



A new species and a new combination of *Phalaenopsis* (Orchidaceae: Epidendroideae: Aeridinae): evidence from morphological and DNA analysis

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Abstract

A new species of *Phalaenopsis*, *P. pingxiangensis*, from Guangxi, China, is described and illustrated. Detailed morphological comparison between the newly discovered orchid and other members of *Phalaenopsis* s.l. indicate that *P. pingxiangensis* is similar to *P. marriottiana*. The new species differs from the latter in its small stature, short inflorescence with two flowers, smaller and pink flower with pale yellow sepals abaxially, orbicular petals, purple-red, flabellate lip and terete column without wings. The molecular analyses of *Phalaenopsis* indicate that *P. pingxiangensis* is a distinct species nested in *P.* subgenus *Hygrochilus*. In addition, *Hygrochilus tsii* is transferred to *Phalaenopsis*.

Key words: *Hygrochilus*, new species, orchid phylogenetics, Vandeeae

Introduction

Phalaenopsis Blume (1825: 294) is one of the most important orchid genera, and it includes ornamental species and many hybrids, used both as cut flowers and pot plants (Belarmino & Mii 2000). The species of *Phalaenopsis* are distributed from India and Southeast Asia in the west to Australia and New Guinea in the east, with the greatest diversity in Indonesia and the Philippines (Pridgeon *et al.* 2014). Classification of *Phalaenopsis* was bewildering as the number of species included was variable, as a consequence of species being transferred between *Phalaenopsis* and its relatives, especially *Doritis* Lindley (1833: 178), *Kingidium* Hunt (1970: 97; Goh *et al.* 2005). Christenson (2001) suggested treating *Doritis* and *Kingidium* as part of *Phalaenopsis*, and subsequent molecular analyses supported his opinion (Padolina *et al.* 2005, Tsai *et al.* 2005). Along with extending the coverage of sampled species, additional molecular studies (Kocyan & Schuiteman 2014, Pridgeon *et al.* 2014) supported a broader definition of *Phalaenopsis*, including well-known morphological alliances, such as *Doritis*, *Kingidium* and *Nothodoritis* Tsi (1989: 58), as well as some more distant relatives: *Hygrochilus* Pfitzer (1897: 112), *Ornithochilus* (Wallich ex Lindley) Benth & Hooker (1883: 581) and *Sedirea* Garay & Sweet (1974: 149).

The broad circumscription of *Phalaenopsis* comprises four subgenera (Pridgeon *et al.* 2014): *Parishianae* (Sweet) Christenson (2001: 46), *Phalaenopsis*, *Hygrochilus* (Pfitzer) Kocyan & Schuiteman (2014: 67) and *Ornithochilus* (Lindl.) Kocyan & Schuiteman (2014: 66). Seven genera distributed in China (Li *et al.* 2011, Tsi *et al.* 1999, Wu *et al.* 2009), namely *Kingidium*, *Nothodoritis*, *Doritis*, *Lesliea*, *Ornithochilus*, *Hygrochilus* and *Sedirea*, have been transferred to *Phalaenopsis* (Table 1) and placed among the last three subgenera (Cribb & Schuiteman 2012, Kocyan & Schuiteman, 2014). However, a newly published Chinese species, *Hygrochilus tsii* M.H.Li, Z.J.Liu & S.R.Lan (2014: 264), has not been transferred to *Phalaenopsis* so far, and a new combination for this orchid should be proposed.

During fieldwork in Pingxiang, southwestern Guangxi, China, we discovered a new orchid species, which is similar to *P. marriottiana*, but it is a smaller plant with a shorter and two-flowered inflorescence and smaller pink flower. Molecular phylogenetic analyses, as well as detailed morphological comparison and a literature survey, confirmed that it is a new species of *Phalaenopsis* in subgenus *Hygrochilus* (Fig. 1).