high; stem subterranean. **Leaves** lanceolate, up to 180 × 100 mm, undulate, glabrous, abaxial surface bright green, adaxial surface glaucescent, ± acute, base cuneate. **Bracts** tubular; uppermost one navicular, green with purple edges. **Sepals** lanceolate, orange-yellow. **Petals** dark blue, lower two ± 50 mm long, with rounded basal auricles; upper ovate, ± 20 mm long. **Stamens** with anthers twice as long as filaments. **Ovary** with exserted style; style branches 3, linear, ± 20 mm long. **Flowering time** Aug.–June. Along rivers and forests; Sub-Escarpment Grassland, Sub-Escarpment Savanna, Indian Ocean Coastal Belt, Albany Thicket, Indigenous Forests (Mzimvubu River to Kei River Mouth, Grahamstown and East London).

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TECOPHILAEACEAE

(Order Asparagales)

Compiled by Z.L. Magwaza

CYANELLA L.

Species 7 or 8, sthn Afr., N, NC, WC, EC.

lutea L.f.

Five fingers; *vyfvingerblaar* (A)

Perennial geophyte, 0.15–0.35 m high; corm tunics light brown, wiry to fibrous. **Leaves** 30–250 × 2–18 mm, in basal tuft, linear, glabrous, with prominent ribs, margins entire. **Inflorescence** a branched, lax raceme. **Perianth**: segments oblong, lanceolate, 12–18 × 2–4 mm, yellow, pink, often with maroon veins, occasionally maculate, apex acute to mucronate. **Stamens** 6; filaments yellow, 2.5 mm long; anthers spotted maroon or black, dehiscing by pore-like slits; 5 upper filaments free to base, with tubular anthers; 1 lower filament with spathulate anther. **Flowering time** Aug.–Dec. **Fruit** a globose capsule. In coastal fynbos, grasslands and karroid scrubs; Sub-Escarpment Grassland, Upper Karoo, Rainshadow Valley Karoo, Albany Thicket (Queenstown E to Tembuland, southwards from Cradock to Willowmore and Peddie).

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TYPHACEAE

(Order Poales)

Compiled by Z.L. Magwaza

TYPHA L.

Bullrush, cat's tail; *papkuil* (A)

Species ± 8–13, cosmopolitan, found in a wide variety of aquatic habitats; 2 in sthn Afr., widespread.

capensis (Rohrb.) N.E.Br.

Bulrush; *papkuil*, *bobbejaanstert* (A); *ingcongolo* (X); *iBhuma* (Z)

Perennial, robust herb, hydrophyte, ± 2 m high; monoecious; stem simple, erect. **Leaves** 0.4–1.5 m × 4–20 mm, green or glaucous, distichous, linear, margins smooth, upper half often undulate. **Inflorescence** a cylindrical spike; upper male portion contiguous to and longer than lower female portion. **Male flower** with linear-lanceolate, cuneate or forked, brownish white, slender bracteoles; filaments bearing 2 or 3 anthers; anthers linear, often twisted, 2-celled, pollen usually simple. **Female flowers** ebracteolate or with colourless or brownish, linear to lanceolate, acuminate bracteoles; carpopodia often produced; perianth of several slender, colourless, simple hairs; ovary superior, unilocular; style elongate; stigma brown, lanceolate or linear. **Flowering time** Dec.–

May. Along streambanks and marshy places; Upper Karoo, Sub-Escarpment Grassland, Albany Thicket, Eastern Fynbos-Renosterveld (Middelburg SE to Queenstown, Kentani, Port Elizabeth and Grahamstown).

ANDERSON, J.G. 1966. Typhaceae. *Flora of southern Africa* 1: 53–56.
BROWN, N.E. 1897. Typhaceae. *Flora capensis* 7: 30–32.

VELLOZIACEAE

(Order Pandanales)

Compiled by Z.L. Magwaza

XEROPHYTA Juss.

Species ± 30–40; 9 in sthn Afr., N, B, LIM, NW, G, M, FS, KZN, L, EC.

viscosa Baker

Bobbejaanstert (A); *lethepu*, *mariroane* (SS)

Perennial herb, 0.02–0.40 m high; stem ± subterranean, tufted. **Leaves** linear, coriaceous, regularly deciduous, acuminate, 150–220 × 4 mm, strongly ribbed, margins scabrous. **Peduncle** 200–220 mm long, covered with sessile black glands. **Perianth** glandular outside; segments lanceolate, mauve; dotted with large black glands dorsally. **Stamens** with dorsifixed anthers. **Ovary** clavate, 80 mm long, black, viscous; style simple; stigma columnar. **Flowering time** Nov.–Jan. **Fruit** a oblong-turbinate capsule. In grassland; Sub-Escarpment Grassland, Sub-Escarpment Savanna (Weza State Forest to Griqualand East).

BAKER, J.G. 1896. *Vellozia*. *Flora capensis* 6: 244–246.
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XYRIDACEAE

(Order Poales)

Compiled by Z.L. Magwaza

XYRIS L.

Species 250, most in North and South America, fewer in Australia, Asia and Africa; 7 in sthn Afr., N, B, LIM, NW, G, M, S, FS, KZN, L, WC, EC.

anceps Lam.

Perennial herb, hydrophyte/helophyte, 0.35–0.90 m high. **Leaves** up to 240 × 5 mm, distichous, linear, with acute apices. **Scapes** 2–3× as long as leaves, ancipitous, uniformly green. **Bracts** stramineous, spirally arranged, ovate, acute, yellow to olive-green, with grey diamond-shaped depression below apex, often splitting with age. **Inflorescence**

with orange or yellow flowers, broadly ellipsoid to spherical. **Sepals** 3; curved; keel entire, glabrous. **Petals** 3, almost free to base. **Flowering time** July–Feb. **Fruit** a narrowly cylindrical capsule. In coastal swamps, riverbanks and along lakes; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Uvongo Beach to Port Edward).

capensis Thunb.

hloho-tsa-makaka (SS); *umuzi* (S); *udoyi oluncane* (Z)

Tufted, perennial herb, hydrophyte/helophyte, 0.07–0.90 m high; rhizome with bilaterally arranged roots. **Leaves** 50–150 × 4 mm, distichous, linear, laterally flattened, tapering. **Scapes** ± twice as long as leaves, terete, minutely papillate when young, becoming smooth, shiny and golden-brown at base. **Bracts** shiny brown, loosely imbricate at maturity, margins recurved or divergent. **Inflorescence** ellipsoid to rounded. **Sepals** 3; lateral 2 slightly curved, hyaline, keeled, apex acute, keel winged in lower half, smooth, margins entire or rarely with broad teeth. **Petals** 3, yellow, with claws splitting when ovary develops. **Flowering time** Sept.–May. **Fruit** an oblong-ovoid, obtuse capsule. In wet grasslands; Sub-Escarpment Grassland, Drakensberg Grassland, Sub-Escarpment Savanna, Albany Thicket, Eastern Fynbos-Renosterveld (Sehlabathebe SE to Lady Frere, Amatole Mts to Stutterheim and to Witelsbos).

natalensis Nilsson

Tufted, perennial herb, hydrophyte/helophyte, 0.1–1.0 m high; rhizome subhorizontal, compact. **Leaves** clustered, terete, up to 500 × 1 mm, wiry, with acute apices, forming auriculate sheath below. **Bracts** narrowly ovate, smooth, aristate, with entire margins; outer longer, patent and paler than inner. **Inflorescence** conical. **Sepals** 3, laterally folded, falcate, apiculate, keel prominent, densely ciliate. **Petals** 3, yellow. **Flowering time** Oct.–Dec. **Fruit** a narrowly cylindrical capsule. In coastal grasslands; Sub-Escarpment Savanna, Indian Ocean Coastal Belt (Lusikisiki to Port Edward).

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OBERMEYER, A.A. 1985. Xyridaceae. *Flora of southern Africa* 4,2: 1–8.

ZANNICHELLIACEAE see POTAMOGETONACEAE

ZINGIBERACEAE

(Order Zingiberales)

Compiled by C.L. Bredenkamp & Z.L. Magwaza

*HEDYCHIUM J.König

Species ± 45, Asian; 3 naturalised in sthn Afr., near coast, M, KZN, EC.

coronarium J.König

White ginger lily; *witgemmerlelie* (A)

Perennial herb, up to 3 m high. **Leaves** sessile, lanceolate, glabrous with few silky hairs on and near midrib on abaxial surface, 600 × 110 mm, apex acuminate; ligule papyraceous, white or brown. **Bracts** green, ovate, subcoriaceous, overlapping, apex obtuse. **Inflorescence** with yellow and white or red and yellow, bisexual flowers. **Calyx** tubular, unilaterally splitting, glabrous. **Corolla**: tube up to 70 mm long, slender; petals 3, linear-lanceolate, equal, declined; labellum usually yellow-green in centre, deeply 2-lobed. **Staminodes** oblong-lanceolate; lateral petaloid. **Stamens** white, shorter than labellum;

anthers 12 mm long. **Ovary** glabrous or hairy at flowering time, 5 mm long. **Flowering time** Dec.–Apr. In open areas, plantations and moist shaded areas; origin Himalayas, declared weed (Category 1); Indian Ocean Coastal Belt (Port Edward District).

flavescens Roscoe

Yellow ginger lily; *geelgemmerlelie* (A)

Perennial herb, up to 3 m high. **Leaves** sessile, up to 600 × 80 mm, lanceolate, lightly pubescent below, apex acuminate; ligule entire, pubescent. **Bracts** broadly ovate, unevenly pubescent, margins membranous, apex ± obtuse. **Inflorescence** with yellow flowers. **Calyx** pubescent, unilaterally splitting. **Corolla**: tube ± twice length of calyx; petals linear; labellum broadly obcordate, narrowed at base, bilobed above. **Staminodes** spathulate. **Stamens** up to 40 mm long. **Ovary** silky pubescent. **Flowering time** Dec.–Mar. Invader in forests, plantation riverbanks and moist shaded areas; origin Himalayas, Vietnam etc., declared weed (Category 1); Indian Ocean Coastal Belt, Indigenous Forests (Port St Johns District).

SIPHONOCHILUS J.M.Wood & Franks

(= *KAEMPFERIA* L. subgen. *Cienkowskia* K.Schum.)

Species ± 20, Sub-Saharan Africa 10; 1 in sthn Afr., LIM, M, S, KZN, EC.

aethiopicus (Schweinf.) B.L.Burtt

Wild ginger, Natal ginger; *indungulo*, *isiphephetho* (Z)

Perennial herb, above ground parts annual; rhizomes segmented, conical, fleshy, yielding a strong ginger aroma when crushed; root tubers present. **Leaves** 4–8 on an unbranched stem up to 400 mm high. **Flowers** large and showy, throat purple-pink and yellow. **Flowering time** early summer. Damp and partially shady sites, savanna and coastal grassland, ecotone of forests and bush clumps, alt. 400–700 m; Sub-Escarpment Savanna, Indigenous Forests, Indian Ocean Coastal Belt (regionally extinct in KZN, very rare elsewhere; Port Shepstone area to Lusikisiki in Pondoland).

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SMITH R.M. 1998. Zingiberaceae. *Bothalia* 28: 35–39.

ZOSTERACEAE

(Order Alismatales)

Compiled by Z.L. Magwaza

ZOSTERA L.

Species 12, mostly marine but sometimes in brackish water, cosmopolitan in warm and temperate areas; 1 in sthn Afr., occurring in marine pools and lagoons, KZN, WC, EC.

capensis Setch.

Seegras (A)

Perennial herb, hydrophyte, rosulate, 0.38–1.15 m high; rhizome creeping, roots simple, densely covered with long root hairs. **Leaves** convolute, linear, usually 100–300 × 1–2 mm, margins and midribs distinct, apex obtuse to acute, sometimes slightly emarginate. **Spathes** flattened, with folded membranous margins. **Inflorescence** with 3–5 female and 3–5 male flowers. **Stamens** with oblong-ellipsoid thecae. **Ovary** cylindrical, 1–2 mm long. **Flowering time** all year. **Seeds** ellipsoid, with short beak at one end; testa shiny, reddish brown, striate. Along coast; Indian Ocean Coastal Belt, Albany Thicket, Eastern Fynbos-Renosterveld (Port Edward to Bathurst and Humansdorp).

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Glossary

This list is based on the glossary in Retief and Herman (1997, Plants of the northern provinces of South Africa: keys and diagnostic characters. *Strelitzia* 6) which was compiled mainly from Jackson (1928, *A glossary of botanic terms*, edn 4); Exell & Wild (1960, *Flora zambesiaca* 1,1: 42–54); Radford et al. (1974, *Vascular plant systematics*) and Little and Jones (1980, *A dictionary of botany*). Much additional material was gained, chiefly from Orchard (1999, *Species plantarum: Flora of the world. Introduction to the series*).
Abbreviations: *adj.*, adjective; *pl.*, plural; *sing.*, singular; =, synonym; *vb.*, verb.

A

a- (*prefix*): without, lacking.

abaxial: applied to the side or surface facing away from the axis or stem (compare **adaxial**).

abortion: suppression of parts which are usually present.

abscission: the normal shedding from a plant of an organ that is mature or aged.

acarodomatium (*pl.* **acarodomatia**): a small cavity of very varying form, found on almost any vegetative part of the plant, which is inhabited, or thought to be inhabited, by mites; commonest types are small pockets or pits in axils of main veins with midrib on lower leaf surface.

acaulescent/acauline: stemless or seemingly so.

accrescent: increasing in size, e.g. the calyx of some plants in the fruiting stage.
accumbent: lying against, as the **cotyledons** (in some Brassicaceae) with their edges against the **radicle**.
achene: a small dry fruit, not splitting when ripe, formed from a **superior** ovary of one **carpel** and containing a single seed, with the seed coat free from the fruit wall, as in *Clematis* (Ranunculaceae) (compare **cypsela**).
acicular: very narrow, stiff and pointed, needle-like.
acinaciform: scimitar-shaped; shaped like a short, curved, single-edged sword.
acropetal: arising or developing in a longitudinal sequence towards the apex.
acroscopic: facing or directed towards apex.
acrostichoid: in a row or a line at apices of shoots, see Pteridophytes, Dryopteridaceae.
actinomorphic: applied to flowers which are radially symmetrical, i.e. capable of being bisected into similar halves in more than one vertical plane, forming mirror images (= **regular**) (compare **irregular**, **zygomorphic**).
aculeate: armed with **prickles**, as distinct from **spines**.
aculei: armed with prickles e.g. Cucurbitaceae.
aculeolate: with small **prickles**.
acumen: a long, tapering point.
acuminate: having a long, slender, sharp point with a terminal angle less than 45°, with margins straight to convex.
acute: sharp-pointed, with a terminal angle between 45° and 90° with margins straight to convex.
adaxial: applied to the side facing the stem or axis (compare **abaxial**).
adnate: fused to an organ of a different kind, e.g. an ovary to the calyx tube.
adpressed: see **appressed**.
adventitious: applied to plant organs produced in an unusual or irregular position or at an unusual time of development, as in adventitious buds, roots or shoots.
adventive: introduced recently by chance to an area (compare **introduced**, **naturalised**).
aequilateral: equally-sided.
aerenchyma (*adj.* **aerenchymatous**): tissue of thin-walled cells and large intercellular spaces, found especially in water- and marsh plants.
aestivation: the manner in which sepals and petals are arranged in a bud (compare **vernation**).
aggregate fruit: a cluster of fruits formed from the free **carpels** of one flower, e.g. the many small **drupes** in the 'fruit' of *Rubus* (Rosaceae) (compare **syncarp**).
alate: **winged**, as in certain stems or seeds; having wing-like extensions.
albumen (*adj.* **albuminous**): starchy or other nutritive material within the **embryo**; an older term largely replaced by the term **endosperm**.
allantoid: sausage-shaped.
allopatric (of two or more taxa): having different ranges of distribution (compare **sympatric**).
alternate: applied to leaves and other organs inserted singly at different levels along the axis.
alternipetalous: applied to floral parts arising alternately with the petals.
alternisepalous: applied to floral parts arising alternately with the sepals.
alveola (*pl.* **alveolae**): small pits on the surface, as on the receptacle of many of the Asteraceae (see **alveolate**).

alveolate: honeycombed; having deep angular sides, like the cavities of a honeycomb.
amphistomatic/amphistomatous: with stomata on both upper and lower leaf surfaces.
amphitropous ovule: an ovule which is attached near its middle and is bent in the form of a U, so that the ovule tip and stalk base are near each other.
ampliatus: enlarged, increased.
amplexicaul: stem-clasping, as when the base of the leaf is dilated and embraces the stem.
ampullaceous: swollen out in flask-shape.
ampulliform: flask-shaped, swollen below like a short flask.
anacampylotropous: applied to an **ovule** intermediate in structure between **anatropous** and **campylotropous**.
anadromous: having the first lobe or segment of a pinna arising basiscopically (facing basally) in compound leaves.
anantherous: of a filament without anther.
anastomosis (*vb.* **anastomose**): union of one vein with another, the connections forming a network.
anatropous: applied to an **ovule** that is inverted, so that the funicle is basally attached near the adjoining **micropyle** area, and the **chalaza** is at the opposite end.
ancipitous/ancipital: two-edged; flattened or compressed, as in stems of certain Poaceae.
androdioecious: male plant with flowers having only stamens and a bisexual plant with flowers having both stamens and pistils.
androecium: the **stamens** and accessories of one flower.
androgynophore: a stalk supporting both **androecium** and **gynoecium** of a flower above the level of insertion of the **perianth**.
androphore: a stalk bearing the **androecium**.
andropodium: the structure on which the stamens arise (in some Podostemaceae).
anemochoric: dispersed by wind.
anemophilous: pollinated or dispersed by wind (compare **entomophilous**, **hydrophilous**, **ornithophilous**).
aneuploid: having a chromosome number that is not an exact multiple of the **haploid** number, because one chromosome set is incomplete.
angiosperm: a seed-bearing plant whose ovules, and hence seeds, develop within an ovary (compare **gymnosperm**).
angustate: narrow, e.g. shape of leaf base.
angustiseptate: with narrow partitions (compare **latiseptate**).
aniso- (*prefix*): unequal, uneven.
anisocytic: of a **stoma** with three subsidiary cells, one distinctly smaller than the other two, surrounding the stoma.
anisophyllous: with the two leaves of a pair of unequal size or shape.
anisotomous: dichotomies result in branches that have different orientations and functions.
anisovalvate: with valves of unequal size or shape; anthers or fruits, opening by valves.
annual: a plant whose life span ends within one year after germination.
annular: arranged in a circle.
annulate: ring-shaped; having an **annulus**.
annulus: any ring or ring-like structure.

anomocytic: of a **stoma** surrounded by a limited number of cells that are indistinguishable from those of the remainder of the epidermis.
ante- (*prefix*): before, in front of.
anterior (applied to floral organs): in a position most remote from the axis (compare **posterior/posticous**).
anthela (*adj.* **anthelate**): a **panicle** in which the lateral axes overtop the main axis.
anther: the part of the stamen which contains the pollen, usually comprising four **microsporangia** or **pollen sacs**, two in each half or lobe of the anther; the tissue separating the two sacs in each half usually disintegrates before **anthesis**, resulting in a 2-thecous/bithecous/2-locular/2-celled anther.
anther canal (in orchids): the narrow **basal** portion of a **pollinium**.
anther slits: see **gynostegial grooves**.
anther wings (in Asclepiadoideae—Apocynaceae): see **gynostegial grooves**.
antherode: a sterile anther, often rudimentary.
anthesis: period during which the flower is open.
anthocarp: a false fruit formed by the union of floral parts with the fruit (as in Nyctaginaceae).
anthophore: a short stalk between calyx and petals (e.g. in *Dianthus*—Caryophyllaceae).
anti- (*prefix*): against.
anticous/antical: applied to that which is most remote or turned away from the axis; occasionally employed for **introrse**, as applied to anthers (compare **posticous**).
antipetalous: opposite a petal or placed upon one, not alternating with petals.
antisepalous: opposite a sepal or placed upon one, not alternating with sepals.
antrorse: bent or directed towards the apex or forward (compare **retrorse**).
apex (*pl.* **apices**): tip; topmost part or terminal end.
aphlebia: stipular outgrowths which occur on the **rachis**.
apicule/apiculum/apiculus (*adj.* **apiculate**): a short point.
apocarpous: with **carpels** free from one another.
apomict: an organism that reproduces by asexual means; it may be a facultative or an obligate apomict, e.g. in Pontederiaceae, seed is rarely produced or rarely germinating.
apophysis (*pl.* **apophyses**): the rounded, exposed thickening on the scales of certain pine cones.
apotropous: of an **anatropous** ovule with **ventral raphe**.
appendiculate/appendaged: with small appendages; hanging in small fragments.
applanate: flattened or horizontally expanded in shape.
appressed: lying close to and flat along the surface.
aquatic: living in water.
arachnoid: cobwebby by soft and fine entangled hairs which are longer than in **tomentose**.
araneose/araneous: see **arachnoid**.
arborescent: having the shape or characteristic of a tree.
arcuate: curved like a bow.
areolate: divided into distinct spaces.
areole: a small pit or raised spot, often bearing a tuft of hairs or spines; a space marked out on a surface; a small area in a leaf between small veins.
aril: an appendage covering or partly enclosing the seed and arising from the **funicle** (stalk) of the seed.

arillode: a false **aril**; a fleshy coat derived from the orifice or **micropylar** rim of the outer **integument** instead of the stalk of an ovule.
arillus (*pl.* **arilli**; *adj.* **arillate**): see **aril**.
arista (*pl.* **aristae**): a bristle-like appendage as on **glumes** of many Poaceae; a bristly **awn**.
aristate: with a long, bristle-like point.
article: one of the segments of a jointed fruit, such as a **loment**, or **internodes** of the branchlets of e.g. Amaranthaceae or *Casuarinaceae.
articulate(d): jointed or separating at a certain point and leaving a clean scar.
articulation: a joint, e.g. between the **column** and the lower part of the **lemma** in *Aristida* (Poaceae).
ascendent/ascending: growing erect after an oblique or ± horizontal beginning.
ascending (of **aestivation**): sepals or petals arranged in the bud so that the upper margins of the lowest member overlap the lower margin of the member above it.
asperous: rough, harsh to the touch.
asperulate/asperulous: slightly rough to the touch.
ategmic (of a seed): without covering.
atrocastaneous: dark chestnut-coloured; dark brown.
attenuate: tapering gradually.
aulacospermous (of seeds): furrowed.
auricle (*adj.* **auricled/auriculate**): an ear-like lobe or appendage at the base of a leaf or other organ.
auriformis: ear-shaped.
autogamous: self-fertilising.
awn: a fine bristle usually terminating an organ, as at the tip of the **glumes** and **lemmas** of many Poaceae.
axil: the angle between leaf or bract and the axis bearing it.
axile placentation: **placentation** with the **ovules** borne on the axis or the inner angle of the locules of a **syncarpous** ovary (see also **marginal** and **parietal placentation**).
axillary: arising from the **axil**.
axis (of an inflorescence): that part of the stem or branch on which the individual flowers are borne.

B

baccate: berry-like.
barbate: bearded.
barbed: with rigid points or lateral bristles pointing backwards.
barbellate: shortly **barbed**.
basal: at the base.
basifixed: fixed by its base, e.g. of an anther (compare **dorsifixed**, **medifixed**, **versatile**).
basiscopic: toward the **basal** or **proximal** (as opposed to **distal**) end; facing basally.
B-chromosomes (accessory chromosomes): supernumery chromosomes occurring in addition to the normal **diploid** complement.
beak: a prominent terminal projection, especially of a **carpel** or fruit; a slight narrowing of the **lemma** below the **awns**, as distinct from a longer straight **column**, e.g. in *Aristida* (Poaceae).
bearded: with long awns or with tufts of stiff hairs.

berry: a juicy fruit with soft **pericarp**, the seeds immersed in pulp (compare **drupe**, **pyrene**).
bi- (*prefix*): twice; two; having two.
bicallose: with two **callosities**.
bicarpellate (of an ovary): with two carpels.
bicolorous: two-coloured.
bifacial (of a leaf): **dorsiventral**, having a distinct upper and lower surface.
bifarious(ly): see **distichous**.
bifid: cleft into two parts for ± half the length.
bifoliate: having two leaves.
bifoliolate: having two **leaflets**.
bilabiate: 2-lipped, as when two or three lobes of a calyx or corolla stand separate as an upper lip from the others forming a lower lip.
bilocular: with two **locules** or compartments.
binate: in pairs.
bipinnate: when the primary divisions (pinnae) of a **pinnate** leaf are themselves pinnate.
biramous: with two branches.
biseriate: arranged in two rows or **whorls**.
bisexual: having both sexes in the same **flower** or **inflorescence**.
bitegmic: of an ovule having two **integuments**.
biternate (of a leaf): with two orders of leaflets, each **ternately** compound.
bithecate (of an anther): with two **thecae**.
bivalved: having two **valves**.
blade: the expanded part of a leaf or petal (see also **lamina**, **limb**).
bothrospermous (of seeds): pitted.
botryoid: like a cluster of grapes.
brachyblast: a **spur shoot** or short branch.
bract: a leaf-like structure, different in form from the foliage leaves and without an axillary bud, associated with an **inflorescence** or a **flower**.
bracteal cup: cup-shaped structure formed by fused bracts (e.g. in Viscaceae).
bracteate: possessing or bearing **bracts**.
bracteole (*adj.* **bracteolate**): small bract borne on the **pedicel** or **calyx** of a flower.
bractiform: looking like a **bract**.
bristle: a stiff, strong **trichome**, similar to a pig's bristle, as in the **perianth** of some Cyperaceae.
brochidodromous (of a leaf): with a single primary vein, the secondary veins not terminating at the margin but joined together in a series of prominent upward arches or marginal loops on each side of the primary vein.
bud: an undeveloped shoot that can give rise to a branch or flower.
bulb: a storage organ, usually underground, made up of a usually much abbreviated stem and fleshy leaf bases.
bulbil: a small deciduous **bulb** (or **tuber**) formed around the mother bulb or in the **axil** of a leaf, and functioning to propagate the plant vegetatively.
bulbous-based: with an inflated base.
bullate: having a blistered or puckered surface; (of a leaf surface): prominently raised, like a bubble, between the veins.

bur(r): a rough or prickly **propagule** consisting of a seed or fruit and associated floral parts or bracts.

buttress: a flange of tissue protruding from the base of the main trunk of a tree (term butt, associated with *Eucalyptus*).

C

caducous: falling off early.

caespitose: growing in tufts.

calcarate: having a spur.

calceiform: shaped like a slipper.

calciphilous plant: a plant preferring to grow on a calcium-rich substrate.

callose/callous: hard and thick in texture; bearing **callosities**.

callosity: a leathery or hard thickening of part of an organ.

callus (*pl.* **calli**): a thickened part, such as the thickened extension at the base of the **lemma** at the point of its attachment to the **rachilla**.

calycine: belonging to the **calyx**.

calyculus (*pl.* **calyculi**; *adj.* **calyculate**): the bracts around the **calyx** or an **involucre** resembling an outer calyx (see also **epicalyx**).

calyx (*pl.* **calyces**): the outer envelope of the flower, consisting of free or united **sepals**.

calyx tube: when the **sepals** are partly united, the lower portion is referred to as the tube and the upper free part as the **limb** usually divided into calyx teeth, lobes or segments (see also **hypanthium**).

campanulate: bell-shaped.

campylotropous: of an **ovule** orientated transversely (i.e. with its axis at right angles to its stalk and with a curved **embryo sac**).

canaliculate: channelled.

canescent: ± grey-pubescent or hoary.

cano- (*prefix*): greyish white (usually applied to hair covering).

capillary: resembling a hair; very slender.

capitate: (1) like the head of a pin, as the **stigma** of some flowers; (2) collected into compact head-like clusters, as the inflorescences of Asteraceae.

capituliform: shaped like a **capitulum**.

capitulum (*pl.* **capitula**): a dense head-like inflorescence usually of sessile flowers (see also **head**).

capsule: a dry fruit composed of two or more united **carpels** and either splitting when ripe into flaps called **valves** or opening by slits or pores.

carina (*adj.* **carinal**): a keel; the two partially united **anterior** (lowest) petals of a **papilionaceous** flower, or the single, similar-shaped, anterior petal in many Polygalaceae.

carinate: keeled.

carnose: fleshy.

carpel: an organ (generally believed to be a modified foliar unit) at the centre of a flower, bearing one or more **ovules** and having its margins fused together or fused with other carpels to enclose the ovule(s) in an **ovary**, and consisting also of a **stigma** and usually a **style** (see also **suture**).

carpellate: possessing **carpels**.

carpophore: the stalk of a **carpel** or of a **mericarp**.

carpopodium: the stalk of a fruit.

carrier: see **corpuscle**.
cartilaginous: hard and tough, as the skin of an apple-pip.
caruncle (*adj.* **caruncular/carunculate**): an outgrowth from **integuments** at or near the **hilum** of certain seeds (see also **strophiole**).
caryopsis: a 1-seeded, dry, indehiscent fruit with the seed coat adnate to the fruit wall, derived from a 1-loculed **superior ovary** (characteristic of Poaceae) (compare **achene**).
castaneous: chestnut-coloured; dark brown.
catadromous: having the first lobe or segment of a pinna arising acroscopically (facing apically) in compound leaves.
cataphyll: small scale leaf, e.g. on **rhizomes** of flowering plants.
catkin: a dense, often **pendulous spike** of small unisexual flowers which have no conspicuous **perianth**.
caudate: abruptly ending in a long tail-like tip or appendage.
caudex: a short, thickened, often woody, vertical or branched perennial stem, usually subterranean or at ground level (e.g. in some spp. of *Encephalartos*—Zamiaceae).
caudicle: the stalk of a **pollen mass** connecting it to the **corpuscle**, in Asclepiadaceae and Orchidaceae (also known as **translator arm**).
caulescent: with an obvious leafy stem; having an evident stem above ground.
cauliflorous: producing flowers from old wood (compare **ramiflorous**).
cauline: arising from or inserted on the stem.
centric (of a leaf): filiform to cylindrical with a ± continuous palisade layer (see also **unifacial**).
centripetal: as in **inflorescences**, blooming from the outside inward or from the base upward.
cernuous: nodding.
chalaza (*adj.* **chalazal**): basal region of the **ovule** where it joins the **funicle**; region of a seed opposite the **micropyle**.
chamaephyte: a perennial plant, generally woody or partly woody, with the mean height of the renewal buds less than or equal to 0.7 m from the ground.
chartaceous: papery in texture, opaque and thin.
chasmogamous: pollinated when the flower is open (compare **cleistogamous**).
chasmophyte: plant growing in rock crevices.
chlorenchyma: **parenchyma** cells containing chloroplasts.
choripetalous: having separate and distinct petals (= **polypetalous**) (compare **gamopetalous**, **sympetalous**).
cilia (*sing.* **cilium**): short epidermal outgrowths, such as hairs or scales ± confined to the margins of an organ.
ciliate: with a fringe of hairs along the edge.
ciliolate: minutely **ciliate**.
cincinnus (*pl.* **cincinni**; *adj.* **cincinnate**): a tight, unilateral **scorpioid cyme**.
circinnate: spirally coiled, with the tip innermost, as the leaves of *Drosera*—Droseraceae.
circumgynoecial: around gynoecium.
circumscissile: applied to an organ opening as if cut circularly around the upper part, which then comes off like a lid.
cirrhiferous: producing **tendrils**.
cirrhose: having **tendrils**.
cistolith: see **cystolith**.

cladode: a flattened, foliaceous stem having the form and function of a leaf, but arising in the axil of a minute, bract-like caducous, true leaf (compare **phyllode**).
clathrate: latticed or pierced with apertures like a trellis.
clavate: club-shaped or thickened towards the end.
clavellate: diminutive of **clavate**, thickened towards the apex.
claviform: club-shaped.
claw (*adj.* **clawed**): the narrow base of a petal, sepal or bract.
-cleft: incised almost to the midrib or base.
cleistogamous: (of pollination) occurring when the flower is closed (as in *Viola*—Violaceae) (compare **chasmogamous**).
club-shaped: gradually thickened from a slender base.
coalesce: to fuse.
cobwebby: entangled with fine filaments (see also **arachnoid**).
coccus (*pl.* **cocci**; *adj.* **coccous**): a one-carpel unit of a **schizocarp** or lobed fruit, becoming separate at maturity (e.g. in Euphorbiaceae).
cochleate: coiled like a snail's shell.
collateral: standing side by side.
colleter: a mucilaginous secretory hair, often occurring in tufts near the base of the leaf **lamina** and on the **calyx** (e.g. in Apocynaceae).
colliculate: covered with little rounded elevations.
colpate (of a **pollen** grain): having elongate, longitudinal apertures.
colporate (of a **pollen** grain): having compound apertures (*adj.* of **colporus**).
colporus (of a **pollen** grain): a compound aperture consisting of an ectocolpus with one or more endoapertures.
colpus (*pl.* **colpi**) (of a **pollen** grain): a usually longitudinal, ± distinct aperture (compare **sulcus**).
columella (*pl.* **columellae**): (1) the central structure inside a schizocarp (dry dehiscent fruit type), visible when dry mericarps break away for dispersal (e.g. in *Sida*—Malvaceae); (2) pillar-like elements, supporting a layer or crowned by a single element in the structure of the **pollen** wall.
column: (1) the adnate **stamen** and **style** forming a solid central body, as in orchids; (2) the tube of connate **filaments**, as in Malvaceae; (3) a straight structure between the apex of the **lemma** and the branching point of the **awns**, as in *Aristida* and *Stipagrostis* (Poaceae) (see **beak**).
coma: a tuft of hairs at the end of some seeds; a terminal crown of leaves or bracts, e.g. in *Eucomis* (Hyacinthaceae).
commissural: of a joint or seam, such as that between two adhering **sepals**.
commissure: the faces of cohering **carpels** (e.g. in Apiaceae); the place of joining or meeting.
comose: bearing a tuft of **trichomes**, usually apically.
complanate: flattened; compressed.
complicate: folded on itself.
compound: the opposite of **simple**; composed of several similar parts, as a leaf of several leaflets; compound fruit: the fruits of separate flowers becoming united into a mass; compound umbel: each **ray** again bearing an **umbel**.
compressed: flattened lengthwise from side to side or from front to back.
concolor/concolorous: of uniform colour (e.g. upper and lower leaf surface with the same colour) (compare **discolorous**).

concrescent: growing/grown together.
conduplicate: folded together lengthwise.
condyle: an intrusion of the placenta which forms grooves or cavities in the **endocarp** of the developing fruit (e.g. in Menispermaceae).
confervoid: composed of threads; (of **pollen**): united in strings.
conflorescence: a modified, condensed inflorescence, as found in *Eucalyptus*—Myrtaceae.
connate: applied to parts of the same series which are united so closely that they cannot be separated without tearing.
connective: the part of an anther which connects its two **thecae**.
connivent: applied to parts converging so as to be nearer together above than below.
conoidal: ± conical.
conservation (of a name): the decision of an International Botanical Congress that a validly published name shall be used even though to do so is contrary to the International Code of Nomenclature for Algae, Fungi and Plants (**ICNAFP**).
contiguous: touching, but not adnate, connate, adherent or coherent.
contorted (of **sepals** and **petals**): twisted in the bud so that each overlaps the adjoining one on one side and is overlapped by the other adjoining one on the other side, like a furled umbrella; spirally twisted.
contractile roots: a specialised type of root, often found in bulbous plants, that undergoes contraction and thereby pulls the bulb or shoot parts deeper into the soil.
convexity: the condition of being convex or having a curvature that bulges towards the point of observation.
convolute: rolled up lengthwise (also used in the sense of **contorted**).
cordate: applied to the base of a leaf when it is ± deeply notched.
cordulate: diminutive form of cordate; tiny outgrowths on either side of the petiole resulting in a cordulate leaf base.
coriaceous: firm, tough, of the consistence of leather.
corm: a tuberous bulb-like **rootstock**.
cormous: possessing a **corm**.
cornate: bearing a horn.
corniculate: bearing or terminating in a small horn-like protuberance or process.
cornute: bearing a horn.
corolla: the inner envelope of the flower, consisting of free or united **petals**.
corona: a crown; (in the flower of some Apocynaceae and Passifloraceae and others): a circle of appendages between the **corolla** and **stamens**, often united in a ring or crown; in some members of the Asclepiadoideae—Apocynaceae the corona consists of one or two (sometimes three) alternating rows different in size and shape, the outer row nearest to the corolla lobes, the inner row nearest to the **staminal column**.
coroniform: shaped like a crown.
corpuscle/corpusculum (*pl.* **corpuscula**): a small, ± spherical, slightly 2-parted, hard, usually brown to black, sticky body with two flexible arms (**caudicles**), each carrying one **pollinium**, in Asclepiadoideae—Apocynaceae.
corrugate: irregularly crumpled, furrowed or in folds.
cortex: the unspecialised tissue in stems and roots between the vascular bundles and the epidermis.

corymb (*adj.* **corymbose**): a ± flat-topped **racemose** inflorescence in which the branches or **pedicels** start from different points but all reach to about the same level.
costa (*pl.* **costae**): the midvein of a single leaf or the **rachis** of a **pinnately compound** leaf.
costule: the midrib of a **pinnule** or **pinna** segment.
cotyledon (*adj.* **cotyledonary**): the primary leaf of an **embryo**.
craspedodromous venation: leaf venation characterised by a single primary **vein**, with the lateral veins terminating at the margin.
crassate: coarse, gross, dense, thick.
crateriform: bowl-shaped, i.e. hemispherical and concave.
crenate (*noun* **crenation**) (of a margin): notched with regular blunt or rounded teeth; scalloped.
crenulate: crenate with very small teeth; minutely scalloped.
crescentic/crescentiform: biconcave, resembling the shape of the moon in its first or last quarters.
crested: having a crest, elevated appendage or ridge on the summit of an organ.
crinite: bearded with long, weak hairs.
crispate: curled.
crista (*adj.* **cristate**): a crest or ridge.
cruciform: cross-shaped.
crustaceous: of brittle texture.
cucullate: hooded or hood-shaped.
culm: the stem of Cyperaceae and Poaceae.
cultrate/cultriform: shaped like a knife blade.
cuneate (of the base of a leaf): tapering gradually, i.e. wedge-shaped.
cuneiform: wedge-shaped; triangular, with the narrow part at the point of attachment.
cupular/cupuliform: applied to a shallow, open structure, as the **involucre** of an acorn.
cupule/cupulum (*pl.* **cupula**): a cup-shaped structure at the base of some fruits formed by the fusion of **involucral bracts** at their bases, e.g. the acorn of oaks, a structure at the base of the fruits of some palms, the cup-shaped involucre of some Asteraceae; a series of free **trichomes** apically on **achenes** of Asteraceae which become fused with age.
cusp: an abrupt, sharp, often rigid point.
cuspidate: abruptly tipped with a sharp rigid point.
cuticle: a noncellular layer of waxy or fatty materials on the outer wall of epidermal cells.
cutin (*adj.* **cutinous**): a waxy, waterproof substance that is the main constituent of the plant **cuticle**.
cyathiform: cup-shaped.
cyathium: an **inflorescence** resembling a single flower, composed of unisexual flowers surrounded by **bracts** and often by **glands**, typical of *Euphorbia*—Euphorbiaceae.
cymbiform: boat-shaped.
cyme (*adj.* **cymose**): a **determinate inflorescence** in which each flower, in turn, is formed at the tip of a growing axis, and further flowers are formed on branches arising below it (compare **indeterminate** inflorescence).
cymule: a small **cyme** or portion of one, usually few-flowered.
cypsela (*pl.* **cypselae**): an **achene** derived from a 1-loculed, **inferior** ovary; as in the indehiscent fruits of Asteraceae (compare **achene**).

cystolith: mineral concretion, usually of calcium carbonate, in the epidermis of e.g. Acanthaceae and Urticaceae, showing up as streaks or protuberances, particularly in dried material.

D

daucate: carrot-shaped.
deciduous: falling off at the end of the season of growth (opposite of evergreen).
declinate: angled downwards or forwards (compare **decurved**).
decompound: applied to leaves that are several times divided or **compound**.
decrescent: decreasing, gradually growing less.
decumbent: spreading horizontally at first but then growing upwards.
decurrent: as when the edges of the leaf are continued down the stem or petiole as raised lines or narrow wings.
decurved: angled downwards and curved or curled.
decussate: in opposite pairs, with each pair at right angles to the one above and below it.
deflexed: bent abruptly downwards or outwards (compare **inflexed**).
dehiscent/dehiscing (*noun* **dehiscence**): opening spontaneously when ripe as in **capsules** and **anthers**.
deliquescent: dissolving or melting away.
deltate: shaped like an equal-sided triangle.
deltoid: shaped ± like an equal-sided triangle.
dendritic/dendroid: tree-like; resembling the shape of a tree; having a branched appearance.
dentate (of a margin): prominently toothed, the teeth directed outwards.
denticulate: finely toothed/**dentate**.
dentiform: tooth-like.
depressed: ± flattened from above downwards or at least at the top.
determinate (of an **inflorescence**): with a **bud** or **flower** terminating the growth of the main axis (compare **indeterminate**).
dextrorse: turned toward the right (compare **sinistrorse**).
di- (*prefix*): two-.
diad (of a **pollen** grain): two fused together (compare **monad**, **tetrad**).
diadelphous: having the **stamens** united into two groups, or all but one united in a group and one free (e.g. many Fabaceae) (compare **monadelphous**).
diadem: a crown.
diaphanous: very thin and transparent.
dichasium (*adj.* **dichasial**): a **determinate** type of **cymose** inflorescence having a central, older flower which develops first and a pair of opposite lateral branches bearing younger flowers (compare **monochasium**).
dichlamydeous: said of a flower having two whorls of **perianth** parts.
dichotomous: forking regularly into two equal branches.
dicotyledon: a flowering plant having two **cotyledons** in the seed (compare **monocotyledon**).
dictyostelic: with vascular bundles concentrically arranged with large overlapping **leaf gaps**, in the trunk.
didymous: 2-lobed; (of **anthers**): distinctly 2-lobed but with almost no connective.
didynamous (of **stamens**): with four in two pairs of unequal length, e.g. in Acanthaceae and Lamiaceae.

diffuse: loosely and openly branching or spreading.
digitate: like the fingers of a hand, with the members arising from the same point.
digitiform: shaped like a finger.
dimidiate: having one of two sides or parts more developed than the other.
dimorphic/dimorphous: of two forms.
dioecious: with unisexual flowers, the male and the female flowers on separate plants (compare **monoecious**).
diploid: having two of the basic sets of chromosomes in the nucleus (compare **haploid**).
disarticulate: breaking apart at the joints.
disc: an enlargement of the **receptacle** within the calyx or within the corolla or stamens, usually in the form of a ring, cup or cushion, often lobed or even cut up into so-called (nectary) **glands**.
disc floret: the central florets as compared with the **ray florets** in a head of the Asteraceae.
disc hololophic: stamens, **antisepalous**, inserted beneath disc, alternating with disc lobes, e.g. in *Tamarix*.
disciform (of heads of Asteraceae): with central flowers perfect with tubular **corollas**, and the marginal flowers **pistillate** or neuter but without **ligules**, their corollas tubular or wanting.
discoid: (1) like a disc or plate; (2) applied to the heads of Asteraceae without **ray** flowers.
discolorous: of a leaf in which the two surfaces are unlike in colour (compare **concolorous**).
disc paralophic: stamens alternating with disc lobes (disc hololophic) or each lobe deeply bipartite with each half lobe fusing to the adjacent filament, e.g. male flowers of *Tamarix usneoides*.
disc synlophic: half lobes of bipartite discal lobes very strongly fused to adjacent filaments, filaments seemingly broad based, e.g. female flowers of *Tamarix usneoides*.
dissepiment: a partition (**septum**) within an ovary or fruit, derived from fusion of adjacent **carpels**.
distal: farther from the point of attachment or origin (compare **proximal**).
distichous: regularly arranged one above the other in two opposite rows, one on each side of the stem or **rachis**.
diurnal: happening during the day.
divaricate: widely divergent or spreading in different directions, and often ± horizontal.
dizonasulculate (of a **pollen** grain): with two ring-like **sulci** around the equator.
domatium (*pl.* **domatia**): small swelling/pocket on the lower surface of the leaf of some woody **dicotyledons** in the axils of the primary veins, usually partly enclosed by leaf tissue or hairs.
dorsal: relating to or situated on the face turned away from the axis; (of a leaf): the lower surface; (of a **thallus**): the upper surface, facing away from the substrate (compare **ventral**).
dorsifixed: attached at or by its back, said e.g. of an **anther** to the **filament**.
dorsiventral: flattened and having distinct **dorsal** and **ventral** surfaces, the two usually different, as in many leaves.
drupaceous often refers to a fruit that is drupe-like but not strictly a drupe (compare **berry**, **pyrene**).

drupe (*adj.* **drupaceous**): an indehiscent, fleshy fruit, usually 1-seeded, in which the **pericarp** is clearly tripartite: a tough **exocarp**, a fleshy **mesocarp** and a hard **endocarp**, found e.g. in plum or cherry and in the **aggregate fruit** of e.g. *Rubus* (Rosaceae).
drupelet: a small **drupe**.
druse: an aggregate of crystals within a cavity.
duplicate: folded twice.

E

e- (*prefix*): often implying absence of something, e.g. in **ebracteate**, **eglandular**.
ebracteate: without **bracts**.
ecalcarate: without a spur.
ecallose: without **callus/calli**.
ecalyculate: without a **calyculus**.
ecaudate: without a tail-like tip or appendage.
echinate: covered with **prickles** like a hedgehog.
echinolophate (of a **pollen** grain): **lophate** with **echinate** ridges.
echinulate: covered with small, pointed **spines**.
effuse: spreading out loosely, especially of an inflorescence.
efoliate: without leaves.
eglandular: having no **glands**.
elaiosome: an appendage of a seed, usually rich in oil, attractive to animals (especially ants) and hence an aid to dispersal by such animals.
eligulate: without a **ligule**.
ellipsoid: an elliptic solid.
elliptic: in the form of a flattened circle more than twice as long as broad.
emarginate: notched at the extremity.
embryo: the rudimentary plant still enclosed in the seed, consisting of the **radicle** from which the root develops, the **cotyledons** (one, two, rarely more), which become the earliest leaves, and the **plumule**, the bud from which the stem and further leaves develop.
emergent/emersed: with part of the plant aerial and the rest submersed; with part extending out of the water.
enation: arising from, e.g. outgrowth from the surface of a leaf or other part.
endemic: having a natural distribution confined to a particular geographical region.
endocarp (*adj.* **endocarpal**): the innermost layer of the wall of a fruit.
endosperm: formerly called **albumen**, the nutritive material (mealy, oily, fleshy or horny), formed in the **embryo** sac after fertilisation and stored within the seed and often surrounding the **embryo** (compare **perisperm**).
endothecium (*adj.* **endothecial**): the inner lining of the **theca** of an **anther**.
enervate: without **nerves**.
ensiform: sword-shaped.
entire: with an even margin without teeth, lobes, etc.
entomophilous (of pollination): effected by insects (compare **anemophilous**, **hydrophilous**, **ornithophilous**).
epaleate: without **paleae**.
epapillate: without **papillae**.
epappose: without a **pappus**.
ephemeral: short-lived.

epi- (*prefix*): on, upon, above, over.
epicalyx: an **involucre** of **bracts** arising below the flower, resembling an extra **calyx**, as in some Malvaceae (see also **calyculus**).
epicarp: the outer layer of the wall of a fruit (see also **pericarp**).
epichile (of an orchid flower): apical portion of a longitudinally two- or three-partite **lip**.
epidermis (*adj.* **epidermal**): the outermost layer of cells of an organ, usually only one cell thick.
epigeal: describing seed germination in which the **cotyledons** emerge from the seed and are elevated above the soil surface (compare **hypogeal**).
epigynous: applied to the flower when the sepals, petals and stamens are apparently borne above the ovary, the latter being enclosed in an adnate **receptacle** or **calyx tube** (compare **hypogynous**, **perigynous**).
epilithic: living on, upon, above, over rocks.
epipetalous: borne on the **petals**.
epiphyte (*adj.* **epiphytic**): a plant that grows on another plant but without deriving nourishment from it, i.e. not parasitic, as some ferns and orchids growing on trees.
episepal: an **epicalyx** segment.
episepalous (of **stamens**): borne on the **sepals**.
epitropous/epitropic (of an **anatropous** ovule): with its **raphe** facing the **placenta** when **pendulous**, facing away from it when **ascending**.
equitant (*literally* riding, astride); (of leaves): folded sharply in half along the midline so that the adaxial surface is hidden and the margins overlap both margins of a similarly folded leaf on the opposite side of the stem, thus creating a 2-ranked arrangement typically found in Iridaceae (compare **obvolute**).
ericoid: resembling plants of the family Ericaceae, especially their small, tough leaves.
erose: applied to a margin which is irregularly eroded, gnawed or jagged.
estipitate: having no **stipe**.
estrophiolate: having no **strophiole**.
evagination: something that is inside out.
evanescent: disappearing quickly.
ex- (*prefix*): often implying absence of something, e.g. **exstipulate**.
exalbuminous: without **albumen/endosperm**.
exannulate: without an **annulus** or other ring-like structure.
excrescence: an outgrowth or protuberance, e.g. on the stem of a tree.
excurrent: extending beyond the apex or margin of a leaf into a mucro or awn.
exfoliate: peeling off in layers or shreds.
eximbricate: not **imbricate**.
exine: outer wall of spores and **pollen** grains, usually divided into different layers.
exocarp: the outer layer of the **pericarp**.
exserted: projecting beyond, as the stamens from the tube of the corolla (compare **included**).
exstipulate: without **stipules**.
extra-axillary: beyond or outside the **axil**.
extra-floral (of nectaries): not within the flower.
extrastaminal (e.g. of the **corona**): outside the **stamen** whorl.
extrorse: of an **anther** which opens outwardly towards the circumference of the flower (compare **introrse**).

F

facultative (of **parasites**): optional (compare **obligate**).
falcate: curved like a scythe.
family: a group of one to many genera believed to be related phylogenetically, usually clearly separable from other such groups; the major taxonomic group between genus and order.
farinaceous: starchy.
farinose: covered with mealy powder resembling flour.
farinosus: mealy, covered with farina.
fascicle (*adj.* **fascicled**/**fasciculate**): a cluster of flowers, leaves, etc. arising at about the same point.
fastigiate: strictly erect and ± parallel to other members, e.g. with reference to stems or branches.
faucal: of the throat of a **gamopetalous** corolla.
fenestrate: having openings or translucent areas (windows).
ferrugin(e)ous: rust-coloured.
fetid: see **foetid**.
fibril: submicroscopic thread or fibre that constitutes the form in which cellulose occurs in the cell wall.
fibrillose: covered with small fibres.
-fid (*suffix*): indicating number of parts into which an organ is cleft (divided up to ± the middle).
filament: the stalk of a **stamen** supporting the **anther**; a thin thread.
filamentous: thread-like.
filiform: slender, thread-like.
fimbriate: with the margin bordered by long, slender, hair-like processes.
fimbrillate/**fimbrilliferous**: minutely **fimbriate**.
fissure: narrow opening, caused by the separation of the parts of an organ.
fistular: hollow throughout its length, like a pipe but closed at the ends.
flabellate: fan-like.
flaccid: weak, limp, lax or flabby, tending to wilt (compare **turgid**).
flag leaf: the first leaf below the inflorescence.
flagellate: with whip-like hairs, e.g. the antherozoid (male gamete in cycads).
flagelliform (whip-shaped): long, tapering and supple, like the thong of a whip; this term confined to stems and roots.
flexuose/**flexuous**: zigzag or bent alternately in opposite directions.
floccose: covered with woolly hairs which tend to rub off and adhere in small masses.
floral: belonging to or associated with a flower.
florescence: **inflorescence** with a cluster of flowers terminating the main axis, but not terminating with a flower and hence apex of florescence remaining **indeterminate** forming exclusively lateral flowers.
floret: small individual flowers that make up a (dense) inflorescence, as those in the **heads** of Asteraceae or the **spikelets** of Poaceae.
floricane: a flowering and fruiting stem, especially of brambles (*Rubus* spp.—Rosaceae).
flower: the sexual reproductive structure of angiosperms, typically consisting of **gynoecium**, **androecium** and **perianth** and the **axis**/**receptacle** bearing these parts.
foetid/**fetid**: having a disagreeable odour.

foliaceous: leaf-like.
foliar: of or relating to a leaf.
foliolate: having **leaflets**.
follicle (*adj.* **follicular**): a fruit formed from a single **carpel** opening usually only along the inner (i.e. **ventral**) **suture** to which the seeds are attached.
forb: a non-woody plant other than a grass, sedge, rush, etc. (compare **herb**).
-form (*suffix*): superficially resembling; e.g. an umbelliform inflorescence is one that resembles, but is not a true **umbel**.
fornix (*pl.* **fornices**): a small scale.
foveate: pitted.
foveolate: marked with small pitting.
free: neither adhering nor united; free-basal placenta: one in which the ovules are attached to a central column arising from the base of the ovary cavity and not reaching the top, e.g. in Primulaceae; free-central placenta: the same but reaching to the top of the cavity, e.g. in most Caryophyllaceae.
frond: leaf of a fern, palm or cycad, or the **thallus** of e.g. Araceae.
frondose: leafy.
frutescent: becoming shrub-like (woody).
fruticose: shrub-like.
fugaceous: lasting only for a short time.
fugitive: moving from place to place; evanescent, quickly fading or perishable, volatile.
fulvous: tawny.
funicle/funiculus: the stalk which attaches the **ovule** to the **placenta**.
funnelform: funnel-shaped, gradually widening upwards.
furcate: forked.
furfuraceous: scaly, scurfy.
fuscous: of a brownish grey colour.
fusiform: spindle-shaped, thick but tapering towards each end.

G

galea: a **petal** shaped like a helmet; the strongly concave upper lip (petal) of some **bilabiate** corollas.
galeate: helmet-shaped; having a **galea**.
gamete: a **haploid** cell or nucleus that fuses with another, of opposite sex, in sexual reproduction.
gametophyte: a plant, or phase of a plant's life cycle, that bears **gametes**.
gamopetalous: with the **petals** united, either entirely or at the base into a tube, cup or ring (see also **choripetalous**, **sympetalous**; compare **polypetalous**).
gamosepalous: with united **sepals**.
gamotepalous: with united **tepals**.
gasteriform: shaped like a belly; (of a perianth tube, e.g. in *Gasteria*—Asphodelaceae): basally inflated.
gemma (*pl.* **gemmae**): an **adventitious bud** capable of reproducing the plant; a process found on **pollen** grains.
gemmiferous: bearing **gemmae**.
geniculate: bent like a knee.
genome: a complete **haploid** set of chromosomes, as present in a **gamete**.

genotype: the total complement of hereditary factors (genes) acquired by an organism from its parents and available for transmission to its offspring (compare **phenotype**).

genus (*pl.* **genera**): a group of species believed to be related phylogenetically and usually clearly separable from other such groups, or a single species without close relatives; the major taxonomic rank between species and family.

geocarpic/geocarpous: referring to the development of fruits in the ground originating from flowers which developed and were pollinated above ground.

geophyte: a perennial plant, usually herbaceous, with renewal buds located on the plant below the soil surface, as on **bulbs** or **rhizomes**.

geoxylic: of a woody plant with numerous stems arising from a subterranean **rhizome**.

gibbosity (usually of a **calyx** or **corolla**): a pouch-like swelling or hump.

gibbous: with a **gibbosity**.

glabrate: glabrous, but obviously having previously had an **indumentum**.

glabrescent: becoming **glabrous** or nearly so.

glabrous: devoid of hairs.

gland (*adj.* **glandular/glandulose**): (1) secreting structure on the surface or embedded in the substance of a leaf, flower, etc., or raised on a stalk (glandular hairs or stipitate glands); (2) a warty protuberance or fleshy excrescence (often on petiole, inflorescence, or within the flower); (3) (see **corpuscle**).

glaucescent: species notable for the glaucus condition of the leaves, e.g. Anacardiaceae.

glaucous: pale bluish green or with a pale bloom.

globose: ± spherical or rounded.

glochid/glochidium (*pl.* **glochidia**; *adj.* **glochidiate**): barbed bristle or hooked hair.

glomerate: compactly clustered.

glomerule (*adj.* **glomerulate**): a small compact cluster.

glumaceous: resembling the **glumes** of Poaceae.

glume: a **bract**, usually chaffy, in the **spikelets** of Cyperaceae, Poaceae and similar plants.

glutinous: with a sticky exudate.

granulose/granulate: finely covered with very small granules.

gregarious: growing in groups or colonies.

guide rails: see **gynostegial grooves**.

gymnosperm: a seed plant with the ovules borne on the surface of a **sporophyll** (compare **angiosperm**).

gynobase: a dilation or prolongation of the receptacle which bears **carpels/nutlets** (e.g. in Boraginaceae).

gynobasic (of the **style**): arising apparently from the base of the **gynoecium**, e.g. between the lobes of the ovary, as in Boraginaceae and Lamiaceae.

gynodioecious: having bisexual flowers and female flowers on separate plants (compare **gynomonoecious**).

gynoecium: the female part of the flower, consisting, when complete, of **ovary**, **style** and **stigma**; also called **pistil**.

gynomonoecious: having bisexual and female flowers on the same plant (compare **gynodioecious**).

gynophore: a stalk supporting the **gynoecium** and formed by an elongation of the **receptacle**.

gynostegial corona: collective term for the **staminal** and **interstaminal coronas**, both of which are associated with the **gynostegium**.

gynostegial grooves: the grooves between the lateral margins of adjacent anthers fused to the **style head**, in Apocynaceae (also known as **anther slits**, **anther wings** or **guide rails**) (see also **gynostegium**).

gynostegium (*pl.* **gynostegia**): a structure formed by the union of the **stamens** with part of the **pistil**, as in Apocynaceae.

gynostemium (*pl.* **gynostemia**): the **column** in the centre of flowers of Orchidaceae formed by the union of the stamen with part of the **gynoecium**.

H

habitat: the environment in which a plant lives.

hair type B (in tribe Gnaphalieae—Asteraceae): with one basal cell and a very long terminal cell.

half-inferior (of an **ovary**): partly below and partly above the level of attachment of **perianth** and **stamens**.

halophilous: salt-loving.

halophyte: a plant that grows in very salty soil.

haploid: having a single set of unpaired chromosomes, as in the nucleus of one of the **gametes**.

hapteron (*pl.* **haptera**): flattened organ, without vascular tissue, attaching the **thalli** of Podostemaceae to the substrate by a cement-like substance.

hastate: applied to the base of a leaf when it has two more or less triangular lobes diverging laterally.

hastiform: triangular leaves with two flaring basal lobes.

hastula (in palms with **palmate** leaves): the outgrowth from the top of the leaf stalk (**rachis**).

haustorium (*pl.* **haustoria**): a specialised root of parasitic plants capable of penetrating host tissue and thus absorbing nutrients.

head: a dense **inflorescence** of sessile or nearly sessile flowers on a compound **receptacle** (see also **capitulum**).

helical: shaped like a helix/spiral.

helicoid: coiled; (of a **cymose** inflorescence): branching repeatedly on the same side.

heliophilous: sun-loving.

helophytic: growing in marshes.

hemi- (*prefix*): half-; hemiparasite as in *Striga*; hemidimorphic e.g. fronds of *Anemia*.

hemidimorphic: with only some pinnae or part of a leaf dimorphic.

herb: any vascular plant that never produces a woody stem (compare **forb**).

herbaceous: not woody; soft in texture.

hermaphrodite (*adj.* **hermaphroditic**): an organism or structure possessing both male and female reproductive organs, e.g. a flower with both stamens and pistil (= **bisexual**).

heteroblastic: having the adult parts of the plant (especially the leaves) distinctly different in form from the juvenile parts.

heterocarpic/**heterocarpous**: having carpels or fruit of more than one kind.

heterocarpy: having two kinds of fruit.

heterodistylous: said of a species in which two kinds of plants occur, those with long styles and those with short styles.

heterogamous: of different sexes; (of a flower head, as in some Asteraceae): having two kinds of **florets**, those of the **ray** florets being neuter or unisexual and those of the **disc** florets bisexual; of **spikelet** pairs in Poaceae: consisting of a sterile and a female-fertile spikelet (compare **homogamous**).

heteromorphic: of different forms (compare **homomorphic**).

heterophyllous: having leaves of different forms.

heterosporous: having two types of **haploid** spores (compare **homosporous**).

heterostylous: applied to a species which has flowers with **styles** differing in length or shape (compare **homostylous**).

heterothetic (of a compound raceme): composed of a terminal, as well as lateral racemes.

hilum (*adj.* **hilar**): the scar left on the seed where it was attached to the **funicle** or **placenta**.

hippocrepiform: horseshoe-shaped.

hirsute: with rather coarse, stiff hairs (compare **villous**).

hirsutulous: minutely **hirsute**.

hirtellous: minutely covered with long, rather stiff **trichomes**.

hispid: bristly pubescent.

hispidulous: minutely **hispid**.

hoary: covered with white or greyish white, very short, closely interwoven hairs.

holonectary (e.g. in Mesembryanthemaceae): a nectary forming a continuous ring.

holoparasite: a parasite completely dependent on a host for organic and inorganic nutrition, usually harming the host.

homogamous: applied to a flower head/**capitulum** with all the flowers of the same kind; or to spikelet pairs in Poaceae that are of the same sexuality (compare **heterogamous**).

homomorphic/homomorphous: uniform in shape (compare **heteromorphic**).

homonym (in nomenclature): a name spelled exactly like a validly published name for a taxon of the same rank based on a different type.

homosporous: having only one type of **haploid** spore (compare **heterosporous**).

homostylous: species in which the flowers have **stigmas** and **anthers** held at the same level relative to each other on all plants (compare **heterostylous**).

hood (in flowers of Asclepiadoideae—Apocynaceae): a concave segment of the **corona**.

host: an organism on which a **parasite** lives and by which it is nourished (also applied, loosely, to a plant supporting an **epiphyte**).

humifuse: lying or spreading on the ground.

hyaline: almost transparent.

hydathode: a minute pore or specialised structure through which water is discharged from a leaf by guttation; sometimes differentiated as secretory **trichomes**.

hydrophily (*adj.* **hydrophilous**) (of pollination): effected by water.

hydrophyte (*adj.* **hydrophytic**): a plant living in water or in a very moist habitat; an aquatic plant.

hygrochastic: applied to plants in which opening of the fruit and dispersion of the spores or seeds are caused by absorption of water.

hygrophytes (*adj.* **hygrophytic**): marsh plants or plants that need a large supply of moisture for their growth.

hygroscopic: readily absorbing and retaining moisture from the atmosphere, resulting in changes in form or position of certain cells or structures.

hypanthium (*pl.* **hypanthia**): a cup or tube bearing floral parts above the base, and often above the top of the ovary of a flower, e.g. in many Myrtales (see also **calyx tube**).

hypochile (of an orchid flower): the basal part of a longitudinally two- or three-partite **lip**.

hypocotyl: the part of the stem of an **embryo** or young seedling below the **cotyledonary node**.

hypocrateriform: see **salverform**.

hypogeal: growing or remaining below ground; describing seed germination in which the **cotyledons** remain below the soil surface (compare **epigeal**).

hypogynium (*pl.* **hypogynia**): portion of the **receptacle** below the ovary, e.g. in Cyperaceae.

hypogynous: having the flower parts attached below the base of the ovary and free from it; flowers with this arrangement have a **superior** ovary (compare **epigynous**, **perigynous**).

hypsophyll: leaf borne at the upper level of a plant, as with various floral bracts; some possibly have a protective function.

hysteranthous (of leaves): appearing after the flowers (compare **synanthous**).

I

ICNAFP = International Code of Nomenclature for Algae, Fungi and Plants.

idioblast: a cell that differs from those around it in the same tissue.

illegitimate (of a validly published name): contrary to one or more articles of the **ICNAFP**.

imbricate: (1) overlapping like tiles; (2) applied to parts in a flower bud where one **sepal** or **petal** is wholly internal and one wholly external and the others are overlapping at the edge only.

immaculate: without spot or stain; pure, unblemished, undefiled.

immarginate: not **margined** or bordered.

imparipinnate: having an uneven number of **pinnae**, by virtue of having one terminal **pinna**.

imperforate: not perforated.

inaequilateral: not equally-sided.

inaperturate (of a **pollen** grain): without germinal pores.

incised: margin cut rather deeply and sharply.

included: not projecting (compare **exserted**).

incrassate: thickened.

incubous: obliquely inserted on the stem so that the leaf edge nearest the shoot tip overlaps and thus covers the lower edge of the leaf above.

incumbent: resting or lying (on); (of the orientation of an **embryo**): with the **cotyledons** lying face to face and folded downwards beside the **radicle** (as in some Brassicaceae); (of anthers): lying against the inner face of the **filament**.

incurved: bent or curved inwards or upwards; (of leaf margins): curved towards the **adaxial** surface.

indefinite: variable in number; numerous; many; (of stamens): more than twice as many as the petals or sepals; (of an inflorescence): not terminating in a flower, i.e. having a continuing terminal growing point.

indehiscent: not opening when ripe.
indeterminate: (1) (of an **inflorescence**): the lateral or lower flowers mature first while the primary axis continues to grow, hence the terminal flower is the last to open, therefore a **racemose** inflorescence (compare **cymose**) (2) (of growth): (= **monopodial**) the condition in which the terminal bud persists and produces successive lateral branches.
indumentum: any covering of a surface such as hairs, wool, scales.
induplicate: with margins (of **petals** or **sepals**) folded inwards but not overlapping.
indurated: hardened.
indusium (*pl.* **indusia**): a cup covering the **stigma**, as in Goodeniaceae.
inferior: beneath or below, as in a **calyx** which is below the **ovary**, the latter then being **superior**; as in an ovary which appears to be below the calyx, the latter being adherent to the ovary.
inflexed: bent sharply inwards, upwards or forwards (compare **deflexed**).
inflorescence: the arrangement of the flowers.
infra- (*prefix*): below; beneath.
infructescence: the arrangement of fruits on a plant.
infundibular/infundibuliform: funnel-shaped.
inrolled: see **involute**.
insectivorous: catching, and presumably feeding on, insects.
inserted: attached, included.
insertion: place of attachment.
integument: one of the outer layers of tissue of an **ovule**.
intercalary (of growth): between apex and base, not apical.
internode: the portion of a stem between two nodes (compare **node**).
interpetiolar: applied to **stipules** placed between the **petioles** of opposite leaves (often **connate**).
intersepalar: between the **sepals**.
interstaminal corona: fleshy lobes, often connate into a tube, attached to the base of the **staminal column** in the interstaminal areas (compare **gynostegial corona**, **staminal corona**).
interstice: space between structures.
interstitial: situated in **interstices** or spaces between structures; interstitial growth: a type of growth occurring in organs that do not have specific or localised **meristematic** regions; all-over growth, as in some fruits.
intrapetiolar: between the **petiole** and the stem (compare **interpetiolar**).
intrastaminal: between the **stamens**.
introduced: not indigenous; not native to the area in which it now occurs (compare **adventive**, **naturalised**).
introflexed: see **inflexed**.
introrse: applied to an **anther** opening towards the centre of the flower.
intruse: projecting or pushed out, in or forward.
invested: covered tightly; the focus is on the tight fit, e.g. an **integument** invests a seed.
involucel: **involucre** of bracteoles surrounding a secondary inflorescence such as the base of an **umbellule**.
involucrate: having an **involucre** of some kind.
involucre/involucrum (*adj.* **involucral**): a number of bracts, e.g. those surrounding the base of a flower head/**capitulum** or of an **umbel**.

involute: having the edges of the leaves rolled towards the **adaxial** surface (compare **revolute**).

irregular (of a flower, calyx or corolla): bilaterally symmetrical, symmetrical about one plane only, usually the plane that bisects the flower vertically along the longitudinal axis (= **zygomorphic**) (compare **actinomorphic**, **regular**).

iso- (*prefix*): equal, like.

isobilateral (= **isolateral**) (of a leaf): having structurally similar upper and lower surfaces.

isopolar (of a **pollen** grain): with the equatorial plane dividing the grain into similar halves, i.e. the **proximal** and **distal** faces are similar.

isotomous: all dichotomies result in equally thick branches, as in the fern *Huperzia*.

isovalvate: with valves of equal size or shape; anthers or fruits, opening by valves.

isthmus (*pl.* **isthmi**): a narrow part or organ connecting two larger parts.

J

jugate: coupled or yoked together, applied especially to the **leaflets** of a **pinnate** leaf.

K

keel (= **carina**): a ridge like the keel of a boat; in Fabaceae a boat-shaped structure formed by the fusion of the two **anterior petals**.

keeled: ridged along the middle of a flat or convex surface.

kneed: having a knee-like joint.

L

labellum: see **lip**.

lacerate: cut irregularly; appearing torn, as in certain leaves and **ligules**.

lacinia (*pl.* **laciniae**): a slender lobe.

laciniate: cut into slender, pointed lobes.

lacinulate: finely **laciniate**.

lacuna (*pl.* **lacunae**): (1) an internal air space or chamber, usually between cells, as in leaf, stem and root tissues; also any space within a cell; (2) a **leaf gap** as viewed in cross sections of stem nodes.

lacunar: referring to or arising from **lacunae**.

lacunose: full of **lacunae**; having air-cells.

laevigate: see **levigate**.

lageniform: shaped like a Florence flask.

lamella (*pl.* **lamellae**; *adj.* **lamellate**): a thin plate or layer.

lamina (*pl.* **laminae**): the limb, blade or expanded part of a leaf, sepal or petal.

lanate: woolly.

lanceolate: lance-shaped; about four times as long as broad, broadest in the lower half and tapering toward the apex.

lanceoloid: shape of a solid figure with widest axis (diameter) below the middle and length/diameter (L/D) more than 6:1–3:1, e.g. male cones of certain species of the genus *Encephalartos* (Zamiaceae).

lanuginose: cottony, similar to **lanate**, but with shorter **trichomes** (hairs).

latex: a viscous fluid exuded from the cut surfaces of leaves and stems of certain plants.

latiseptate: with broad partitions (compare **angustiseptate**).

latrorse (of **anthers**): opening laterally, i.e. towards adjacent anthers.
leaf gap: gap left in the vascular system at the **node** of a stem at the point where the vascular element supplying the leaf, branches off.
leaflet: the ultimate member of a **compound** leaf.
legume: a simple fruit, consisting of a single **carpel**, usually dry and usually opening along both **sutures** into two halves, e.g. in Fabaceae.
lemma: the lower of two **bracts** enclosing the florets of Poaceae.
lenticels (*adj.* **lenticellate**): corky spots on the bark through which gaseous exchange occurs.
lenticular: shaped like a biconvex lens.
lepidote: clothed with small, scurfy scales.
levigate: having a smooth, polished surface.
liana/liane: a woody climber with rope-like stems.
ligneous: of or resembling wood.
lignified: woody, due to the deposition of lignin in cell walls.
lignotuber (*adj.* **lignotuberous**): a woody swelling at the base of the shoot system below or just above the ground, containing **adventitious** buds from which new shoots develop if the top of the plant is cut off or burned.
ligulate: strap-shaped, applied e.g. to the **ray** florets in many Asteraceae.
ligule: (1) a thin, membranous and/or hairy appendage at the top of the leaf sheath as in Poaceae; (2) the **limb** of **ray florets** in Asteraceae.
limb: the upper, usually expanded part of the calyx or corolla above the tube, throat or claw.
linear: long and very narrow in relation to the length and with parallel edges (compare **lorate**).
lineolate: marked with fine lines.
lingulate: tongue-shaped.
lip: (1) one of two divisions of a **gamosepalous calyx** or a **gamopetalous corolla** when it is cleft into an upper (posterior) and a lower (anterior) portion (see **bilabiate**); (2) of an orchid: the lowest petal (the inner median perianth lobe), usually enlarged and different in form from the two lateral ones (= **labellum**).
litho- (*prefix*): stone-.
lithophyte (*adj.* **lithophytic**): a plant growing amongst or on rocks or on cliff faces.
lobe: any division or segment of an organ (usually rounded); specifically a part of a leaf, petal or calyx cut less than halfway to the centre.
lobulate/lobuled: having small lobes.
lobules: small lobes.
locellate: divided into small secondary compartments.
locular: having chambers; thus: **unilocular** = one-chambered; **bilocular** = two-chambered, etc.
locule/loculus: a chamber or cell of an ovary or fruit or anther containing ovules or seeds or **pollen** grains.
loculicidal: referring to the dehiscence of a fruit which splits down the middle of the cells or **locules** (i.e. the midrib or dorsal **suture**) and not at the line of junction of the **carpels**, e.g. in most Liliaceae (in wide sense) (compare **septicidal**).
lodicule/lodicula (*pl.* **lodiculae**): a small scale outside the stamens in flowers of the Poaceae.

loment/lomentum: modified **legume** fruit with constrictions between the seeds, which at maturity separates at the constrictions into 1-seeded segments.
lophate (of a **pollen** grain): with the outer **exine** raised in a pattern of ridges.
lophomorphic: crested.
lorate (= **loriform**): strap-shaped; moderately long with parallel sides (compare **linear**).
lumbricate: worm-shaped.
lumen: the cavity of a plant cell.
lunate/luniform: shaped like the waxing moon.
lunulate: finely **lunate**.
lycophylls: leaves of plants in the Lycopodiophyta.
lyrate: applied to a leaf which is pinnately lobed or cut into small segments below, but with a much larger terminal lobe.
lysigenous: originating by dissolution of cells.

M

maculate (*noun* **maculation**): spotted or blotched.
mallee: scrub vegetation composed mainly of **Eucalyptus* spp. (Myrtaceae) about 2–10 m high in dry, subtropical parts of southwest and southeast Australia.
mam(m)illate: having small nipple-shaped projections.
marcescent: withering without falling off.
marginal: occurring at or very close to the margin.
marginal placentation: the type of **placentation** found in a **gynoecium** consisting of a single **carpel** or of two or more free carpels and where the margins of the carpel(s) have become united to form a **suture** along which the ovules are borne (see also **axile** and **parietal placentation**).
marginate/margined: having a margin of distinct colour or texture.
marmorate: marbled, having coloured veins.
medial/median: of or situated in the middle.
medifixed: fixed by the middle, e.g. of an anther (compare **basifixed**, **dorsifixed**, **versatile**); (of a hair): ± T-shaped with the stem much shorter than the cross-bar.
medulla: the pith of a stem.
megaspore: the larger of the two kinds of spores produced in the sexual life cycle of a **heterosporous** plant, giving rise to the female **gametophyte**.
membranaceous/membranous: of thin, translucent texture.
mentum: an extension of the base of the **column** in the flower of some Orchidaceae.
mericarp: one segment of a fruit that breaks at maturity into units derived from the individual carpels, e.g. in Apiaceae or Malvaceae (see also **schizocarp**).
meridional: running in a north-south direction, from apex to base.
meristem (*adj.* **meristematic**): growing region of a plant in which cells which have retained their embryonic characteristics, or have reverted to them secondarily, divide to produce new cells.
-merous (*suffix*): indicating number of parts, e.g. flowers 5-merous where floral organs are present in 5's.
mesocarp: the fleshy portion of the wall of a succulent fruit inside the skin and outside the stony layer, if any, surrounding the seed(s) (see also **pericarp**).
mesochile (of flowers of certain Orchidaceae): the middle portion of a longitudinally two- or three-partite **lip**.

mesomorphic: having characteristics suited to growing in environments that are neither very dry nor very wet.
mesophyll: photosynthetic tissue of a green plant.
mesophyte (*adj.* **mesophytic**): plants which grow in environments that are neither very wet nor very dry; plants intermediate in moisture requirements between **hydrophytes** and **xerophytes**.
micropyle (*adj.* **micropylar**): a minute canal through the **integument(s)** of an ovule through which the **pollen** tube enters and which persists as a pore in the seed coat.
microsporangium (*pl.* **microsporangia**) (in an **anther**): the chamber in which the **pollen** is formed (= **pollen sac**) (see **anther**).
microspore: the smaller of the two kinds of spores produced in the sexual life cycle of a **heterosporous** plant, giving rise to the male **gametophyte**.
midrib: the principal, usually central nerve of a leaf or leaf-like part.
mitre-shaped/mitriform: shaped like a bishop's cap.
monad (of **pollen** grains): single, not fused to others (compare **diad**, **tetrad**).
monadelphous (of stamens): in one bundle, e.g. in certain Fabaceae and Malvaceae.
moniliform: like a string of beads.
mono- (*prefix*): one; single.
monocarpic: applied to a plant which flowers and fruits only once and then dies (compare **polycarpic**).
monochasium (*pl.* **monochasia**; *adj.* **monochasial**): a **cyme** reduced to single flowers on each axis (the laterals of the **dichasium** having been lost by reduction).
monochlamydeous: with a perianth of a single **whorl** of similar parts (**tepals**).
monocotyledon: a flowering plant having a single **cotyledon** in the seed (compare **dicotyledon**).
monoecious: with male and female flowers separate but borne on the same individual plant.
monolete: with the dehiscence line unbranched, as in bilateral spores.
monomerous: formed of a single member.
monomorphic/monomorphous: of one form only.
monophyletic: derived from a single ancestral line (compare **polyphyletic**).
monopodial (of growth): with a persistent terminal growing point producing many lateral organs successively (compare **sympodial**).
monosulcate (of a **pollen** grain): having a single longitudinal groove or **sulcus**.
monothecous (of an anther): having one **theca**.
monotypic: a genus with only one species.
monovalent/univalent: a single, unpaired chromosome during meiosis.
morchelliform: shaped like a morel (a fungus of the genus *Morchella* which has a pitted cap).
moribund: accumulation of dead, dry organic material.
mucilage (*adj.* **mucilaginous**): a gelatinous substance which absorbs water and increases in bulk.
mucous: slimy.
mucronate: ending abruptly in a short stiff point which is a continuation of the midrib.
mucronulate: finely **mucronate**.
multifarious: many-rowed; 5-farious, in five rows, 8-farious, in eight rows.
multifid: divided into many lobes or segments.

multinodal shoot: spring shoot developing from the terminal winter bud and producing two or more whorls of branches; the cones are partly lateral in the middle of the shoot; e.g. *Pinus halepensis*.
multistratose: in several strata.
muricate: rough, with short hard tubercles or pointed protuberances.
muriculate: finely **muricate**.
muticous: blunt, without a point.
mycorrhiza: a symbiotic union between a fungus and a plant root.
mycotrophic: of a plant possessing mycorrhiza.
myxogenic: capable of forming mucus (when wetted).

N

naked (of seeds): exposed on the surface of a sporophyll (not enclosed within an ovary); (of flowers): without perianth.
napiform: turnip-shaped (in Polygonaceae).
-nate (*suffix*): indicating number of parts in a group, e.g. leaves 3-nate = three leaves in a group or cluster.
naturalised: introduced and reproducing itself without human assistance (compare **adventive**, **introduced**).
navicular /naviculate/naviculiform: boat-shaped.
nectar guides: floral orientation cues directing a pollinator to the nectar.
nectary/nectarium (*adj.* **nectariferous**): any structure that secretes nectar.
nerves: the principal or more conspicuous **veins** or ribs of a leaf or other organ.
net-veined: with the smaller veins connected like meshes of a net; reticulate.
nigropunctate: with black dots.
nitid: glossy, lustrous, smooth and clear.
nitrophilous: of a plant that grows well in soil rich in nitrogen.
node: the point on the stem at which a leaf or leaves and accompanying organs arise (compare **internode**).
nodiform: noduliformis or nodule-like.
nodose: having knots or being knobby, usually in reference to roots, especially in the legumes (Fabaceae).
non-surculose: without a sucker, shoot or a young branch.
nucellus: the female **sporangium** (megasporangium) within the ovule.
nut: a one-seeded indehiscent fruit, with a hard, dry **pericarp** (the shell).
nutlet: a little **nut**.

O

ob- (*prefix*): inverse or inversely, e.g. **obovate** = inversely **ovate**.
obconic: inversely **conical**, with the point of attachment at the small end.
obcordate: more or less heart-shaped but with the narrow end at the base, and the broad end deeply notched.
obdiplostemonous (of a flower): with the stamens in two alternating whorls, the outer whorl opposite the petals and the inner opposite the sepals.
oblanceolate: inversely **lanceolate**; with the broadest portion nearest the apex and tapering toward the base.

oblanceoloid: a solid figure with widest axis above the middle and length to diameter ratio (L/D) more than 6:1–3:1, e.g. male cones of certain species of *Encephalartos* (Zamiaceae).
oblate: transversely broadly **elliptic**.
obligate (of parasites): unable to survive without the **host** (compare **facultative**).
oblique: of unequal sides, e.g. applied to a leaf with the two sides of the blade unequal at the base.
obloid: a solid, near **elliptic** shape depressed at the poles.
oblong: much longer than broad, with nearly parallel sides.
obovate: **ovate** with the broadest part above.
obovoid: solid shape of **obovate** outline.
obsolete: reduced to a rudiment, or completely lacking (compare **rudimentary**, **vestigial**).
obtrullate: inversely **trullate**; angular-obovate, i.e. shaped like an inverted trowel, broadest above the middle with two equal sides meeting at base and two shorter straight sides meeting at apex.
obturator: a small protuberance, generally of placental origin, which grows into the space between **nucellus** and **integument**, or between the ovule and the ovary wall.
obtuse: blunt or rounded at the end.
obvolute: of a leaf folded along the midline with one margin overlapping one margin of a similarly folded leaf on the opposite side, i.e. half-**equitant**.
ocellate: with a small eye; marked with two-coloured spots having a centre of one colour surrounded by a broad ring of another.
ocrea (*pl.* **ocreae**; *adj.* **ocreate**): a tubular **stipule** sheathing the stem (e.g. in *Polygonum*—Polygonaceae).
-oid (*suffix*): indicates likeness, resemblance or similarity; or something having the form or nature of something else; e.g. **racemoid**: resembling a **raceme**; **petaloid**: resembling a **petal**. Also indicating solid figures; e.g. plane shape **deltate**, solid shape **deltoid**.
opaque: not transparent; dull, not shining.
operculate: with a cap or lid.
operculum: (1) a lid, cap or cover; (2) the thickened tips of **integuments** of certain angiosperm ovules.
opposite: (1) pertaining to leaves or branches when two are borne at the same **node** on opposite sides of the stem; (2) one part before another, as a stamen in front of a petal.
orbicular: flat with a ± circular outline.
orifice: opening.
ornithophilous (of pollination): effected by birds.
orthotropous (of an ovule): erect so that the **micropyle** points away from the **placenta**.
osseous: bony.
ostiole: an opening or pore, e.g. at the apex of the figs of *Ficus* (Moraceae).
oval: broadly **elliptic**.
ovary: that part of the **pistil** (the usually enlarged base) which contains the **ovules** and eventually becomes the fruit.
ovate: with the outline of an egg: scarcely twice as long as broad, with the broader end below the middle.
oviform: egg-shaped.

ovoid: solid shape of **ovate** outline.
ovule: the immature seed in the ovary before fertilisation.
ovulode: a sterile **ovule**.

P

palate: in **sympetalous** corollas, the raised projection of the lower lip which closes or very nearly closes the throat.
palea (*pl.* **paleae**; *adj.* **paleate**): (1) one of the chaffy scales or thin colourless bracts amongst the flowers on the **receptacle**, in Asteraceae; (2) the inner of two bracts enclosing the **floret**, in Poaceae.
paleaceous: with small membranous scales; chaffy.
paleaster: an individual scale present on rhizomes or **fronds** or on both these organs and varying in colour and in shape (Pteridophyta e.g. Dryopteridaceae).
paleate: bearing scales.
pallid: pale in colour.
palmate (of a leaf): shaped like the palm and fingers of a hand (see **digitate**).
palmatifid (of a leaf): with the margin **palmately cleft** to less than halfway to the base.
palmatilobed (of a leaf): **palmately** divided to about halfway to the midrib.
palmatipartite (of a leaf): **palmately** divided almost to the midrib.
palmatisect (of a leaf): **palmately** divided down to the midrib.
pandurate/panduriform: fiddle-shaped.
panicle (*adj.* **paniculate**): a compound **raceme**; an **indeterminate** inflorescence in which the flowers are borne on branches of the main axis or on further branches of these.
pantoporate (of a **pollen** grain): with apertures scattered over the whole surface.
papilionaceous/papilionoid: applied to flowers with a 'butterfly-like' appearance, as in many Papilionoideae—Fabaceae and Polygalaceae.
papilla (*pl.* **papillae**): a soft, nipple-shaped protuberance; a type of **trichome**.
papillate: having **papillae**.
papillose: covered with minute, nipple-like protuberances.
pappus: the ring of hairs or scales around the top of the fruit (as in Asteraceae) and perhaps representing the calyx limb.
papule: a pimple or small pustule.
papulose: covered with **papillae**.
papyraceous: (1) papery; (2) white as paper.
paracarpous (of an ovary): with **carpels** joined by the margins only.
paracytic: of a **stoma** accompanied on either side by one or more subsidiary cells parallel to the long axis of the pore and guard cells.
paraphyletic (of a group of taxa): derived from a single ancestral taxon, but which does not contain all the descendants of the most recent ancestor.
paraphysate: the receptacle is an axis to which the **sporangia** and, if present, the **paraphyses** are attached.
paraphysis (*pl.* **paraphyses**): sterile hair, often club-shaped, found among **sporangia** in a **sorus**.
parasite: an organism living on or in a different organism and deriving nourishment from it (compare **epiphyte**, **saprophyte**).
parchment-like: like skin or leather.

parenchyma: plant tissue consisting of mature living cells that are relatively unspecialised in function.

parietal placentation: **placentation** with the **ovules** borne on the inner surface of the wall of the **ovary** or on intrusions of the wall that form incomplete partitions or false **septa** (compare **axile** and **marginal placentation**).

paripinnate: of a **pinnate** leaf without an odd terminal leaflet.

-partite (*suffix*): cleft nearly but not quite to the base.

patelliform: shaped like a knee-cap.

patent: spreading out widely, e.g. patent branches.

paucidentate: few toothed.

pauciserrate: sparsely **serrate**.

pectinate: like a comb.

pedate: resembling **palmate**, but the side lobes further divided.

pedicel (*adj.* **pedicellate/pedicelled**): the stalk of an individual flower.

pedoconnectives: connective tissue of an anther forming a pedestal.

peduncle (*adj.* **pedunculate/ peduncled/peduncular**): the stalk of an **inflorescence**; the common stalk (**rachis** or **axis**) of several **pedicellate** or **sessile** flowers.

pellucid: translucent.

peltate: applied to a leaf, or sometimes some other organ with a stalk, of which the stalk is attached to its undersurface instead of to its edge.

pendent/pendulous (of ovules): arising on and hanging down from an apical **placenta**.

penicillate: with a tuft of hairs at the end.

penninerved: **pinnately** nerved.

penni-parallel-veined: **pinnately** parallel-veined.

pentamerous: having parts in fives or multiples of five.

perennial: a plant whose life span extends over more than two growing seasons.

perfoliate (of a sessile leaf or bract): having its base completely wrapped around the stem.

perforate (of a **pollen** grain): with holes less than 1 μm in diameter and generally situated in the **tectum**.

perianth: the floral envelope, consisting of **calyx** or **corolla** or both.

pericarp: the wall of the ripened ovary; its layers may be fused into one, or ± divisible into **epicarp**, **mesocarp** and **endocarp**.

periderm: secondary protective tissue derived from the **phellogen**, and replacing the epidermis.

perigone (*adj.* **perigonal**): see **perianth**.

perigynium (*pl.* **perigynia**): the **hypogynous setae** of Cyperaceae; the flask or **utricle** of *Carex* (Cyperaceae); any **hypogynous disc**.

perigynous: applied to the flower when the sepals, petals and stamens arise on an open **receptacle** surrounding the ovary but are not **adnate** to it (compare **epigynous**, **hypogynous**).

perisperm: nutritive tissue in an **angiosperm** seed, formed from the **nucellus** (compare **endosperm**).

persistent: remaining attached to the plant beyond the expected time of falling.

personate (of a flower, e.g. in Scrophulariaceae): with a two-lipped corolla in the form of a face, with an arched upper lip and a lower lip that protrudes into and nearly closes the throat of the corolla.

petal: see **corolla**.

petaloid/petaline: resembling **petals**.
petiolate: having a **petiole**.
petiole (*adj.* **petiolar**): leaf stalk.
petioled: having a **petiole**.
petiolode: the axis-like structure below the **lamina** and **petiole** (if any); it often bears the inflorescences at its distal end and sometimes shows powers of late elongation; it sometimes also produces roots (*Streptocarpus*—Gesneriaceae).
petiolule (*adj.* **petiolulate/petioluled**): the stalk of a **leaflet**.
phalloid: resembling a phallus.
phellem: cork.
phellogen: cork cambium.
phenotype: the physical characteristics of an organism; the outward expression of characteristics conferred on an organism by its **genotype**.
photonastic: one-sided growth in length of an organ due to the unrestricted action of light.
phyllary: an individual **bract** of the **involucre**, e.g. in the inflorescence of Asteraceae.
phylloclade (= **cladode**): a flattened foliaceous stem having the form and function of a leaf but arising in the axil of a minute, bract-like, often caducous, true leaf.
phyllode: a flattened **petiole** or leaf **rachis** with the form and functions of a leaf (compare **cladode**).
phyllopodium: in fern species with articulate **stipes** (the stalk of a **frond**), the portion of the **stipe** that remains attached to the rhizome (Cyatheaceae).
phyllotaxy: the arrangement of leaves on a stem.
phytomelanous (especially in seeds): black.
piliferous: bearing hairs; pilose hairy.
pilose: hairy with rather long, soft, simple hairs.
pin flower: in **heterostylous** plants, the flower type having the longer style (compare **thrum flower**).
pinna (*pl.* **pinnae**): a primary division of a **pinnate** leaf.
pinnate: like a feather in appearance; (of a compound leaf): with the leaflets arranged along each side of a common **rachis**; (of the venation of a leaf): with a middle vein and secondary veins arising from it on each side.
pinnate-parallel (of the venation of a leaf): **pinnate** with the secondary veins running parallel to each other.
pinnatifid: with the margin **pinnately** cleft but not to the midrib.
pinnatilobate/pinnatilobed: **pinnately** divided to about halfway to the midrib.
pinnatipartite: **pinnately** divided almost to the midrib.
pinnatisect: **pinnately** divided down to the midrib.
pinnule: the secondary or tertiary division of a leaf which is twice or thrice **pinnate**.
pistil: see **gynoecium**.
pistil head: see **style head**.
pistillate: pertaining to a flower with one or more **carpels** but no functional stamens; unisexual and female.
pistillode: a sterile **pistil**, often rudimentary.
pitted: marked with small depressions, punctate.
placenta: the part of the ovary, sometimes but not always thickened or raised, to which the ovules are attached (see also **free**).

placentation: the arrangement of **placentas**, and hence of ovules, within an ovary.
placentiferous: bearing a **placenta**.
planoconvex: a disc with one face plane and the other one convex (seeds of *Helinus integrifolius*).
plesiomorphic (of a character): common to the group under discussion and its ancestors.
plicate: folded back and forth longitudinally like a fan.
plumose: like a feather; with fine hairs branching from a central axis, e.g. the **pappus** of some Asteraceae.
plumule: see **embryo**.
pluri- (*prefix*): many-.
pluriseriate: in several to many rows.
pneumatophore: erect respiratory root that protrudes some distance above soil level in waterlogged areas (e.g. in Onagraceae).
pod: see **legume**.
polarised (of **endothecial** tissue of Asteraceae): with thickenings restricted to the horizontal cell walls.
pollen: the **microspores** of seed plants shed from **anthers**.
pollen carrier: see **corpuscle**.
pollen mass: pollen grains cohering into a single body (= **pollinium**).
pollen presenter: a structural modification, usually a swelling, of the style around or below the stigma which enables **pollen**, shed in the bud, to be retained (e.g. in Proteaceae and Rubiaceae).
pollen sac: the chamber in an **anther** in which **pollen** is formed (see **anther**).
pollinarium (*pl.* **pollinaria**): the complex structure found in the flowers of many Apocynaceae where the **pollen** masses of two adjacent **thecae** are united for dispersal as a unit; it consists of a small, ± globose, sticky body, the **corpuscle** which has two thin, elastic arms, the **caudicles**, each bearing one **pollinium**.
pollinium (*pl.* **pollinia**): a cohesive mass of **pollen** grains which are shed together and transported as a unit during pollination (e.g. in Apocynaceae and Orchidaceae).
polycarpic: applied to a plant which flowers and fruits often (compare **monocarpic**).
polyforate (of a **pollen** grain): with many pores.
polygamo-dioecious: with bisexual and male flowers on the same plant, and bisexual and female flowers on others.
polygamo-monoecious: with bisexual flowers and unisexual flowers of both sexes on the same plant.
polygamous: having unisexual and bisexual flowers on the same or on different individuals.
polymorphic: having more than two distinct morphological variants.
polypetalous: of flowers with petals free from each other (compare **gamopetalous**).
polyphyletic: composed of members that originated independently from more than one evolutionary line (compare **monophyletic**).
polyploid: having more than two of the basic sets of chromosomes in the nucleus (compare **diploid**, **haploid**).
pome: a fleshy (false) fruit, formed from an inferior ovary in which the **receptacle** or **hypanthium** has enlarged to enclose the true fruit.
porate (of a **pollen** grain): with rounded apertures (compare **colpate**, **colporate**).
pore: small, ± round aperture, e.g. on **pollen** grains.

poricidal: opening by pores.
poriferous: having many pores.
porrect: directed outward and forward; perpendicular to the surface.
posterior: in position nearest to the axis (compare **anterior/anticous**).
posticous: on the **posterior** side, next to the axis (compare **anticous**).
pouch: a bag, sack or receptacle of moderate size.
praemorse: apparently bitten off at the end.
precocious: appearing or developing early; often used of flowers which appear before the leaves.
prehensile: adapted for grasping, especially by wrapping around a support.
prickle: a sharp outgrowth from the bark or surface layer containing no conducting tissue.
primocane: the first season's shoot or cane of a biennial woody stem, as in many brambles (*Rubus* spp.—Rosaceae).
procumbent: trailing or lying on the ground without rooting at the **nodes**.
prolate (of a **pollen** grain): having a polar axis of greater length than the equatorial diameter.
proliferating growth: inflorescence axis growing out and returning to vegetative growth.
proliferous: bearing **adventitious buds** on the leaves or in the flowers, capable of rooting and forming separate plants.
propagule: a structure with the capacity to give rise to a new plant.
prophyll: a leaf formed at the base of a shoot, usually smaller than those formed subsequently.
prostrate (= **procumbent**): trailing to lying on the ground without rooting at the **nodes**.
protandrous/proterandrous: with the **anthers** ripening before the **stigmas** (compare **protogynous**).
proterogynous: see **protogynous**.
protogynous: having the female sex organs maturing before the male ones (compare **protandrous**).
protrusion: something that projects or thrusts outwards or forwards.
protuberance (*adj.* **protuberant**): a bulge or swelling.
proximal: nearer to the point of attachment or origin; the converse of **distal**.
pruinose: having a whitish, waxy, powdery bloom on the surface.
psammophilous: sand-loving.
psammophyte: a plant which grows in sand or sandy soil.
pseud-/pseudo- (*prefix*): false, not genuine, not the true or typical.
pseudanthium: an inflorescence resembling a single flower (e.g. a **cyathium**).
pseudo-aril: false aril; see **arillode**.
pseudobulb: a solid, above-ground, thickened or bulbiform stem, characteristic of some orchids.
pseudocolpus (of a **pollen** grain): a **colpus**-like streak.
pseudo-indusium: false indusium.
pseudopetiolate: subsessile.
puberulent: minutely **pubescent**.
puberulous: slightly **pubescent**.
pubescent: covered with soft, short, erect hairs.
pulverulent: powdery.

pulvinate: cushion-shaped.
pulvinus: a swollen base or apex of the **petiole** or **petiolule**, often glandular or responsive to touch; a cushion.
punctae *pl*: **dots** or translucent **glands**, e.g. punctate surfaces of pollen walls, leaves or fruits etc.
puncticulate: very finely **punctate**.
punctiform: reduced to a mere point.
pungent: ending in a sharp, rigid point.
pusticulate: finely **pustulate**.
pustule (*adj.* **pustulate**): a slight elevation like a pimple or blister.
putamen: the shell of a **nut**; the hardened **endocarp** of a **drupe**.
pyrene: a nutlet or kernel, the stone (**endocarp** plus seed) of a **drupe** or similar fruit (compare **berry**, **drupe**).
pyriform: pear-shaped.
pyrophyte: a plant adapted to survive severe fires.

Q

quadr-/quadra-/quadri- (*prefix*): four-.
quincuncial (applied to calyx or corolla lobes in the bud): a variant of **imbricate aestivation** with two lobes outside, two lobes inside, and one lobe which is overlapped on one side only.

R

raceme (*adj.* **racemose**): an **indeterminate** inflorescence in which the flowers are borne on **pedicels** along an unbranched axis or **peduncle**, the terminal flowers being the youngest and last to open (**centripetal** development).
racemiform: having the shape of a **raceme**.
rachilla (*pl.* **rachillae**): (1) the **rachis** (axis) of the spikelet in Cyperaceae and Poaceae; (2) a secondary axis, as in a **compound** leaf.
rachis (*pl.* **rachises** or **rachides**) (= **rhachis**): (1) the axis of an inflorescence in which flower stalks occur at short intervals from each other, as in Poaceae; (2) the axis of a **pinnately** compound leaf, corresponding to the midrib of a simple leaf.
radial (of **endothecial** tissue of Asteraceae): with thickenings ± evenly distributed in the walls of the cells, particularly in the radial walls.
radiate: applied to flower heads of Asteraceae with **ray** florets.
radical: applied to leaves which arise so close to the base of the stem as to appear to arise on the root.
radicant: rooting, in particular of a stem which produces **adventitious** roots.
radicle (*adj.* **radicular**): see **embryo**.
ramification: the scheme of branching or separation into branches.
ramiflorous (of flowers and fruits): borne below the current leaves on recently formed woody branches (compare **cauliflorous**).
raphe (*adj.* **raphal**): the part of a stalk of an **anatropous ovule** that is fused along the side of the ovule.
raphides: mineral substances in the form of needle-shaped crystals, within the cells of plants.

ray: (1) the florets of the margin of a flower head of the Asteraceae when different from those of the centre or disc; (2) one of the radiating branches of an **umbel**.

recaulescence (*adj.* **recaulescent**): a condition where the bract subtending a flower is not situated on the main axis on which the flower arises but on the pedicel.

receptacle (*adj.* **receptacular**; = **torus**): the extremity of the axis on which the parts of the flower, sepals, petals, stamens and pistil, are inserted.

reclinate: (1) turned or bent downward upon some other part; (2) when they are bent down upon their stalk; (3) falling gradually back from the perpendicular.

recurved: curved or curled downwards or backwards.

reduplicate (of sepals or petals): with margins **valvate** and **reflexed**.

reflexed: bent downwards or backwards.

regular (= **actinomorphic**) (of a flower, calyx or corolla): radially symmetrical, i.e. capable of being dissected into similar halves in more than one vertical plane forming mirror images (compare **irregular**, **zygomorphic**).

reniform: kidney-shaped.

repand: with the margin uneven or wavy, with shallow undulations; not as deep as **sinuate**.

repent: lying or creeping along the ground.

replicate: folded abaxially along the middle, as along the midrib of a leaf.

replum: a longitudinal partition in an ovary, formed between **parietal placentas** (e.g. in Brassicaceae).

resin (*adj.* **resinous**): plant exudate, often sticky, insoluble in water.

resiniferous: yielding **resin**.

resupinate: upside down because the pedicel or ovary is twisted through 180° (as in flowers of Orchidaceae and Lobeliaceae).

reticulate: having a network-like pattern; net-veined, with the smallest veins of a leaf connected together like the meshes of a net.

retinaculum (*pl.* **retinacula**): (1) the persistent, hook-like **funicle**, as in the fruits of the Acanthaceae; (2) the structure to which the **pollinium** is attached, as in the Asclepiadaceae and Orchidaceae (see **corpuscle**).

retrofracted: bent abruptly backwards.

retrorse: bent abruptly backwards, away from the apex (compare **antrorse**).

retuse: notched.

revolute: rolled back from the margin (compare **involute**).

rhachilla: see **rachilla**.

rhachis: see **rachis**.

rhipidium (*pl.* **rhipidia**; *adj.* **rhipidial**): a ± fan-shaped **cyme** with the lateral branches developed alternately on one side and then on the other.

rhizome (*adj.* **rhizomatous**): a rootstock or root-like stem prostrate on or under the ground, sending rootlets downwards, and branches, leaves or flowering shoots upwards, always distinguished from a true root by the presence of buds, leaves or scales.

rhizomorph: present in genus *Isoëtes* (Lycopodiophyta); a subterraneous, 3-lobed structure, 10–15 mm in diam., bearing lycophylls on its upper surface and dichotomously-branched roots on its lower surface.

rhombic/rhomboid: ± diamond-shaped; having straight margins and being widest in the middle.

ringent: term applied to monopetalous corolla with limb unequally divided, lip arched, lower prominent and pressed against lip, when compressed the whole resembles the mouth of a gaping animal.
riparian: of, inhabiting or situated on the bank of a river or stream.
rootstock: a short swollen structure at the junction of the root and the shoot system of a plant.
rosette: a crowded, circular cluster of leaves or other organs.
rostellum (in Orchidaceae): a projection of the upper edge of the **stigma** in front of the **anthers**; a small beak.
rostrate: beaked (see **beak**).
rostrum: any **beak**-like extension.
rosulate: with the leaves in a circle or **rosette**.
rotate: wheel-shaped; of a corolla with a short tube and spreading **limb**.
rotund: with a shape between orbicular and broadly elliptic.
rounded: margins and apex forming a smooth arc.
ruderal: a plant that grows on waste ground.
rudimentary: poorly developed and not functional (compare **obsolete**, **vestigial**).
rufescent: becoming reddish.
rufous: rusty or brownish red.
rugose: wrinkled; covered with coarse **reticulate** lines.
rugula (*pl.* **rugulae**): a fine wrinkle or fold, e.g. in the upper lip of some Acanthaceae.
rugulose: finely wrinkled.
ruminate: mottled in appearance, e.g. of bark, or of the food reserves in a seed.
runcinate: **pinnatifid** with the lobes pointing towards the base.
runner: a slender, prostrate or trailing stem which produces roots and sometimes erect shoots at its **nodes** (compare **stolon**).
russet: reddish brown, usually rough skin.

S

saccate: pouched.
sagittate: applied to the base of a leaf or an anther with two acute, straight lobes directed downwards like in an arrow-head.
saliciform: like the genus *Salix* (Salicaceae); willow-like.
salverform/salver-shaped: shaped like a trumpet, e.g. of a **sympetalous corolla**, with a slender tube and an abruptly spreading **limb**.
samara: an indehiscent, 1-seeded fruit or **mericarp** with wings (e.g. *Combretum*–Combretaceae).
samaroid: applied to a fruit resembling a **samara**.
saponins: a group of soap-like, toxic substances.
saprophyte (*adj.* **saprophytic**): an organism deriving its nourishment from dead organic matter and usually lacking chlorophyll (compare **epiphyte**, **parasite**).
sarcotesta: the fleshy outer coat of a seed.
saxicolous: living or growing among or on rocks.
scaberulous/scabrellous: minutely **scabrous**, slightly rough to the touch.
scabrid/scabrous: rough to the touch, usually from the presence of very short harsh hairs.
scabridous/scabridulous: somewhat rough to the touch.
scalariform: having a ladder-like pattern.

scale: (1) reduced or rudimentary leaf, usually **sessile** and **scarious** and seldom green; (2) a kind of **indumentum** in the form of small, flat discs attached by the centre; (3) any thin, usually small and dry structure.
scalloped: see **crenate**.
scandent: climbing.
scape: a naked flower stalk arising from the ground with **radical** or **rosulate** leaves.
scapigerous: possessing a **scape**.
scapose: bearing one or more flowers on a **scape**; in the form of a **scape**.
scarious: thin and dry, not green.
schizocarp (*adj.* **schizocarpic/schizocarpous**): a dry, dehiscent fruit which splits into two or more separate carpels (**mericarps**) at maturity, found e.g. in Apiaceae and Malvaceae.
schizogenous: originating by separation of cell walls along the middle lamella.
scimitar-shaped: see **acinaciform**.
sclereid: sclerenchyma cell having thick, lignified secondary walls.
scleroid: having a hard texture.
sclerophyllous: with leaves stiffened by sclerenchyma.
sclerotic: having **sclereids**.
scorpioid (of a **cymose** inflorescence): with the main axis coiled in bud, the flowers being usually 2-ranked, i.e. with single flowers alternately right and left (compare **helicoid**).
scrobiculate: pitted; marked by minute or shallow depressions.
scutate: like a small shield.
scutelliform: shaped like a dish.
sectile (of **pollinia**): compartmented.
secund: with parts or organs (branches, leaves or flowers) all directed to one side.
segment: a part or division of an organ.
sepal: see **calyx**.
sepaloid/sepaline: resembling sepals.
septal (of a **nectary**): occurring in the partitions of the ovary where the carpel walls are incompletely fused, especially in **monocotyledons**.
septate: divided by one or more partitions.
septicidal: referring to the dehiscence of a ripe **capsule** which splits open through the **septa** or **carpel** margins (compare **loculicidal**).
septifragal: referring to the **dehiscence** of a ripe **capsule** where the **valves** or backs of the **carpels** break away leaving the **septa** intact.
septum (*pl.* **septa**; *adj.* **septal**): dividing cross wall or partition; an internal partition of an ovary or fruit.
seriate: in rows or whorls.
sericeous: silky, with closely appressed, soft, straight hairs.
serrate: toothed like a saw, with regular, pointed teeth.
serrature: the toothing of a **serrate** leaf.
serrulate: **serrate** with minute teeth.
sessile: without a stalk; (of a **stigma**): the **style** is absent and the stigma is therefore sessile on the ovary).
seta (*pl.* **setae**): a bristle or stiff hair.
setaceous: having bristle-like hairs; bristly.

setiferous: bearing **setae**.
setiform: looking like a **seta**.
setose: beset with bristles.
setulose: a diminutive of **setose**.
sexine: the outer and/or sculptured layer of the **exine** of a **pollen** grain.
sheath: the (lower) portion of the leaf clasping the stem.
sigmoid/sigmoidal: double-curved in opposite directions, like the letter S.
siliceous: containing silica.
silicula (*pl.* **siliculae**): a short **siliqua**, not much longer than broad.
siliqua/silique (*pl.* **siliquae/siliques**): a dry, dehiscent fruit formed from a **superior** ovary of two carpels, with two parietal placentas, divided into two compartments by a thin partition (**replum**), opening by two **valves** which fall away from a frame on which the seeds are borne (e.g. in Brassicaceae).
simple: of one piece or series, the opposite of **compound**, e.g. simple leaf: not divided into leaflets; (of a hair or inflorescence): not branched.
sinistrorse: turned towards the left (compare **dextrorse**).
sinuate/sinuous: with the margin uneven, with rather deep undulations (compare **undulate**).
sinus (*pl.* **sinuses**): (1) a curve; (2) a recess between the teeth or lobes on a margin; (3) the recess formed by the basal lobes of a leaf or other organ.
siphonostele (*adj.* **siphonostelic**) (in a dicotyledonous stem): the cylinder of conducting tissue surrounding the central **parenchyma**.
sobole: a shoot, especially from the ground.
soboliferous: bearing **soboles**.
solitary: borne singly or alone.
sorus (*pl.* **sori**; *adj.* **soral**): a cluster of spores and/or **sporangia**.
spadix (*pl.* **spadices**): a flower **spike** with a fleshy or thickened axis, e.g. in Araceae and some palms (Arecaceae).
spathe (*adj.* **spathaceous/spatheate**): a large bract enclosing a **spadix**, or one or more bracts enclosing a flower or inflorescence.
spathella (*pl.* **spathellae**): (1) a capsule-like structure enclosing the flower buds in some Podostemaceae, rupturing irregularly as the pedicel elongates at **anthesis**; (2) formerly used term for the glumes of Poaceae; (3) small bracts as found in the inflorescences of Restionaceae.
spatheole: a secondary **spathe** within a **compound inflorescence** in the Andropogoneae —Poaceae.
spathulate: spoon-shaped, broadly rounded above and long and narrow below.
spatulate: see **spathulate**.
species: a **taxon** comprising one or more populations of individuals capable of interbreeding to produce fertile offspring.
spheroid/spheroidal: approximately spherical.
spicate: arranged in a **spike**.
spiciform raceme: **spike**-like **raceme**.
spiculate: having a surface covered with fine points or crystals.
spicule: a small spike.
spike: an inflorescence with the flowers **sessile** along a simple undivided axis or **rachis**.
spikelet: a small **spike** composed of one or more flowers enclosed by **glumes**, in Cyperaceae and Poaceae.

spine: a sharp-pointed, hardened structure modified from another organ (leaf, branch, **stipule**, etc.), or from part of an organ.
spine shield: in some Euphorbieae—Euphorbiaceae, the hardened bases along the angles of the stems and branches, from which the **spines** of certain species are produced.
spinescent: spine-tipped, having **spines**.
spinose: spiny or having **spines**.
spinulose: bearing small **spines**.
spiral (of leaves or floral organs): borne at different levels on the axis, in an ascending spiral.
spiraperturate (of a **pollen** grain): with one or more spiral apertures.
-sporangiate (of an **anther**): containing a given number of **microsporangia**/**pollen sacs** (e.g. 4-sporangiate: containing four **pollen** sacs, as commonly found in 2-**thecate** anthers) (see **anther**).
sporangium (*pl.* **sporangia**): a hollow, unicellular or multicellular, sac-like, spore-producing structure.
sporophore: any structure bearing spores.
sporophyll: a modified leaf or leaf-like structure which bears **sporangia**.
spur: a slender, usually hollow extension of some part of the flower.
spur shoot: a (very) short lateral branch (= **brachyblast**).
spurious: not genuine or real, false.
squama (*pl.* **squamae**): a scale, usually derived from a leaf.
squamella: diminutive of **squama**, a scale of the second order or reduced in size, as in the **disc** of Asteraceae.
squamiform: scale-like.
squamose: scaly, covered with coarse scales.
squarrose: spreading or recurved at some point above the base, e.g. as in the **phyllaries** of some Asteraceae which are sharply curved downward or outward.
stamen (*adj.* **staminal**): in **angiosperms**, the **pollen**-producing structure in a flower usually consisting of an **anther** and a **filament**.
staminal column: see **androphore**.
staminal corona: fleshy outgrowth of tissue, attached dorsally to the staminal column at the base of the filament or on the backs of the anthers (compare **gynostegial corona**, **interstaminal corona**).
staminate: having stamens (usually implying that **carpels** are absent).
staminode (*adj.* **staminodial**): an abortive or vestigial **stamen** without a perfect anther.
staminophore: a structure bearing stamens.
standard: the large posterior petal (outside in the bud) of a **papilionaceous** corolla (= **vexillum**).
stele: the portion of the plant body which comprises the vascular system (xylem and phloem) and its associated ground tissue (e.g. pericycle, interfascicular regions and pith).
stelidium (*pl.* **stelidia**): lateral horn- or tooth-like appendages of the **gynostemium** of some Orchidaceae (e.g. *Bulbophyllum* spp.).
stellate: resembling a star in shape; (of hairs): with several arms radiating horizontally.
stereome (of **involucral bracts** of some Asteraceae): the thickened region in the lower part.
stigma (*adj.* **stigmatic**/**stigmatose**): the point or surface of the **pistil** which receives the **pollen**, either sessile (when there is no style) or on the top or surface of the **style** or its branches.

stipe: the stalk supporting a **carpel** or **gynoecium** or fern **frond**.
stipel/stipella (*pl.* **stipellae**): small secondary **stipule** at the base of a leaflet.
stipi(ti)form: looking like a **stipe**.
stipitate: supported on a special stalk, or **stipe**, e.g. an ovary (e.g. in Capparaceae).
stipule (*adj.* **stipular**): leaf-like or scale-like appendage of a leaf, usually at the base of the petiole.
stipuloid: **stipule**-like.
stolon: a **runner** which roots.
stoloniferous: having **stolons**; trailing over the soil surface and rooting at the **nodes**.
stoma (*pl.* **stomata**): a minute pore in the epidermis of leaves, providing for gaseous exchange between the tissues and the atmosphere.
stomatose: possessing stomata.
stomium: part of the sporangium in Pteridophyta; situated below the free end of the **annulus**, consisting of a vertical strip of 4 thin-walled cells, developing into a 'mouth' necessary for the liberation of **spores**.
stone cell: a ± isodiametric **sclereid**.
stramineous: straw-like or straw-coloured.
stria (*pl.* **striae**): see **striation**.
striation (*adj.* **striate**): one of a number of parallel longitudinal lines, grooves or ridges.
strigillose: finely **strigose**.
strigose: with short stiff hairs appressed to the surface.
strigulose: minutely **strigose**.
strobiliform: resembling a **strobilus**.
strobilus (*pl.* **strobili**): a cone-like structure containing the reproductive organs of one or both sexes, as in ferns and gymnosperms.
strophiole: an appendage to the **hilum** of some seeds (see also **caruncle**).
strumose: with a swelling.
strut: a rod or bar connecting parts of a structure.
style: narrow upper part of an **ovary** supporting the **stigma**.
style head/pistil head: the dilated apical part of the style or **gynostegium**, particularly in Apocynaceae.
stylidium/stylodium: a style-like **stigma**.
stylopodium: a disc-like enlargement of the base of the style (e.g. in some Brassicaceae).
sub- (*prefix*): implying 'almost', e.g. **subacute**: almost acute; **subentire**: having a very slightly uneven margin.
suberous: corky.
subtend: to have a **bud** or similar part growing in its **axil**.
subulate: awl-shaped: narrow and tapering gradually to a fine point.
succubous: obliquely inserted on the stem so that the leaf-edge nearest the shoot-tip is overlapped by and covered by the lower edge of the leaf above.
succulent: a plant which accumulates water in fleshy, water-storing stems, leaves or roots; juicy, fleshy in reference to texture or appearance.
suffrutescent: like a **suffrutex**.
suffrutex: a perennial plant which is slightly woody only at the base.
suffruticose: shrubby.
sulca: a groove or furrow.
sulcate: grooved, furrowed.

sulculus (*pl.* **sulculi**; *adj.* **sulculate**) (of a **pollen** grain): an elongated latitudinal ectoaperture not situated at a pole (compare **sulcus**).

sulcus (*pl.* **sulci**) (of a **pollen** grain): an elongated latitudinal ectoaperture situated at the **distal** or **proximal** pole of a **pollen** grain (compare **colpus**, which is usually a longitudinal aperture; compare **sulculus**, which is not situated at a pole).

superior: applied to an **ovary** when the sepals, petals and stamens are inserted below it (**hypogynous**); also when the **receptacle** bearing the calyx, corolla and stamens is prolonged so as to be separate from the ovary, but forms a cup surrounding it (**perigynous**) (compare **inferior**).

supra (*prefix*): above, on the upper side.

suture: the line of junction or seam of union, commonly used of the line of opening of a **carpel**; the dorsal (outer or anterior) suture of a carpel represents the midrib of the carpellary leaf; the **ventral** (inner) suture represents the united margins on which the ovules and placentas are borne.

sward: lawn; continuous grass cover produced by stoloniferous species.

syconium: a multiple fruit, or **syncarp**, with a hollow centre, e.g. the figs of *Ficus* (Moraceae).

sympatric (of two or more taxa): having coincident or overlapping ranges of distribution (compare **allopatric**).

sympetalous: having petals which are partly or completely fused (= **choripetalous**, **gamopetalous**) (compare **polypetalous**).

sympodial (of growth): without a single persisting growing point; changing direction by frequent replacement of the growing apex by a lateral growing point below it (compare **monopodial**).

synandrium: an **androecium** of a male flower with united anthers.

synanthous (of leaves): appearing together with the flowers (compare **hysteranthous**).

syncarp/syncarpium: a structure consisting of several united, usually fleshy fruits; (compare **aggregate fruit**).

syncarpous: composed of two or more united **carpels**.

synflorescence: a compound **inflorescence**.

synthecate (of anthers): with the two **thecae** having merged into one, e.g. in some Scrophulariaceae.

T

tannin: a complex yellowish or brownish aromatic compound found in many plants.

tanniniferous: producing **tannins**.

taproot: the main, descending root of a plant that has a single dominant root axis.

tawny: dull yellow, with a mixture of grey and brown.

taxon (*pl.* **taxa**): a group or category, at any level, in a system for classifying organisms.

tectum (of a **pollen** grain): the outermost closed layer of the **exine**, the resistant part of the pollen wall.

tendril (*adj.* **tendrillar/tendrillous**): a long, slender, coiling, modified leaf, or rarely stem, by which a climbing plant attaches to its support.

tendrilliform/tendrilloid: resembling a **tendril**.

tentacles (**tentaculum**): sensitive glandular hair as in *Drosera*.

tenui- (*prefix*): slender, thin.

tenuous: thin or slender in form.

tepal: any of the members of a **perianth** that is not clearly differentiated into **calyx** and **corolla**.
terete: cylindrical, circular in transverse section.
terminal: at the apex or **distal** end.
ternate: arranged in a **whorl** or cluster of three.
ternately compound (of a leaf): with **leaflets** in threes.
terrestrial: on or in the ground.
tessellate: having a checkered pattern, e.g. with depressions.
testa: the outer coat of a seed.
tetra- (*prefix*): four-.
tetrad: a group of four spores or **pollen** grains derived from a spore mother cell or **pollen** grain mother cell as a result of meiosis, and remaining fused at maturity, e.g. in Ericaceae (compare **monad**).
tetradynamous: having six **stamens**, two of which are shorter than the others, as in most Brassicaceae.
tetragonous: 4-angled.
tetramerous: having four members in a whorl.
tetrandrous: having four **stamens**.
tetrasporangiate (of an **anther**): having four **microsporangia** or **pollen sacs**.
thalloid: resembling or shaped like a **thallus**.
thallus (*pl.* **thalli**): a single plant body not differentiated into stem and leaves, e.g. *Lemna* spp. (Lemnaceae).
theca (*pl.* **thecae**; *adj.* **thecous/thecate**): one half of an **anther**, usually containing two **pollen sacs/microsporangia**.
thorn: a modified plant organ, especially a stem, that is stiffened and ends in a pungent point.
throat (of a tubular **corolla**): the top of the tube, where the lobes arise from the tube.
thrum flower: in **heterostylous** plants, the flower type having the shorter **style** (compare **pin flower**).
thyrse: a **panicle** with the secondary and ultimate axes **cymose**, i.e. the main axis is **indeterminate** and the lateral branches are **determinate** in their growth.
thyrsoid: like a **thyrse**.
tiller: a shoot growing from the base of a grass (Poaceae) stem; to produce tillers.
tomentellous/tomentulose: minutely **tomentose**.
tomentellum: a fine, short **tomentum**.
tomentose: densely covered with short, soft, felted hairs.
tomentum: a covering of woolly, densely matted hairs; wool.
toothed: see **dentate**.
tortuous: irregularly twisted or twining.
torulose: cylindrical with contractions or swellings at intervals.
torus: see **receptacle**.
trabeculate: cross-barred.
trace: a strand of vascular tissue connecting the stem with a leaf or reproductive organ.
transformer: invader plant that can change the character, condition, form, or nature of ecosystems over substantial areas e.g. *Acacia cyclops* (Fabaceae).
translator: see **corpuscle**.
translator arm: see **caudicle**.

trapeziform: a figure of four straight, unequal sides.
tri- (*prefix*): three; thrice.
triad: a group of three.
trichome: an epidermal outgrowth, such as a hair or scale.
trichotomous: forking regularly into three.
tricuspidate: abruptly tipped with three sharp rigid points.
trifarious: arranged in three rows.
trifid: deeply divided into three parts.
trifoliate: having three leaves.
trifoliolate: having three **leaflets**.
trigonous: triangular in cross section and with obtuse angles (compare **triquetrous**).
trilete (e.g. of spores): having three scar lines forming a 'Y', or basically tetrahedral.
trimerous: in threes, e.g. of a flower with three sepals, three petals, etc.
tripartite: divided into three parts.
tripinnate (of leaves): thrice **pinnately** divided.
triporate: with three pores.
triquetrous: triangular in cross section and with acute angles, therefore with three distinct longitudinal ridges (compare **trigonous**).
tristichous (of leaves on a stem): arranged in three vertical rows.
tristylous (said of a **heterostylous** species): having three style lengths (short, mid, long); the flowers of any one plant have three styles of different lengths.
triumbonate: with three blunt projections [e.g. arising on the surface of the capsule in *Wurmbea stricta* (Colchicaceae)].
trophic: pertaining to nutrition, relating to an increase in growth.
trophopodia: vegetative outgrowths or organs increasing in thickness, pertaining to nourishment.
trullate/trulliform: trowel-shaped; having its widest axis below the middle and with straight margins.
truncate: cut off ± squarely at the end.
tuber: (1) a thickened branch of an underground stem, which produces buds; (2) a swollen root or branch of a root acting as a storage organ.
tubercle: a small, wart-like outgrowth.
tuberculate: covered with wart-like protuberances or knobs.
tuberous: swollen; (of roots): **tuber**-like.
tuft (*adj.* **tufted**): clump, cluster.
tuft domatium: a **domatium** supplied with or consisting of hairs.
tumid: swollen, enlarged.
tumulus (*pl.* **tumuli**): a small mound.
tunic (*adj.* **tunicate**) (of a **bulb** or **corm**): a loose membranous or fibrous outer skin which does not develop from the epidermis.
turbinate/turbiniform: shaped like a top; obconical.
turgid: swollen due to a high water content (compare **flaccid**).
turion: (1) a young shoot or sucker which is produced from an underground stem; (2) a perennating winter bud which is separated from the parent and gives rise to a new plant in spring.
tussocky: tufted as in some grasses or grass-like plants.

U

umbel (*adj.* **umbellate**): a **racemose** inflorescence in which all the divergent pedicels or **rays** arise in a cluster at the top of the peduncle and are of about equal length; **compound umbel**: each ray bears an umbel, each of the latter called a partial umbel; **simple umbel**: each ray terminates in a flower.

umbellule: a secondary **umbel** in a compound umbellate inflorescence.

umbo (*adj.* **umbonate**): a blunt or rounded projection arising from a surface, as on a pine-cone scale.

uncinate: terminating in a hooked point.

undulate: wavy on the margin (compare **sinuate**).

unguiculate (of petals): having a narrow **claw**-like base.

uni- (*prefix*): one-.

unifacial: one-faced; (of leaves): folded sharply in half along the midline so that the adaxial surface is hidden; or filiform to ± cylindrical with a ± continuous palisade layer (see also **centric**).

unifarious (of the **indumentum** of a stem): restricted to one side or vertical line.

unifoliate: having only one leaf.

unifoliolate: of a **compound** leaf which is reduced to a single, usually terminal, **leaflet**; the **petiolule** is distinct from a **petiole**.

unilateral (of stamens): with **anthers** grouped on one side of the **style**.

unilocular (of an ovary or fruit): having only one internal cavity.

uninodal shoot: spring shoot developing from the terminal winter bud and producing only one **internode** with one whorl of branches at the end; the cones are subterminal at the end of the shoot; e.g. *Pinus pinea*.

unisexual: bearing only male or only female reproductive organs.

united: fused together.

unitegmic (of an **ovule**): with one **integument**.

unithecate/unithecous (of an **anther**): with one **theca**.

urceolate: urn-shaped, with a short swollen tube contracted near the top and then slightly expanded in a narrow rim.

urticate: to cause a burning or itching sensation.

utricle: bladder-shaped structure, applied (1) to the traps of *Utricularia* (Lentibulariaceae); (2) to the fruits of e.g. some Cyperaceae, such as *Carex*, and of Lemnaceae.

V

vagina: sheath.

vallecular (of grooves between ridges): e.g. in the fruits of Apiaceae and Asteraceae.

valvate: having the edges of **petals** or **sepals** touching without overlapping.

valve (*adj.* **valvar**): one of the parts produced by the splitting of a **capsule** when ripe.

vascular: specialised for the conduction of fluids; **vascular plant**: plant containing specialised conducting tissues.

vegetative (of plant organs or parts): having non-reproductive functions, e.g. leaves, roots, stems, etc.

veins: strands of **vascular** tissue (compare **nerves**).

velamen: water-retaining outer layer of the aerial roots of some **epiphytes**, especially Orchidaceae.

velum: a veil; a membranous covering.

velutinous: covered with dense, straight, long and soft **trichomes**, pile-like.
velvety: with a coating of fine soft hairs.
venation: the arrangement of **veins** of a leaf or other organ.
venose: having veins.
ventral (of a lateral organ): the upper or inner face or the surface facing the axis; (of a **thallus**): the surface facing the substrate (compare **dorsal**).
ventricidal: of the dehiscence of a fruit which splits down the **ventral** (axile) side of the locules.
ventricose: swollen or bulging on one side; unequally inflated.
vermiform: shaped like a worm.
vernation: the arrangement of unexpanded leaves in a bud (compare **aestivation**).
verruciform: resembling a wart.
verrucose: warty.
verruculose: finely warty.
versatile (of an **anther**): swinging freely about the point of attachment to the **filament** which is ± in the middle of the back (compare **basifixed**, **dorsifixed**, **medifixed**).
verticil: a whorl or circular arrangement of similar parts around an axis, at the same level.
verticillaster: a false **whorl** of opposed dense **cymes**, especially in Lamiaceae.
verticillate: arranged in one or more **whorls**.
vesicle: a small sac or cavity; a spherical body.
vesicular: pertaining to, having, or composed of, **vescicles**.
vestigial: of an organ now degenerate and of little or no utility (compare **obsolete**, **rudimentary**).
vestiture: any covering on a surface, e.g. plant **trichomes**.
vexillum (*adj.* **vexillary**): the uppermost (or posterior) **petal** of a **papilionaceous** flower (= **standard**).
vibratile: capable of vibration.
villous: beset with long, weak hairs (compare **hirsute**).
virgate: with many long, slender, ± straight, ascending, almost parallel stems.
viscid: sticky, glutinous.
viscidium (in Orchidaceae): a **viscid** part of the **rostellum**, which is clearly defined and removed with the **pollinia** as a unit, and serves to attach the pollinia to an insect or other pollination agent.
viscidulous: slightly sticky.
viscous (of a liquid): thick and sticky.
vitta (*pl.* **vittae**): aromatic oil tubes in the fruit of some Apiaceae.
viviparous: with seeds or buds germinating or sprouting while attached to the parent plant.
voluble: twining or twisting.

W

whorl (*adj.* **whorled**): (1) a group of three or more parts at a **node**, e.g. leaves or branches; (2) a circle of floral organs, e.g. stamens, petals, carpels.
wing (*adj.* **winged**): (1) any flat membranous expansion; (2) a thin flange of tissue extended beyond the normal outline of a stem or petiole; (3) one of the two lateral petals of a **papilionaceous** flower; (4) one of the **petaloid** sepals of the flower in Polygalaceae.

X

***x*/basic chromosome number**: the number of chromosomes in the original **genome** (**haploid** set) from which a **polyploid** or a group of polyploid forms or species is known or postulated to have arisen.

xerochastic: applied to plants of which the fruits burst by desiccation and their seeds or spores are scattered.

xeromorphic (of plants or plant parts): having characteristics that serve as protection against excessive loss of moisture.

xerophyte (*adj.* **xerophytic**): a plant that is adapted to dry or arid habitats.

Z

zonasulculate (of a **pollen** grain): with a ring-like **sulcus** around the equator.

zonatriporate (of a **pollen** grain): with three pores equatorially.

zygomorphic: applied to flowers which are bilaterally symmetrical, i.e. capable of being bisected into identical halves in one plane only, forming mirror images (**= irregular**) (compare **actinomorphic**, **regular**).

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A Flora of the Eastern Cape Province is a comprehensive book, the first to describe the vascular plants occurring in the Eastern Cape Province. From an evolutionary perspective, this flora evolved during the formation of the Karoo Supergroup and reached a phase of maturity in the latter half of the Cretaceous. Geology and soils, together with climate, form the basis for the existence of plants and animals, a symbiosis that can rightfully be described as a symphony. The introduction to the *Flora* leads the reader through the 12 bioregions and the lustre thereof is reflected in the twelve accompanying photographic plates. A broad perspective of the bioregions in the Eastern Cape is provided by Prof. Richard Cowling in the chapter *Vegetation of the Eastern Cape: navigating a transition zone*. This *Flora* contains descriptions of all families (226), genera (1 440) and species (6 611) occurring in the Eastern Cape Province, compiled by 77 contributors, of whom many are specialists on specific taxa.





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