

Primulina linglingensis var. *fragrans* (Gesneriaceae), a new variety from Guangxi, China

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Abstract

Primulina linglingensis var. *fragrans* (Gesneriaceae) endemic to Guangxi, China, is described and illustrated here as a new variety. The newly described variety is similar to *P. linglingensis* var. *linglingensis* but differs by having leaf blade nearly symmetric to symmetric, inflorescence with cymes 2–8-flowered, peduncle densely hairy with glandular and eglandular indumentum, bracts narrowly ovate, corolla usually bicolor, staminodes 2, ovary and style densely hairy and glandular-hairy. Notes on habitat, distribution and conservation status are provided.

Introduction

The genus *Primulina* Hance, has 170+ species (Möller and Clark 2013). Most species occur in southwestern and southern China, especially in Guangxi, Guizhou, northern Guangdong and southern Hunan (Wei *et al.* 2010) but a few dozen species of them also discovered in northern Vietnam (Ho 2000, Wang *et al.* 2011, Weber *et al.* 2011). In the course of floristic surveys for the flora of limestone caves in South China, we collected a rare plant of *Primulina* which has sweetly aromatic flowers. Previously, no species in this genus were reported to have attractive scent. After comparing with all previously published species of *Primulina* (Wang 1990, Wang *et al.* 1998, Li and Wang 2004, Wei *et al.* 2010, Lai and Wen 2015, Wen *et al.* 2015), we concluded that it was sufficiently different from all the known species and varieties of *Primulina*, although mostly similar to *P. linglingensis* var. *linglingensis*, to be recognized as a distinct variety of the latter taxon. This new variety is described here.

Taxonomic treatment

Primulina linglingensis (W.T.Wang) Mich.Möller & A.Weber var. *fragrans* F.Wen, Y.Z.Ge & B.Pan *var. nov.*
Figs 1, 2

Diagnosis: Similar to *Primulina linglingensis* (W.T.Wang) Mich.Möller & A.Weber var. *linglingensis*, but differing by having leaf blade nearly symmetric to symmetric (*P. linglingensis* var. *linglingensis* oblique); inflorescence with cymes, 2–8-flowered (var. *linglingensis* 1–4-flowered), peduncle densely hairy with glandular and eglandular indumentum (var. *linglingensis* eglandular hairs only); bracts narrowly ovate, corolla usually bicolor, staminodes 2, ovary and style densely hairy and glandular-hairy.

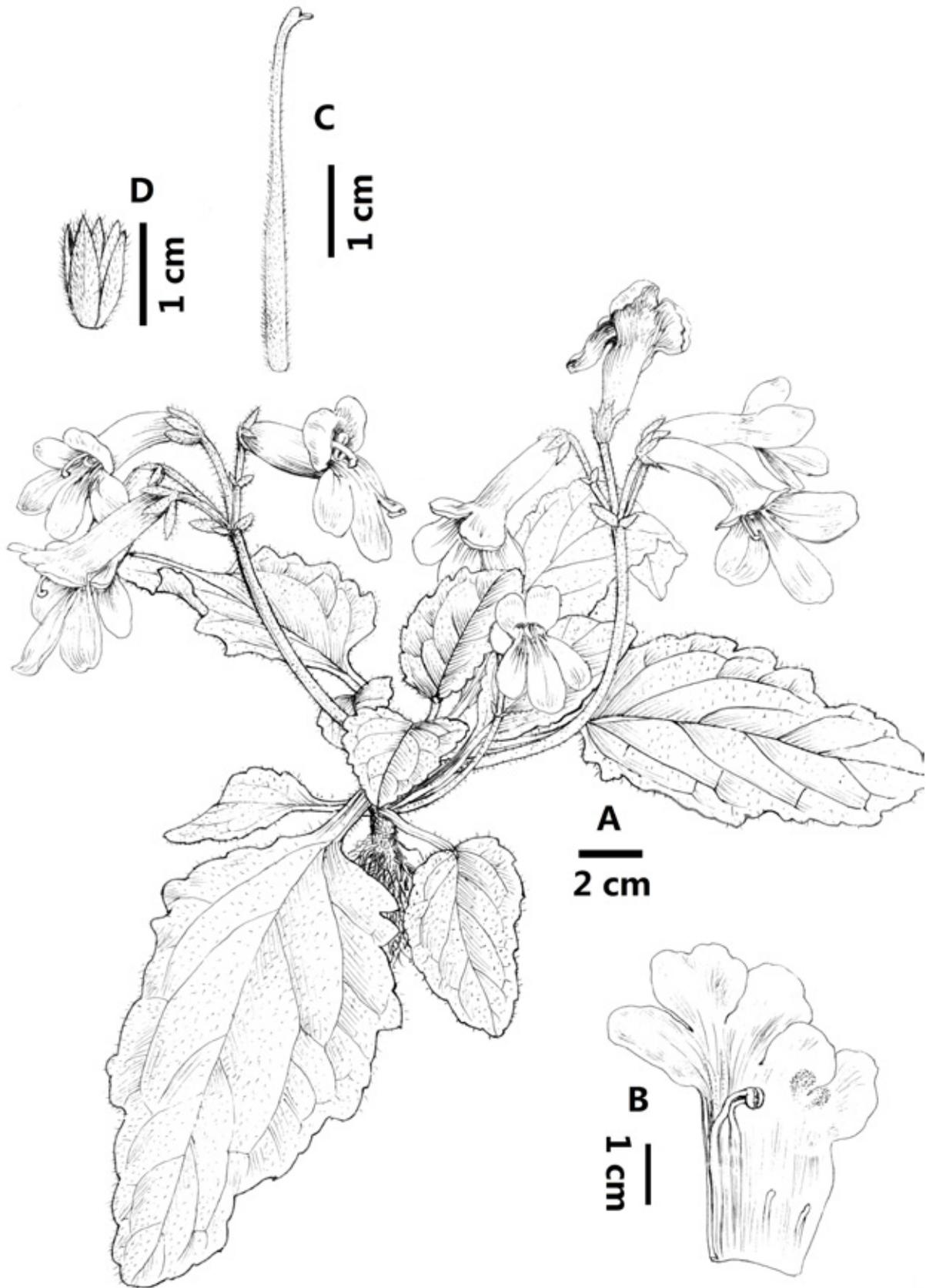


Fig. 1. *Primulina linglingensis* (W.T.Wang) Mich.Möller & A.Weber var. *fragrans* F.Wen, Y.Z.Ge & B.Pan. **a**, Habit; **b**, opened corolla; **c**, pistil; **d**, calyx. All from the type specimen, *Bo Pan 130409-01*. Illustration by Mr. Wen-Hong Lin.



Fig.2 *Primulina linglingensis* (W.T.Wang) Mich.Möller & A.Weber var. *fragrans* F.Wen, Y.Z.Ge & B.Pan. **a**, Habitat; **b**, plant in flowering; **c**, adaxial surface of leaf blade; **d**, cyme and flowers; **e**, calyx lobes; **f**, frontal view of corolla; **g**, lateral view of corolla; **h**, top view of corolla.

Holotype: China. Guangxi Province: Quanzhou County, Huangsha Town, 26°03'N, 111°13'E, alt. ± 169 m, 09 Apr 2013, *Bo Pan 130409-01* (flowering) (IBK).

Perennial herbs. Rhizomes subterete, 1.5–2 cm long, 1–1.5 cm in diameter. Leaves 5–11, basal, herbaceous; petiole flattened, 20–35 mm long, 4–10 mm wide, hairy with hairs brownish and whitish; blade chartaceous, nearly symmetric to symmetric, ovate-oblong to rhombic, 28–90 mm long, 15–65 mm wide, hairy with brownish- and whitish- indumentum on both surfaces, base broadly cuneate, margin serrate, apex obtuse to rounded; lateral veins 3–5 on each side of mid-vein, inconspicuously sunken on adaxial surface, and conspicuously raised on abaxial surface. Cymes 2–5, axillary, 1 (or 2)-branched, 2–8-flowered; peduncle 60–110 mm long, c. 2 mm diam., densely hairy with glandular and eglandular indumentum; bracts 2, opposite, narrowly ovate, 5–10 mm long, 4–8 mm wide, margin entire, apex acute, villous on both surface; pedicel 12–20 mm long, densely eglandular-hairy and glandular-hairy. Calyx 5-partite to near base; lobes narrowly ovate to linear, 4–9 mm long, c. 1 mm wide, margin entire, apex acuminate, outer surface densely hairy, inner surface glabrous. Corolla usually bicolored; abaxial lip reddish purple to purple, throat with two longitudinal yellow stripes, adaxial lip pale purple to pinkish-white, 35–50 mm long, outer surface sparsely hairy, inner surface glabrous; corolla tube infundibuliform, 20–35 mm long, c. 9 mm diam. at mouth, c. 5 mm diam. at base; limb distinctly 2-lipped, purple; abaxial lip 3-lobed at least to middle of lip, lobes oblong, 9–18 mm long; adaxial lip 2-partite at least to middle of lip, lobes oblong, 9–15 mm long, between two lobes with a brownish spot, the surface of

spot purple glandular-hairy and white hairy; stamens 2, adnate to corolla tube on lower c. 13 mm from corolla base; filaments linear, white, c. 13 mm long, geniculate at middle, upper half sparsely hairy; anthers c. 3 mm long, c. 2 mm diam., dorsifixed, with sparsely villous; staminodes 2, c. 5 mm long, apex capitate, glabrous, adnate to c. 9 mm above base of corolla tube. Disc annular, c. 1 mm high, margin repand to entire, glabrous. Pistil c. 35 mm long, densely hairy and glandular-hairy from ovary to style, ovary narrowly ovoid, 2–2.2 mm long, c. 0.9 mm diam.; style 18–20 mm long; stigma obtrapeziform, c. 2 mm long, 1–1.5 mm wide, apex 2-lobed. Capsule narrowly ellipsoidal, 14–16 mm long, 1.8–2 mm across, hairy.

Derivation: Only three species, *Primulina tabacum* Hance, *P. repanda* var. *guilinensis* (W.T.Wang) Mich.Möller & A.Weber and *P. glandulosa* var. *yangshuoensis* (F.Wen, Yue Wang & Q.X.Zhang) Mich.Möller & A.Weber, were reported to have a special spicy or sweet scent in their leaves. Before this new variety was discovered and formally reported, flowers of all known *Primulina* species are considered to be lack of sweet or special scent. Thus, the specific epithet refers to its fragrance of flowers.

Phenology: The new variety was collected in flower in April. The relatively large number of mature flowers seen suggest that the main flowering period of this variety may be from late March until end of April.

Distribution: The new variety is at present known from the type locality, a limestone cave in Huangsha Town, Quanzhou County, Guangxi (Fig. 3–A).

Ecology and habit: *Primulina linglingensis* var. *fragrans* inhabits the shaded and damp rocky tufa surface of limestone cliff in a large cave, close to entrance, at c. 169 m elevation.

IUCN Red List category: The survival of this new variety strictly rely on the special limestone cave habitat where it is usually very shaded and moist. The population is not in any of the protected areas, natural reserves, or national provincial parks, and no protection measures have been implemented at present. The approximately 200 mature individuals were confirmed in this cave, but after a further five more detailed, and wider searches, no additional populations have been located. We recommend the variety should be treated as Endangered Critically (CR B2a; C2b) (IUCN 2011).

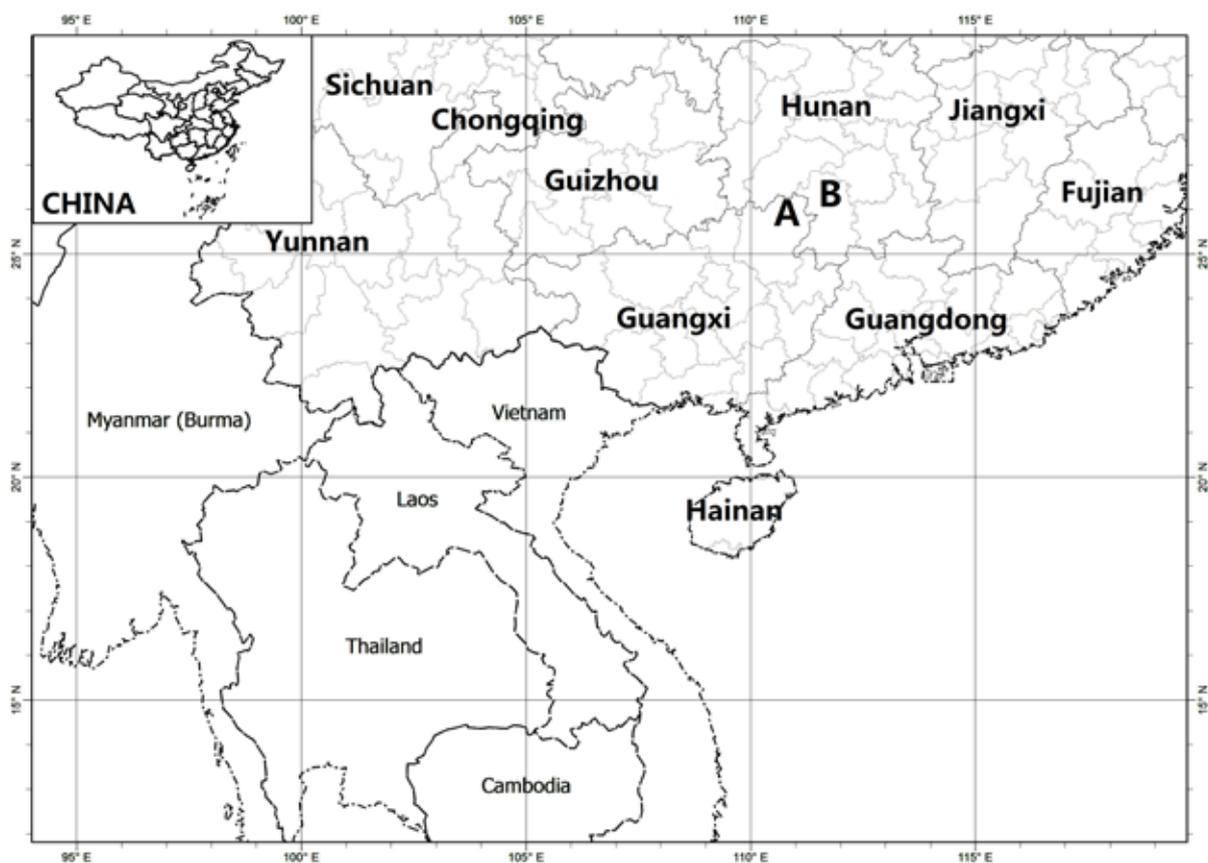


Fig. 3. Maps showing the currently known distribution for *Primulina linglingensis* var. *fragrans* (A) and *P. linglingensis* var. *linglingensis* (B) in Guangxi and Hunan provinces of China, respectively

Notes and affinities: This variety would appear to be most similar to but readily distinguishable from *P. linglingensis* var. *linglingensis*, by the characters discussed (above). The typical variety is known from Lingling District, Yongzhou, Hunan Province (Fig. 3–B) (Wang *et al.*, 1990, 1998), but the new variety is only distributed in Quanzhou County, Guangxi. A comparison of diagnostic differences between the two varieties is provided in Table 1.

Table 1. Morphological comparison between *Primulina linglingensis* var. *linglingensis* and *P. linglingensis* var. *fragrans*

Characters	<i>P. linglingensis</i> var. <i>fragrans</i>	<i>P. linglingensis</i> var. <i>linglingensis</i>
Leaf blade	nearly symmetric to symmetric, ovate-oblong to rhombic, 28–90 mm long, 15–65 mm wide, hairy and brownish- and whitish-villous on both surfaces	oblique, ovate to nearly orbicular, 25–60 mm long, 25–64 mm wide, hairy on both surfaces
Cyme	2–8-flowered,	1–4-flowered,
Peduncle	60–110 mm long, densely glandular- and eglandular-hairy	30–70 mm long, villous
Bracts	narrowly ovate, 5–10 mm long, 4–8 mm wide	lanceolate-linear, c. 7 mm long, 1–1.2 mm wide
Calyx lobes	narrowly lanceolate to linear, 4–9 mm long, c. 1 mm wide	linear-lanceolate, 7–9 mm long, 1.2–2 mm wide
Corolla	usually bicolour, adaxial lip pale purple to pinkish-white, abaxial lip reddish purple to purple; outside sparsely hairy, inside glabrous	purplish-red; outside sparsely hairy, inside hairy toward mouth
Corolla tube	infundibuliform	broadly funnellform to tubular-funnelform
Filaments	c. 13 mm long, geniculate at middle, upper half sparsely hairy	c. 11 mm long, geniculate at base, sparsely hairy apically
Staminodes	2, glabrous	3, sparsely hairy
Ovary and style	densely hairy and glandular-hairy	densely hairy

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