

## *Primulina debaoensis* sp. nov. (Gesneriaceae) from a limestone cave in Guangxi, China

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A new species of Gesneriaceae, *Primulina debaoensis* Neng Jiang & Hong Li, from Guangxi Zhuangzu Autonomous Region, China, is illustrated and described here. It resembles another endemic and stenochoric species in Guangxi, *P. pungentisepala* (W. T. Wang) Mich. Möller & A. Weber, but differs by having 12–18 or more leaves, leaf blade being broadly linear, oblanceolate-elliptical or oblanceolate, bracts being ovate or elliptical with silvery or argenteous nerves and by having a yellow ovary that is 4–5 mm long and sparsely white pubescent.

During recent studies of shade plants, an unknown species of *Primulina* Hance, Gesneriaceae, was discovered and collected from Debao County in southwestern Guangxi in 2008. After a thorough consultation of relevant literature (Wang et al. 1990, 1998, 2011, Li and Wang 2004, Wei et al. 2010, Tang and Wen 2011, Huang et al. 2012, Li et al. 2012, Wen et al. 2012), we consider this to constitute a new species. Comparative characters of the new species and related species are described and illustrated below.

### *Primulina debaoensis* Neng Jiang & Hong Li sp. nov. (Fig. 1, 2)

The new species differs from *P. pungentisepala* (W. T. Wang) Mich. Möller & A. Weber in having more numerous leaves (12–15 or more), oblanceolate-elliptical or oblanceolate leaf blades, ovate or elliptical and greyish–green bracts with silvery or argenteous nerves, and a yellow ovary that is 4–5 mm long and sparsely white pubescent.

**Type:** China. Guangxi Zhuangzu Autonomous Region: Debao County, Jixingyan, growing on the moist ceiling of a limestone cave in the Karst region, ca 800 m a.s.l., 28 Jun 2008 (fl.), Jiang Neng 080628 (holotype: IBK, isotype: IBK).

### Etymology

The specific epithet ‘*debaensis*’ refers to Debao County.

### Description

Perennial acaulescent herb. Rhizome cylindrical, 1.5–1.8 cm long, 0.7–0.8 cm in diameter. Leaves 12–15 or more, basal or clustered at the apex of the rhizome; leaf blade greyish–green, glaucous when young, feathered silver grey,

slightly succulent or coriaceous, thickly chartaceous when dried, oblanceolate-elliptical or oblanceolate, 7–13 × 1.8–3.5 cm, narrowly cuneate at base, attenuate to petiole, acute at apex, with margin irregularly crenate to repand-crenate, rarely entire, sparsely ciliate, sparsely appressed strigose or rarely glabrate on both sides; midrib observably recessed, 3–5-nerved on each side, midrib and lateral nerves conspicuously raised on abaxial surface; petiole 1.8–3.0 mm long. Cymes axillary, 3–7 or more, 1–2-branched, rarely unbranched, 5–9-flowered; peduncle sturdy, 6–10 cm long, 1.6–2.1 mm in diameter, sparsely purple-hirsute; bracts 2, opposite, greyish–green, with midrib and lateral nerves on adaxial surface conspicuously silver grey, ovate or elliptical, 1.4–1.8 × 0.6–0.8 cm, purple-strigose outside, glabrous inside, with entire, ciliate margin; bracteoles 2, opposite, green, broadly lanceolate, 6–10 × 3.0–3.5 mm, with entire margin and acute apex, with indumentum as bracts. Pedicel 1.0–1.8 cm long, sparsely appressed purple-hirsute. Calyx 5-parted to the base, lobes almost equal, linear-lanceolate, ca 6.5–7.5 × 1.8–2.0 mm, sparsely appressed purple-hirsute outside, glabrous inside. Corolla infundibuliform-tubular, 2.5–3.0 cm long, orifice ca 1.5 cm in diameter, pink with lavender shading or lilac, without raised appendage and brighter stripes at the throat, the upper part of the interior of the corolla tube with two brownish–purple lines; tube slender, densely erect-pubescent outside; limb distinctly 2-lipped, adaxial lip 2-parted from the base, with lobes 7.0 × 6.5–7.0 mm, obliquely ovate; abaxial lip 3-parted from the middle, with lobes oblong or rounded, 7–9 × 5.0–5.5 cm. Stamens 2, adnate to ca 1.2 cm above the corolla base; anthers elliptical, ca 3.0–3.5 mm long, constricted at the middle, glabrous; filaments ca 1.2 cm long, geniculate near base, glabrous; staminodes 2,

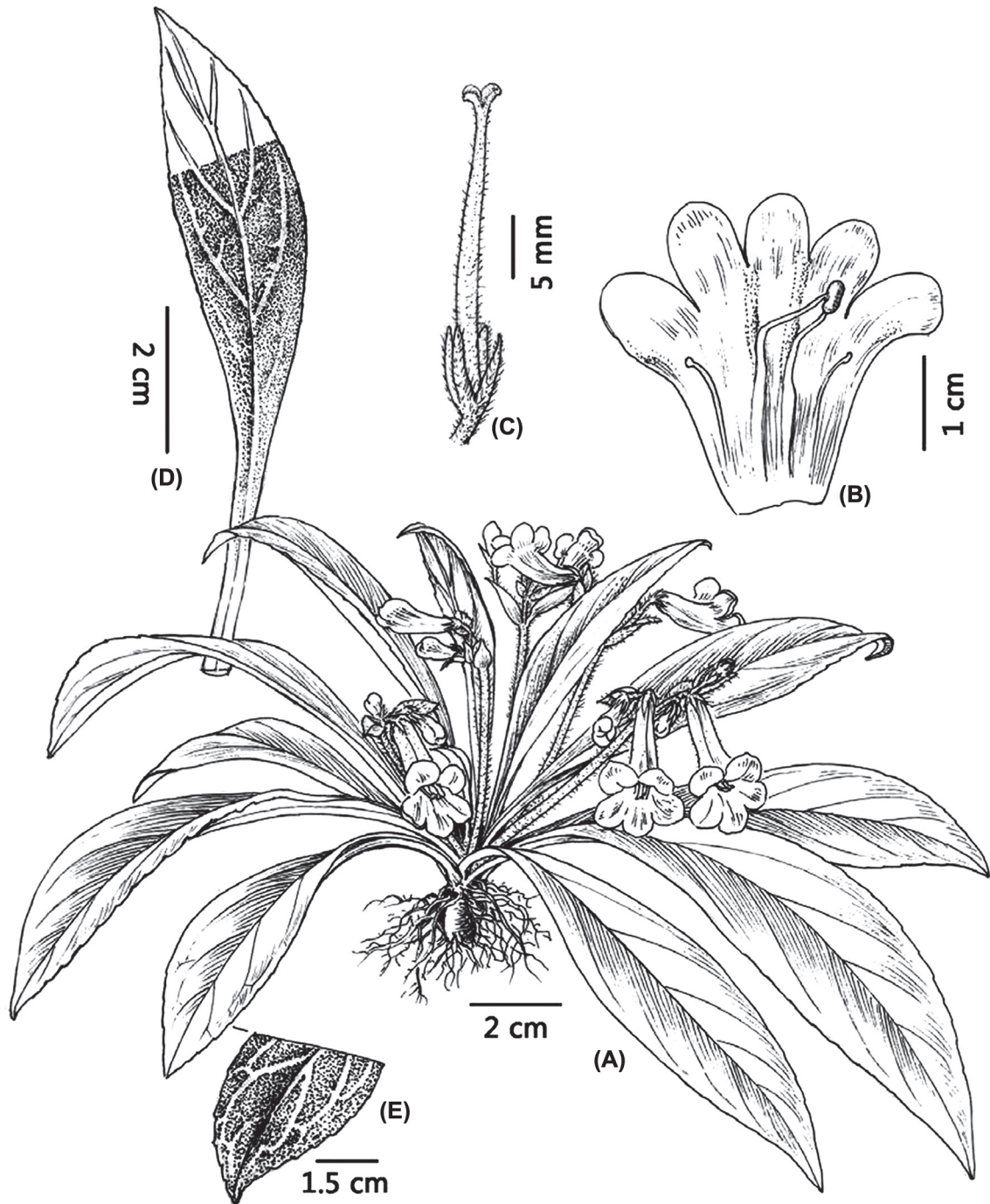


Figure 1. *Primulina debaoensis* sp. nov. (A) habit, (B) corolla opened with stamens and staminodes, (C) calyx and pistil, (D) leaf for showing silver-grey variegation, (E) leaf blade for showing margin, texture and alignment of nerves. Drawn from holotype by W. H. Lin.

linear, 0.6–0.7 cm long, glabrous, with small capitate apex; disc annular, ca 1.5 mm high. Pistil 2.5–3.0 cm long, sparsely white-pubescent; ovary linear, yellow; style ca 5 mm long; boundary of ovary and style ambiguous. Abaxial lobe of stigma obtrapeziform, 2-parted from the base, revolute at apex, 4–5 mm long. Capsule linear, 5–6 × 0.3–0.4 cm, straight.

#### **Phenology**

Flowering occurs in late June and early July, and the fruiting period occurs in late August and early September.

#### **Distribution, ecology and conservation status**

*Primulina debaoensis* grows only on a moist and shaded ceiling of a large limestone cave in Debao County, Guangxi. However, the only suitable habitat of this new species was drastically destroyed in 2010. Because the local government wants to develop the tourist industry, all ‘weeds’ in this beauty spot were totally cleared, and the damp cliffs where many cave-dwelling plants grow were plastered by cement mortar. Thus, some endemic cave-dwelling species disappeared and became extinct. Fortunately, when we found this unknown species in 2009, we collected about 10 individuals





Figure 2. (A)–(G) *Primulina debaoensis* sp. nov. (A) habit, (B) cymes, (C) face view of corolla, (D) top view of corolla, (E) bracts, bracteoles and pedicles, (F) pistil, (G) abaxial and adaxial surfaces of leaf. (H)–(J) *P. pungentisepala* (W. T. Wang) Mich. Möller & A. Weber. (H) habit, (I) cymes and flowers, (J) abaxial and adaxial surfaces of leaf.

Table 1. Morphological comparison between *Primulina debaoensis* sp. nov. and its related species *P. pungentisepala*.

Characters	<i>P. debaoensis</i>	<i>P. pungentisepala</i>
Leaf number	12–15 or more	8–12
Leaf blade shape and size	oblanceolate-elliptical or oblanceolate; 7–13 × 1.8–3.5 cm	narrowly elliptic to elliptical; 3.5–8.5 × 1.0–2.5 cm
Peduncle	sparsely purple-hirsute	puberulent and glandular puberulent
Bracts	ovate or elliptical, greyish-green with silvery or argenteous nerves, 1.4–1.8 × 0.6–0.8 cm, outside purple-strigose	triangular-linear, green, 5.0–13.0 × ca 1.5 mm, outside pubescent
Ovary	yellow, sparsely white pubescent	white, densely glandular puberulent
Abaxial lobe of stigma	2-parted to the base, apex revolute, 4–5 mm long	2-lobed to the 1/3 from base, ca 1.5 mm long

that were brought to Guilin Botanical Garden. Now they have been blooming into colonies. On the basis of IUCN red list criteria (IUCN 2001), we momentarily propose that *P. debaoensis* should be considered as ‘Extinct in the Wild’ (EW) before we find its new population in the field.

#### Similar species

*Primulina debaoensis* is morphologically close to *P. pungentisepala* (W. T. Wang) Mich. Möller & A. Weber (Weber et al. 2011), but it can be easily distinguished by several other characters (Table 1).

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