



## The generic identity of *Zeuxine pulchra* King & Pantl. (Orchidaceae: Goodyerinae)

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Subtribe Goodyerinae Ridley (1907: 12) is a group of about 730 species (in *ca.* 35 genera), of mostly terrestrial orchids with a Pan-tropical to circumboreal distribution. Most species (*ca.* 500 in 30 genera) are found in the Old World, usually in montane forests. Generally they are known as jewel orchids because some taxa [especially in the genera *Anoectochilus* Blume (1825: 411), *Ludisia* Richard (1825: 437), and *Macodes* (Blume 1825: 407) Lindley (1840: 496)] have gold to silver coloured veining on the leaves.

*Zeuxine pulchra* (King & Pantling 1896: 127) was described from Sikkim, India by King and Pantling (1896: 127), then illustrated by them in the majestic ‘The orchids of the Sikkim-Himalaya’ (King & Pantling 1898). It is a beautiful but small terrestrial orchid with reddish to blackish, white-striped, roundish leaves, and a slender spike of two to four flowers. It was not seen in India again for over 75 years until Pradhan (1987) received a few specimens in his collection from Khasi Hills, Meghalaya in 1974, and then Rao (2008) recorded it from Arunachal Pradesh.

During this time the placement of *Z. pulchra* in *Zeuxine* Lindley (1826: 9) has not been questioned, in part this is due to the trust placed in the accuracy of King and Pantling’s drawing, and the scarcity of examinable material. Recently the first author received an unidentified specimen of *Zeuxine* for study, this proved upon critical examination to be *Z. pulchra*. Study of this collection showed it to have the generic characters of the genus *Rhomboda* Lindley (1857: 181) but with three features (densely pubescent inflorescence, narrow petals, subapical column wings) hitherto unknown in it.

The genus *Rhomboda* was proposed by Lindley (1857: 181) but it was misunderstood by later workers, who placed various species referable to it in *Anoectochilus*, *Hetaeria* Blume (1825: 409), and *Zeuxine*. Ormerod (1995) reinstated *Rhomboda*, accepting 23 species distributed from Nepal to the Solomon Islands, and defining it by a suite of characters (labellum with a large, saccate hypochile, inside with one gland each side, medially with a bicarinate, semidiscoid keel, hypochile outside with a narrow flange each side, the column with two large medial wings, and a short rostellum). Later studies (Rao 1998; Ormerod 1998, 2002, 2004) added another seven species to the genus, but a number of taxa were also found to be synonyms. Thus about 22 species are now accepted in *Rhomboda*, with four of these [namely *R. arunachalensis* Rao (1998: 426), *R. lanceolata* (Lindley 1857: 186) Ormerod (1995: 329), *R. longifolia* Lindley (1857: 181), and *R. pulchra*] found in India.

### *Rhomboda pulchra* (King & Pantl.) Ormerod & Av. Bhattacharjee, *comb. nov.* (Fig. 1)

Basionym: *Zeuxine pulchra* King & Pantling (1896: 127).

Type:—INDIA, Sikkim: Keydoom (Lachoong Valley), 7500', August 1895, *R. Pantling 412* (lectotype: CAL!, designated by Bhattacharjee *et al.* 2011); Keydoong, Lachoong Valley, 7000 ft, August 1895, *R. Pantling 412* (syntype: K, photo!)

Terrestrial herbs, 10–20 cm long. Rhizome 2–5 cm long, 2.5–4 mm thick, rooting at nodes. Roots fleshy, with minute root-hairs. Stem 1–3 cm long, 2–4 mm thick, pale purplish-green, terete, decumbent at base, erect above, unbranched, glabrous. Leaves 3–8, 1.2–3 cm long, crowded near apex of stem, glabrous, petiolate; petiole 3–6 mm long, sheathing at base, clasping; lamina 0.9–2.5 × 0.8–2 cm, ovate, adaxially blackish to purplish-brownish, abaxially light purple, subacute to short-acuminate at apex, coriaceous, margin sometimes undulate, mid-vein white. Inflorescence terminal

raceme, laxly 2–4 flowered, densely pubescent; peduncle 7–9 cm long, pale green, with 1–2 distant sheathing bracts; sheathing bracts 0.8–1.2 mm long, acute at apex; rachis 0.5–2.5 cm long. Floral bracts 6–8 × 2–4 mm, lanceolate, as long as or slightly shorter than pedicel plus ovary, membranous, subacute at apex, sparsely pubescent. Flowers *c.* 8 mm long, resupinate. Sepals free, pale brown, spreading, pubescent; dorsal sepal 5–6 × 3–4 mm, ovate-lanceolate, concave, subacute to obtuse at apex, not agglutinate with petals; lateral sepal 5.5–6.5 × 3–4 mm, ovate-lanceolate, concave, sub-acute to obtuse at apex. Petals 5–6 × 2–3 mm (at widest portion), ligulate-oblongate, pale brown, acute at apex, spreading. Labellum *c.* 7 mm long, ‘Y’ shaped, longer than sepals; hypochile saccate, cymbiform, white with yellowish tinge, with 2 teeth-like appendages inside (1 on either side) at basal margin and a bicarinate, semidiscoid keel/callus at middle of the sac, outside with a narrow flange at either side; mesochile indistinct; epichile deeply 2-lobed, lobules large, cuneate-subquadrate, wedge-shaped, divergent, white, erose at margins. Column with 2 large medial wings, wings confined to the upper ventral quarter; rostellum short, bifid. Stigma lobes 2, more or less confluent, anterior. Anther 2-loculed, yellow. Pollinarium with 2 pollinia; pollinia sectile, bifid. Ovary including pedicel *c.* 7 × 2 mm, green, sparsely pubescent. Capsules with coronate flowers, *c.* 1.4 × 0.3 cm, sparsely pubescent, ridged.

**Distribution:**—India (Arunachal Pradesh, Meghalaya, Sikkim).

**Specimens examined:**—INDIA. Meghalaya: East Khasi Hill district, Mawphlang, 1830 m, 5 November 1952, *W.N. Koelz 31529* (MICH); Sikkim: North district, Lachung valley, 2,286 m, August 1895, *R. Pantling 412* (CAL, K).

**Habitat:**—The species is found growing in deep forest (*Koelz 31529*) and in cool shady places close by streams and rivers, usually under thick undergrowth of shrubs and trees in between 1,800–2,500 m of elevation.

King and Pantling (1898) describe and figure the column of *Rhomboda pulchra* (as *Z. pulchra*) as having eight teeth on the ventral upper half of the column. Such a character is unknown in any other species of Goodyerinae and it wasn't found in Walter Koelz's collection from Mawphlang (Meghalaya, India). It is possible that the column was aberrant in the original specimen, or that it was damaged in the dissection process. The single fragile flower of CAL-specimen (lectotype) is not dissected to preserve the only available flowering specimen of the species.

*Rhomboda pulchra* differs from all other taxa in the genus in having a densely pubescent (vs. glabrous to sparsely pubescent) inflorescence, ligulate-oblongate (vs. subelliptic to subfalcate) petals, and column wings confined to the upper ventral quarter (vs. most of the ventral length) of the column.

*Rhomboda pulchra* has a labellum with large epichile lobes, this is a character it shares with a group of six taxa restricted to the Southeast Asian mainland. This group, which includes the type species *R. longifolia*, differs from *R. pulchra* in having oblong-lanceolate leaves, and more floriferous inflorescences.

## Acknowledgements

The first author wishes to thank herbarium and library staff at the Harvard University Herbaria (A, AMES, GH) who kindly arranged the loan from MICH. The second author is thankful to the Director, Botanical Survey of India for research facilities and encouragement.

## References

- Blume, C.L. (1825) *Bijdragen Tot De Flora Van Nederlandsch Indie, Stukken 8*. Lands Drukker Ij, Batavia, pp. 355–434.
- Bhattacharjee, A., Chowdhery, H.J. & Bhakat, R.K. (2011) Lectotypification in *Zeuxine* Lindl. (Orchidaceae). *Taiwania* 56: 153–156.
- King, G. & Pantling, R. (1896) Some new orchids from Sikkim. *Journal of the Asiatic Society of Bengal* 65: 17–33.
- King, G. & Pantling, R. (1898) The orchids of the Sikkim-Himalaya. *Annals of the Royal Botanic Garden, Calcutta* 8: 1–342, pl. 1–448.
- Lindley, J. (1826) *Orchidearum Sceletos*. Ricardi Taylor, Londini, pp. 1–9.
- Lindley, J. (1840) *Genera and species of Orchidaceous plants*. Ridgways, Piccadilly, London, 496 pp.  
<http://dx.doi.org/10.5962/bhl.title.499>
- Lindley, J. (1857) Contributions to the orchidology of India – I. *Journal of the Proceedings of the Linnean Society of London, Botany* 1: 170–190.  
<http://dx.doi.org/10.1111/j.1095-8339.1857.tb02444.x>
- Pradhan, U.C. (1987) *Zeuxine pulchra*. In: Nayar, M.P. & Sastry, A.R.K. (Eds.) *Red data book of Indian plants* 1. Botanical Survey of India, Calcutta, 285 pp.

- Rao, A.N. (1998) *Rhomboda arunachalensis* Nageswara Rao – a new species from India. *Journal of Economic and Taxonomic Botany* 22: 426–428.
- Rao, A.N. (2008) Four new records of orchids to Arunachal Pradesh. *Bulletin of Arunachal Forest Research* 24: 25–28.
- Richard, A. (1825) *Ludisia*. In: Bory-de-Saint-Vincent, J.B.G. *Dictionnaire classique d'histoire naturelle* 7. Rey et Gravier, Libraries-Editeurs, Auades Augustins, no. 55 et Baudouin Frerer, Libraries-Editeurs, Imprimeurs de la Societe D'Histoire Naturelle, Paris, p. 437.
- Ridley, H.N. (1907) *Materials for a flora of the Malayan Peninsula, Part 1*. Methodist Publishing House, Singapore, pp. 1–12  
<http://dx.doi.org/10.5962/bhl.title.19701>
- Ormerod, P. (1995) A reinstatement of *Rhomboda* Lindl. (Orchidaceae Subtribe Goodyerinae). *Orchadian* 11: 323–339.
- Ormerod, P. (1998) Miscellaneous Goodyerinae studies. *Australian Orchid Review* 63: 10–11.
- Ormerod, P. (2002) Taxonomic changes in Goodyerinae (Orchidaceae: Orchidoideae). *Lindleyana* 17: 189–238.
- Ormerod, P. (2004) Notulae Goodyerinae. *Oasis (Dora Creek)* 3: 3–19.