



## *Anoectochilus longilobus* (Orchidoideae: Orchidaceae), a new species from Yunnan, China

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### Introduction

*Anoectochilus* Blume (1825: 411; Orchidaceae) belongs to subtribe Goodyerinae (Cranichideae; Orchidoideae; Pridgeon *et al.* 2003). The generic name is derived from the Greek words ‘anoiktos’ (open) and ‘cheilos’ (lip), referring to the flower with prominent lip giving an open appearance (Sumathi *et al.* 2003, Bhattacharjee 2013). The genus consists of about 30 species according to *Genera orchidacearum* (Pridgeon *et al.* 2003), distributed in India and the eastern Himalayas, through southern and southeastern Asia to Australia and the southeastern Pacific islands (Chen *et al.* 2009). There are 15 species of *Anoectochilus* in China, eight of which were reported from Yunnan previously (Chen *et al.* 2009, Chen & Shui 2010, Hu *et al.* 2012, Ormerod 2013).

A species of *Anoectochilus* was collected in Yunnan by the authors in 2006 and 2013. On the basis of careful examination and comparison with closely related species (Seidenfaden 1971, 1978, Seidenfaden & Wood 1992, Lang 1999, Averyanov 2008, Chen *et al.* 2009), it has been confirmed as an undescribed species. This new species is similar to *A. zhejiangensis* Wei & Chang (1989: 39), which is endemic to China and distributed in central and northern Fujian, northern Guangxi, southwestern Zhejiang (Chen *et al.* 2009) and northern Guangdong (Tian *et al.* 2013); it is also close to *A. chapaensis* Gagnepain (1931: 679), which is distributed in China and Vietnam (Chen *et al.* 2009).

*Anoectochilus longilobus* H.Jiang & H.Z.Tian, *sp. nov.* (Figs. 1, 2A, B, D–F and H–L)

*Anoectochilus longilobus* is similar to *A. zhejiangensi* and *A. chapaensis*, but differs from the former in having much bigger leaves and flowers and a straight spur with an acute angle between lip and from the latter in having a cylindrical spur; it is distinguished from both by having longer, obliquely ligulate obtusely, truncate epichile lobes.

**Type:**—CHINA. Yunnan: Malipo, Mt. Laojun 1550 m, in forests, 28 July 2006, Jiang 04240 (holotype KUN!).

Terrestrial herbs up to 28 cm tall including inflorescences. Rhizome cauliform, creeping, rooting at nodes. Stem 5 mm in diam. Leaves 2–5, ovate, acute, nearly round at base, 2.5–6.0 × 1.5–4.5 cm, margin crenate, 3–5-veined, velvety blackish green to nearly dark purple, with sparse or minimal pale green reticulation above, pale pink beneath; petiole ca. 5 mm long, sheathed, amplexicaul, 0.8–1.0 cm long, sheaths 5–7 mm long. Inflorescence 4–10 flowered; peduncle 10–15 cm long, with articulate glandular hairs; sterile bracts 2–3, pale red, ovate-lanceolate, acuminate, triveined, 8.0–15.0 × 0.8 mm, sparsely hairy; rachis 4–6 cm long; floral bracts similar to sterile bracts, 10 × 6 mm, rose, apex pointed, hairy. Ovary with pedicel fusiform, green brown, ca. 17 × 3 mm, densely hairy, white. Flowers non-resupinate. Sepals pale pink to green brown with rose apices and sparse hair outside. Dorsal sepal ovate, acuminate, ca. 7.0 × 4.5 mm, concave, appressed to petals, forming a hood. Lateral sepals obliquely oblong elliptic, subacute, spreading to reflexed, ca. 8 × 4 mm, 1-veined. Petals glabrous, dimidiately falcate-elliptic, oblique, sharply narrowed towards apex, white, pale olive-green at base and with a rose vein along the inner side, ca. 7.0 × 2.5 mm. Labellum forward-projecting, Y-shaped, white, spurred, ca. 1.8–2.0 cm long, white,

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## References

- Averyanov, L. (1996) New species of orchids (Orchidaceae) from Vietnam. *Botanicheskii Zhurnal* 81: 73–83.
- Averyanov, L. (2008) The orchids of Vietnam illustrated survey, part 1. *Turczaninowia* 11: 5–168.
- Bhattacharjee, A. (2013) A note on the identity of *Anoectochilus roxburgii* (Orchidaceae). *The McAllen International Orchid Society Journal* 14: 8–13.
- Blume, C.L. (1825) *Ludwig von Bijdragen tot de flora van Nederlandsch Indië* 8: 411.  
<http://dx.doi.org/10.5962/bhl.title.395>
- Blume, C.L. (1858) *Collection des orchidées les plus remarquables de l'archipel Indien et du Japon*. Sulphe, Amsterdam, icons 1–360.
- Chen, S.-C., Gale S.W., Cribb, P.J. & Ormerod, P. (2009) *Anoectochilus* Blume. In: Wu, Z.-Y., Raven, P.H. & Hong, D.-Y. (eds.), *Flora of China* 25 (Orchidaceae). Science Press, Beijing, & Missouri Botanical Garden Press, St. Louis, pp. 76–80.
- Chen, W.-H. & Shui, Y.-M. (2010) *Anoectochilus malipoensis* (Orchidaceae), a new species from Yunnan, China. *Annales Botanici Fennici* 47: 129–134.  
<http://dx.doi.org/10.5735/085.047.0207>
- Gagnepain, F. (1931) Dix Orchidacées nouvelles d'Asie. *Bulletin du Muséum National d'Histoire Naturelle* (Paris), 2. s. 3: 679–681.
- Hayata, B. (1914) Contribution to the flora of Formosa. *Icones Plantarum Formosandarum* 4: 1–264.  
<http://dx.doi.org/10.5962/bhl.title.11087>
- Hu, C., Tian, H.-Z. & Dong, Q.-Y. (2012) *Anoectochilus hylei* Rolfe ex Downie (Orchidaceae), a new record from Yunnan, China. *Journal of Tropical and Subtropical Botany* 20: 602–604.
- IUCN (2001) IUCN Red List Categories and Criteria, Version 3.1. Prepared by the IUCN Species Survival Commission. IUCN, Gland & Cambridge.
- Lang, K.-Y. (1999) *Anoectochilus* Blume. In: Lang, K.-Y., Chen, S.-C., Luo, Y.-B. & Zhu, G.-H. (eds.), *Flora Republicae Popularis Sinicae Tomus 17*. Science Press, Beijing, pp. 204–227.
- Lindley, J. (1839) Orchideae. In: Royle, J.F. (ed.), *Illustrations of the botany and other branches of the natural history of the Himalayan Mountains, and of the flora of Cashmere* 1. Allen, London, pp. 361–371.
- Ormerod, P. (2013) Orchidaceous additions to the Flora of China. *Taiwania* 58: 20–34.
- Ormerod, P. & Cribb, P.J. (2003) *Anoectochilus*. In: Pridgeon, A.M., Cribb, P.J., Chase, M.W. & Rasmussen, F.N. (eds.), *Genera orchidacearum, volume 3: Orchidoideae (Part 2) Vanilloideae*. Oxford University Press, Oxford, pp. 69–72.
- Seidenfaden, G. (1971) Contributions to the orchid flora of Thailand. *Botanisk Tidsskrift* 66: 304–324.
- Seidenfaden, G. (1978) Orchid genera in Thailand: Neottioideae Lindl. *Dansk Botanisk Arkiv* 32: 40–58.
- Seidenfaden, G. & Wood, J.J. (1992) *Anoectochilus*. In: *The orchids of peninsular Malaysia and Singapore*. Olsen & Olsen, Fredensborg, pp. 71–76.
- Sumathi, R., Jayanthi, K., Karthigeyan, K. & Sreekumar, P.V. (2003) *Anoectochilus narasimhanii* (Orchidaceae), a new 'Jewel orchid' from the Andaman Islands, India. *Blumea* 48: 285–287.
- Tian, H.-Z., Chen, L. & Xing, F.-W. (2013) Species diversity and conservation of orchids in Nanling National Nature Reserve, Guangdong. *Biodiversity Science* 21: 224–231.  
<http://dx.doi.org/10.3724/sp.j.1003.2013.08005>
- Wei, Z., Chang, Y.-B. & Zhang, F.-G. (1989) New taxa of flowering plants from Zhejiang Prov.. *Bulletin of Botanical Research* 9: 39–41.