

Cephalanthera humilis sp. nov. (Orchidaceae) from Yunnan, China

Xiao-Hua Jin, Zhen-Quan Dai, Qing-Yi Liu, Xue-Yong Ju and Xiao-Guo Xiang

X.-H. Jin (*xiaohuajin@ibcas.ac.cn*) and X.-G. Xiang, State Key Lab of Systematic and Evolutionary Botany, Inst. of Botany, Chinese Academy of Sciences, CN-100093 Beijing, PR China. – Z.-Q. Dai, Q.-Y. Liu and X.-Y. Ju, Nan Shan Botanical Garden, Nan Shan Road 101, Nan-an, Chongqing, PR China.

Cephalanthera humilis X. H. Jin, a new species from Yunnan, China, is described and illustrated. The new species is closely related to *C. calcarata* but differs from it by having an entire lip without spur at base and the stigma on top of the column.

The genus *Cephalanthera* comprises about 15 species, widespread in the temperate and warm-temperate parts of the northern hemisphere. It is a distinct genus, well-characterized by the terrestrial growth, underground rhizome, terminal inflorescence, long and erect column, erect anther and four mealy pollinia without visidium (Chen 1999, Pearce and Cribb 2002, Pridgeon et al. 2005).

Currently there are nine *Cephalanthera* species in China (Chen et al. 2009), two of which are holomycotrophic. During fieldwork in the Gaoligongshan Mountains, northern Yunnan, another holomycotrophic species was discovered in 2010 and is described below.

Cephalanthera humilis X. H. Jin sp. nov. (Fig. 1 and 2)

Habitu Cephalantherae calcaratae similis, a qua labio lanceolato integro ecalcarato, stigmatum columnae apice disposito differt.

Type: China, Yunnan, Fugong County, 25 May 2010, Jin X. H. 10379 (holotype: PE).

Plant 6–8 cm tall, terrestrial, holomycotrophic, with creeping underground rhizome about 2.5 mm in diameter. Root white, fleshy, 3 mm in diameter. Stem erect, white, enclosed by several white tubular sheaths at base; sterile bract tubular, 11 mm long. Inflorescence terminal, few-flowered. Floral bracts lanceolate to elliptic, 1.0–1.5 cm long, 3–5 mm wide. Flowers white, becoming grey with age, subactinomorphic, not open, totally glabrous. Ovary with pedicel 14 mm long, ovary not distinct from the pedicel, smooth. Dorsal sepal lanceolate, acute, 5-veined, 10 mm long, 5 mm wide; lateral sepals oblique, concave, lanceolate, apex acute, 5-veined, 10 mm long, 5 mm wide.

Petals lanceolate, apex acute, 5-veined, 9 mm long, 4 mm wide; lip lanceolate, apex obtuse, 5-veined, 9 mm long, 4 mm wide, the middle three veins slightly thickened. Column 6 mm long, erect, stigma on top of the column. Anther cap erect, two-celled.

Habitat and distribution

Cephalanthera humilis was discovered in Fugong County, Yunnan, in humid environments under evergreen broadleaf Fagaceae forest at 2500 m a.s.l. Its habitat is almost totally shady. During our 3-day stay in this area in 2010, only seven plants with flowers were observed.

Conservation status

Like many other newly discovered taxa, *Cephalanthera humilis* is only known from its type locality that makes its conservation status difficult to assess. However, in six years of fieldwork in the Gaoligongshan Mountains (including in May which is the flowering time of the type specimen) we never came across this plant. We therefore consider the new species to be 'Endangered' (EN), according to IUCN red list criterion Blab(iii)2ab(iii) based on its known extent of occurrence and area of occupancy (IUCN 2001).

Similar species

In total, there are five holomycotrophic species in the genus *Cephalanthera* (Chen et al. 2009, Pedersen et al. 2009). However, this new species can be readily distinguished from all other holomycotrophic species of *Cephalanthera* by the unlobed lip which lacks a spur and by the stigma which is situated on top of the column.

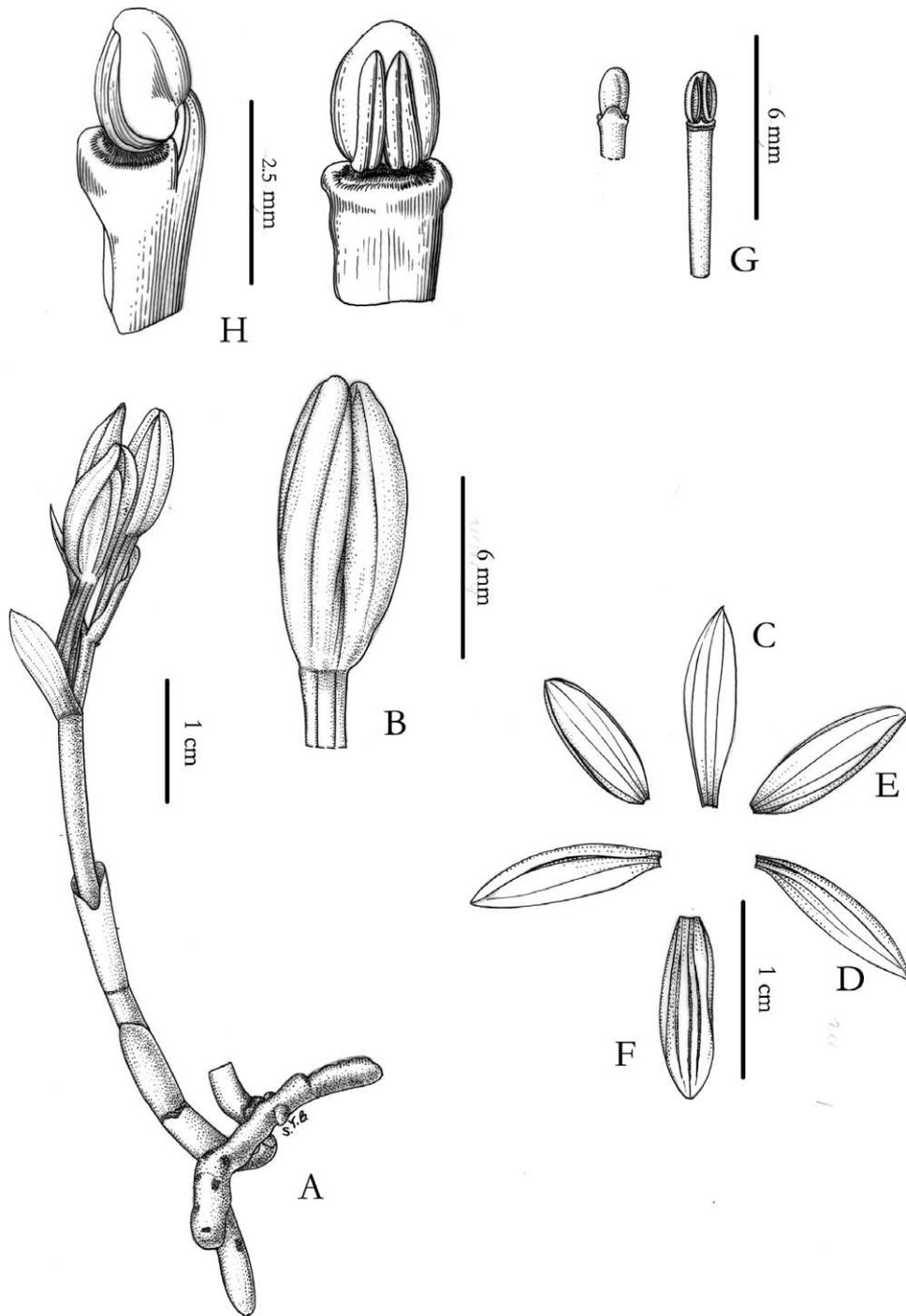


Figure 1. *Cephalanthera humilis* X. H. Jin. sp. nov. (A) habit, (B) flower, (C)–(F) perianth, (G) adaxial and abaxial view of column, (H) adaxial and abaxial view of anther and stigma.

Morphologically, *Cephalanthera humilis* is very similar with the peloric *Tangtsinia nanchuanica* S. C. Chen, both sharing a subactinomorphic perianth and a stigma on the top of the column. Chen (1965) stressed that many characters, including subactinomorphic flowers and the

horizontal stigma, are very significant for classification and he consequently published the new monotypic genus *Tangtsinia*. However, our own recent molecular study indicates that *Tangtsinia* is better included in *Cephalanthera* (unpubl.).



Figure 2. Habit of *Cephalanthera humilis* X. H. Jin sp. nov.

Acknowledgements – We thank Sun Yibao for the line drawings. This research was supported by a grant from the National Natural Science Foundation of China (30600037), the Knowledge Innovation Program of the Chinese Academy of Sciences (13214G1014) and the Shanghai Garden and Forest Bureau.

References

- Chen, S. C. 1965. A primitive new orchid genus *Tangtsinia* and its meaning in phylogeny. – *Acta Phytotax. Sin.* 10: 193–207.
- Chen, S. C. 1999. The genus *Cephalanthera*. – In: Lang, K. Y. (ed.), *Flora Reipubl. Pop. Sin.* Vol. 17. Science Press, pp. 74–81.
- Chen S. C. et al. 2009. *Cephalanthera* Rich. – In Wu, C. Y. et al. (eds), *Flora of China*. Vol. 25. Orchidaceae. Science Press, Miss. Bot. Gard. Press, pp. 174–177.
- IUCN 2001. Red list categories and criteria, ver. 3.1. – IUCN Species Survival Commission.
- Pearce, N. R. and Cribb, P. J. 2002. The orchids of Bhutan. – *R. Bot. Gard. Edinb., R. Govt Bhutan*.
- Pedersen, H. Æ. et al. 2009. *Cephalanthera exigua* rediscovered: new insights in the taxonomy, habitat requirements and breeding system of a rare mycoheterotrophic orchid. – *Nord. J. Bot.* 27: 460–468.
- Pridgeon A. M. et al. 2005. *Genera orchidacearum*. Vol. 4. Epidendroideae (part one). – Oxford Univ. Press.