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Liparis wenshanensis, a new orchid species from China: Evidence from morphological and molecular analyses

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Abstract

A new orchid species, *Liparis wenshanensis*, discovered in Yunnan, China is described and illustrated in this study based on morphological and molecular analyses. A detailed comparison between the newly discovered orchid and other members of the genus, *Liparis,* was conducted. The new plant is characterized by the combination of the following features: a long rachis with 45 to 55 flowers; white sepals, petals and column; a greenish lip with a purplish center; strongly recurved and revolute dorsal sepals and petals; strongly recurved, oblong lateral sepals; a cordate lip that is strongly deflexed below the middle, with a two-lobed apex and a two-lobed callus at the base; an arcuate column with a lamella extending along the center almost to the stigma, and with a pair of broad wings toward the apex. These features distinguish the new orchid from all other known species of *Liparis.* We proceeded to a phylogenetic analysis to ascertain the systematic position of this enigmatic species. Molecular analyses based on nuclear ribosomal ITS and plastid *mat*K DNA sequence data supports the recognition of *L. wenshanensis* as a distinct species.

Keywords: *Liparis wenshanensis*, orchid, Malaxideae

Introduction

The genus *Liparis* Richard (1817: 39)(Orchidaceae, Malaxideae) consists of approximately 320 species. Plants in the *Liparis* genus are widely distributed throughout tropical Asia, New Guinea and the southwestern Pacific islands and also extend into subtropical and tropical Americas. Sixty-five species are found in China, of which 22 are endemic (Chen *et al*. 2009), including two new species that have been recently described and named *Liparis pingxiangensis* L. Li & H. F. Yan (2013:e78112) and *Liparis funingensis* Y. Y. Su, Y. Meng & Z. J. Liu (2014: 85). *Liparis* plants are terrestrial, lithophytic, or epiphytic; rhizomatous; and, rarely, mycotrophic, and their leaves are reduced to scales (Chen *et al*. 2009). These plants' flowers usually have narrow linear petals; a larger and unlobed lip that is incurved and divided to the hypochile and the epichile; an incurved-arcuate, winged column; and four pollinia in two pairs, with each pair having a small viscidium (Su *et al*. 2014). As a new species, *Liparis funingensis* was described based on it having four pollinia with long caudicles but without viscidium and a rostellum with a mucilaginous sac and a three-lobed lip with a notably short and deep two-lobed mid-lobe (Su *et al*. 2014). During a recent field trip, six terrestrial populations of *Liparis* species were observed in Yunnan, China. The plant is similar in appearance to *Bletilla sinensis* Schlechter (1911: 256) and grows in population with *B. sinensis*, but the floral structure is similar to *Liparis* with a lip incurved to the hypochile and the epichile and four pollinia in two pairs. The newly identified species behaves similar to *Liparis odorata* Lindley (1830: 26) and *Liparis habenarina* Benth. (1873: 335) but differs greatly by having an inflorescence with 45 to 55 flowers, and flowers with white sepals, petals and column, and a greenish lip; a dorsal sepal and cylindrical petals, lateral sepals that are oblong and strongly curved; lip cordate, apical two-lobed; a column with a lamellae extending from its base to near the stigma along the centre way, a base of lamellae fused to the base of

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