

In search of *Cyphia*

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Cyphia is a genus of flowering plants in the Lobeliaceae (sometimes included in the Campanulaceae) and Victor et al. (2015) identified it as one of the genera in need of a taxonomic revision. The genus comprises ± 80 species [according to Wimmer (1968)], and is endemic to Africa with the most species [± 61 according to Phillipson and Knox (2003) or 49 according to <http://wcsp.science.kew.org> (2022)] occurring in southern Africa. In the absence of a reliable key and well-defined diagnostic characters, identification of species is an almost impossible task. The

last treatment of the genus as a whole, with the only available identification key to all species, was done by Wimmer in 1968; now largely outdated.

Members of the genus vary considerably, but have the following morphological characters in common (Figure 1): they are herbaceous, perennial plants with underground tubers; stems are twining or erect; flowers are usually strongly zygomorphic with a 5-lobed corolla, the upper lip 3-lobed and the lower lip 2-lobed; corolla in shades of white to magenta

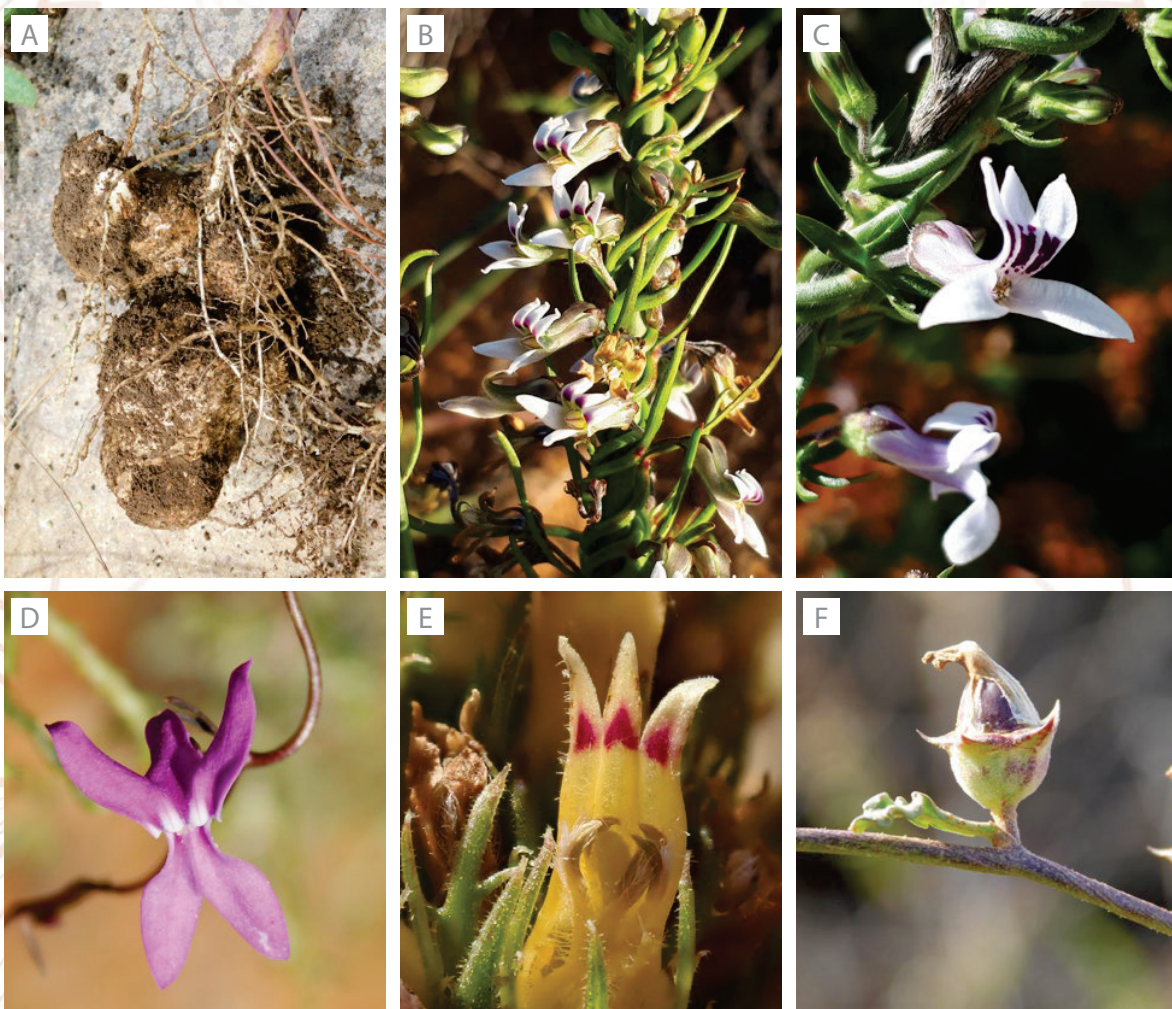


Figure 1. Morphological characters of *Cyphia*. A, underground tubers; B, twining stems; C, strongly zygomorphic flower showing purple markings on white petals; D, corolla 5-lobed with the upper lip 3-lobed and lower lip 2-lobed; E, free, pilose anthers; F, semi-inferior ovary. Photographers: A-D, F, H. Steyn; E, Delia Oosthuizen.

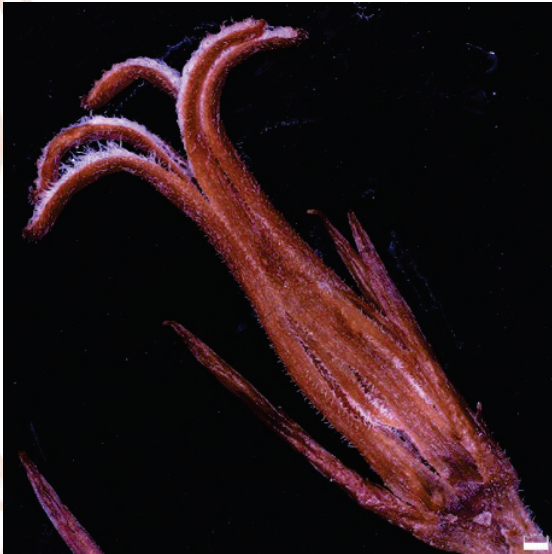


Figure 2. Tubular corolla of species in section *Cyphiella* showing fenestrate base. Photographer: H. Steyn.

with various markings on the petals; anthers are free (not fused as in *Lobelia*) and variously hairy on the back; ovary is usually semi-inferior or inferior; fruit is a dehiscent capsule with numerous small seeds.

According to Wimmer's treatment, *Cyphia* is divided into two sections based on flower morphology. Flowers of section *Cyphiella* have tubular corollas and their stamens are enclosed in the corolla tube (Figure 2), whereas flowers of section *Cyphia* have distinct 2-lipped corollas and clearly visible stamens (Figure 3). These two groups are shown to be unnatural (non-monophyletic) and the relationships within the genus need to be clarified.

Uncertainty regarding the delineation of species, their geographical distribution and habitats impede attempts to accurately identify taxa and assess their conservation status. According to the current Red List assessment [South African National Biodiversity Institute; <http://redlist.sanbi.org> (2022)] 20 of the 83 listed *Cyphia* taxa are DDT (Data Deficient – taxonomically problematic), four are DDD (Data Deficient – insufficient information) and four taxa have not been evaluated yet. These Data Deficient taxa are a priority as they are not assessed and currently do not receive conservation attention. Two species are currently listed as Vulnerable, namely *C. bolusii* E. Phillips and *C. oligotricha* Schltr., with *C. longiflora* Schltr. listed as Near Threatened and *C. ranunculifolia* E. Wimm. as Critically Endangered (CR) (see Figure 4). The conservation status of most species in the genus may, however, prove to be incorrect due to



Figure 3. Corolla of species in section *Cyphia*. Photographer: H. Steyn.

the severe lack of knowledge and expertise on this group. A thorough study will significantly improve the ability to determine the conservation needs of *Cyphia* species.

During November 2021, Dr Eric Knox, Director of the Indiana University Herbarium and Lobeliaceae expert, visited the National Herbarium (PRE) and suggested that I focus on problem clades within the genus. The priority groups identified through his phylogenetic work are the *C. elata* complex, several *Cyphia* species from KwaZulu-Natal and the Eastern Cape (see Table 1) and the *C. digitata/dentariifolia* complex.

Any contributions to iNaturalist would be appreciated, as well as herbarium specimens and/or images that can be sent to the author at the National Herbarium, Private Bag X101, Silverton, Pretoria 0184. Contributions should please include comprehensive locality and habitat information, time of flowering/ collection and other relevant information, e.g., presence of milky sap, smell, etc. For more information please contact Hester Steyn at h.steyn@sanbi.org.za.

References

- PHILLIPSON, P.B. & KNOX. 2003. Lobeliaceae. Pp. 604–612 in Germishuizen, G. & Meyer, N.L. (eds), *Plants of southern Africa: an annotated checklist. Strelitzia* 14. National Botanical Institute, Pretoria.



Figure 4. Species of conservation concern. A, *C. bolusii*; B, *C. oligotricha*; C, *C. longiflora*; D, *C. ranunculifolia*. Photographers: A, Kate Braun; B-D, H. Steyn.

Table 1. Species needed from KwaZulu-Natal and Eastern Cape

Species	Known distribution	Herbarium where type is kept	Type locality information
<i>Cyphia aspergilloides</i> E.Wimm.	FS, KZN	BOL	Karkloof, KZN
<i>Cyphia corylifolia</i> Harv.	KZN	PRE	Ingoma
<i>Cyphia deltoidea</i> E.Wimm.	KZN, M	PRE	Weenen County, Dalton Bridge
<i>Cyphia galpinii</i> E.Wimm.	EC	PRE	Grahamstown, woods
<i>Cyphia maculosa</i> E.Phillips	EC	BOL	Transkei, Kentani
<i>Cyphia phillipsii</i> E.Wimm.	EC	GRA	East London
<i>Cyphia stenophylla</i> (E.Wimm.) E.Wimm.	FS, KZN, M	B?	Natal
<i>Cyphia tysonii</i> E.Phillips	EC, KZN	BOL	Xalanga District, Cala, Bergabhang (= mountain slope)

VICTOR, J., SMITH, G.F. & VAN WYK, A.E. 2015. *Strategy for plant taxonomic research in South Africa 2015–2020*. South African National Biodiversity Institute, Pretoria.

WIMMER, F.E. 1968. Lobelioideae Supplementum et Campanulaceae – Cyphioideae. In: S. Danert (ed.) *Das Pflanzenreich* 108: 53–1024. Akademie Verlag, Berlin.

Acknowledgements

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