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Cyperaceae | Plantz Africa

Cyperaceae Family: Cyperaceae Common names: sedges (Eng.); biesies (Afr.)

Introduction

A large, cosmopolitan family of mostly herbaceous plants, Cyperaceae occur primarily in moist temperate to wet tropical regions of the world; several species are of economic importance.



Description

Description

Sedges are mostly perennial or sometimes annual herbs. Because many species have a tufted growth habit, long, thin-textured, narrow, flat leaves with a sheathing base, a jointed stem and much-branched inflorescences of tiny flowers, they are often described as graminoid, meaning grass-like. Indeed, many horticultural references include sedges under the general heading of grasses! Furthermore, many grasses and sedges do not fit the graminoid image at all, for example having leaf blades rounded in cross section or no leaf blades at all, or having compact, head-like inflorescences. So we end up with some grasses and sedges being called graminoids, and others being called simply herbs. To minimise confusion we prefer to restrict the term graminoid to true grasses (Family Poaceae), and to apply the new term cyperoid to members of the sedge family. All members of the sedge family such as the giant herb, papyrus, the few climbers (in genus *Scleria*) and the *Xerophyta*-like *Microdracoides* from West tropical Africa, with a woody branching stem, can be comfortably accommodated by this term.

Along with the similarities to grasses there are many features that distinguish sedges (such as usually leaves arranged in threes, and usually a solid stem that is triangular in cross section, and usually a conspicuously bracteate inflorescence), but they are not all observable with the naked eye. As in grasses, the basic unit of the inflorescence in sedges is the spikelet. Within the family there is enormous variation in spikelet and inflorescence structure. The spikelet consists of one to several, tiny, male, female or bisexual

flowers, each borne in the axil of a boat-shaped glume (tiny bract) which is coloured in shades of green or brown, red, occasionally white or bright yellow. Mostly petals are absent, but when present, they are concealed within the glume and consist of bristles or scale-like structures.



After pollination, the ovary wall thickens and hardens to become the fruit wall and is often beautifully sculptured.



The unit of dispersal is therefore a single-seeded, dry (fleshy in a few non-African species) indehiscent fruit, termed a nutlet or achene.

Distribution and habitat

Distribution description

The family comprises about 104 genera and more than 5000 species world-wide, although estimates of numbers vary greatly due to differing taxonomic concepts of individual researchers, and because modern sedge floras are available for only a few countries. The largest genus is *Carex* with about 2000 species world-wide, followed by *Cyperus* with about 550 species. Sedges occur primarily in the tropics and subtropics, but may be locally dominant in some areas like the subarctic regions (tundra).

In rather arid southern Africa there are roughly 40 genera and 400 species. They are found throughout the region, in particular habitats. Some species, e.g. in the genus *Tetraria*, are endemic (occur nowhere else in the world) to the winter rainfall region of the Western Cape, South Africa.

Derivation of name and historical aspects

History

Sedges have featured in literature since antiquity. The family is well circumscribed and uncontroversial. It was formally described by De Jussieu in 1789; the name is derived from the genus name *Cyperus*, originally from the Greek *kupeiros*, meaning sedge. Spikelet and inflorescence structure, together with other evidence, forms the basis for classification within the family. Because the spikelet is very small and the inflorescence structure very complex, interpretation is difficult and there is still controversy over recognition of subfamilies, tribes and genera. Molecular studies in the family are still in the early stages and have not, as yet, yielded any real solution to the problem.

There is controversy at higher levels too, so that sometimes Cyperaceae are included in the order Poales and sometimes in their own order Cyperales. For southern African families, the only close relationships that have been demonstrated reasonably well are those between Cyperaceae and Juncaceae (rushes), and Poaceae and Restionaceae (Cape reeds).

Class: Angiosperm: Monocotyledon

Ecology

Ecology

In southern Africa sedges are found mainly in wetlands (some are entirely aquatic) and along watercourses, but also occur in moist grasslands and along forest margins. Some genera (e.g. *Tetraria*) are common constituents of fynbos vegetation, which generally occurs on impoverished sandstone soils, whereas several species of other genera are pioneers on coastal dune sands.

It is not surprising that adaptations to particular habitats are many. Many species are deciduous, and survive the unfavourable season as rhizomes, corms or tubers. Several species grow in semi-arid areas, and

are able to survive periods of drought due to succulent, water-storing leaf sheaths. In arid areas many species have overcome the problem of temporary moisture (such as in pans) by becoming annuals, completing their life cycles in a month or two. Species occurring in fire-regulated grasslands often have protectively thickened and hardened or fibrous leaf sheaths.

Sedges are generally wind-pollinated, although some of the brightly coloured species are thought to be insect-pollinated. On several occasions I have observed thrips (tiny insects) in the flowers of *Fuirena* species, absolutely covered in pollen. It is almost certain that, as well as feeding on the pollen, they are also vectors. After disintegration of the spikelet, the fruits are mostly dispersed by wind and water, and can also be carried long distances in mud on the feet of migrating birds. Some fruits have corky flotation tissue or further adaptations for water dispersal, some have elaiosomes (an oil-rich appendage on the seed) for ant dispersal, and others are equipped with tiny hooks and bristles for dispersal in the fur and feathers of mammals and birds.

Uses

Use

The chief importance of sedges lies in their forming a major natural constituent of wetlands and riverside vegetation, where their densely tangled rhizomes contribute to erosion control and water purification. The consequences once they are eradicated are unfortunately all too easily observed. While on the natural theme, the dense sedge beds that form in swampy regions provide food and shelter for birds, animals and other aquatic life, thus attracting ecotourism. In grasslands, terrestrial game birds (e.g. francolin) feed almost exclusively on the small corms of some *Cyperus* species.

Many species are utilised by humans for food, such as the starchy, protein-rich corms of tiger-nut or chufa (*Cyperus esculentus* var. *sativus*) and Chinese water chestnut (*Eleocharis dulcis* varieties). Corms of the former are also used to make a drink, and many species are used for perfume, as medicine, and probably also for magical purposes.

They are traditionally used for construction e.g. boat and house-building on Lake Titicaca, Peru (*Schoenoplectus californicus*), thatching, paper-making (*Cyperus papyrus*), and for weaving household items such as various mats, baskets, beer-strainers and other utensils.

A modern usage for sedges is in artificially constructed water purification beds, because the rhizomes of several species are able to grow anaerobically, at least for a period of time. In Europe *Schoenoplectus lacustris* is commonly used for this purpose.

Several species are used in horticulture for waterside planting such as *Cyperus papyrus*, the various umbrella sedges (*C. involucratus*, *C. textilis*), smaller species (e.g. *Carex* species); a novel usage is the tiny annual, *Isolepis cernua* (cat's whiskers) sold as a groundcover for bonsai trays.

We should also not forget that two of the world's worst weeds, *Cyperus rotundus* and *C. esculentus*, hail

from the sedge family. In irrigated lands, ploughing spreads their tubers and corms to such an extent that the crop plant is totally smothered, necessitating the use of herbicides to combat these weeds.

In the Garden, sedges are generally used as 'architectural' plants, especially in damp or wet places alongside water features. As with any plants it is important to try to reproduce conditions in their native habitat. They are attractive when allowed to form large masses, but do need some attention from time to time. [Cyperus papyrus](#), [C. prolifer](#) and [C. textilis](#) have already been featured as Plants of the Week.

References

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Credits

Clare Archer

National Herbarium Pretoria

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