

Primulina maciejewskii sp. nov. (Gesneriaceae) from Guangdong, China

Rui-Li Zhang, Wen Ma, Fang Wen and An-Qiang Dong

R.-L. Zhang, College of Landscape Architecture, Beijing Univ. of Agriculture, Beijing, P. R. China. – W. Ma, Chang'an Campus, Shaanxi Normal Univ., Xi'an, P. R. China. – F. Wen, Gesneriad Conservation Center of China, Guangxi Key Laboratory of Plant Conservation and Restoration Ecology in Karst Terrain, Guangxi Inst. of Botany, Guangxi Zhuang Autonomous Region and the Chinese Academy of Sciences, Guilin, P. R. China. – A.-Q. Dong (<http://www.orcid.org/0000-0001-5241-4115>) (25012000@qq.com), Life Sciences College, Zhongkai Univ. of Agriculture and Engineering, Guangzhou, P. R. China.

Primulina maciejewskii F. Wen, R.L. Zhang & A.Q. Dong, a new species of *Primulina* (Gesneriaceae) from Guangdong, China, is described and illustrated. It is similar to *P. lobulata* and *P. danxiaensis* in leaf and flower shape, but can be distinguished by bract shape, peduncle, pedicel, and bract size, filament and anther indumentum, and number of bracts, staminodes and stigma.

Before 2005, only 22 species and two varieties of *Primulina* s. lat. (Hance 1883), including *Chirita* (Don 1822) sect. *Gibbosaccus* (Clarke 1883) were reported from Guangdong, China (Wang et al. 1990, 1998, Li and Wang 2004, Zheng and Xia 2005, Wei et al. 2010). However, in the last five years, 15 new species have been discovered and published from Guangdong (Liao et al. 2010, Wen et al. 2012, Xu et al. 2012, Ning et al. 2013a, 2013b, Chung et al. 2013, Zheng and Deng 2014, Hong et al. 2014, Wen and Wei 2014, Zhou et al. 2014, 2015, Guo et al. 2015, Ning et al. 2015, Lai and Wen 2015). There are currently 36 species and three varieties recognized from the area.

A botanical expedition to limestone areas in Yangshan County, Guangdong, China was carried out in 2010 and then an unclear species of *Primulina* was found. It was first identified as *Chiritopsis lobulata* (now *Primulina lobulata*), and images of it were included in a publication under this name (Wang 1982, Weber et al. 2011). However, we revealed some obvious differences between this mistakenly identified species and *P. lobulata*, and close examination of the material showed differences between it and *P. lobulata*, as well as between it and all other species known from Guangdong and adjacent provinces (especially in Guangxi). After consulting the local Flora (Wang et al. 1990, 1998, Zheng and Xia 2005), relevant literature (Li and Wang 2004, Wei et al. 2010, Xu et al. 2012) and checking herbarium specimens, we conclude that the material represent a species new to science as described below.

Primulina maciejewskii F. Wen, R.L. Zhang & A.Q. Dong sp. nov. (Fig. 1–2)

Primulina maciejewskii is similar to *P. lobulata* and *P. danxiaensis*, but differs from *P. lobulata* by pedicel 4–5 cm long (vs 1 cm long), bracts 3 (vs 2), filament sparsely puberulent (vs glabrous), staminodes 2 (vs 1), and from *P. danxiaensis* by bracts rhombic to narrowly obovate (vs oblanceolate to lanceolate), corolla white, brightly reddish with purple stripes or spots at throat (vs yellowish to yellow), filament sparsely puberulent (vs glabrous), anthers glabrous (vs puberulent) and stigma 2 (vs 1).

Type: China. Guangdong province: Yangshan County, Chengjia Town, growing in crevice and tufa on damp rock groove of limestone hills, 9 May 2012, Wen 120509-1 (holotype: IBK!).

Etymology

This species is named in honor of Stephen Maciejewski, a dedicated Gesneriaceae enthusiast and a member of the Gesneriad Society. He is also one of the cofounders of the Gesneriad Conservation Center of China (GCCC) in 2011 at the Guangxi Institute of Botany (GXIB). His ceaseless efforts have made a considerable contribution to the conservation of Chinese Gesneriaceae.

Description

Perennial, acaulescent herb. Rhizomes subterete, ca 3.5 cm long, ca 1 mm wide. Leaves 4–15(–28), all basal, petiolate; petiole terete, 1–6(–10) cm long, 2–4 mm wide, extremely

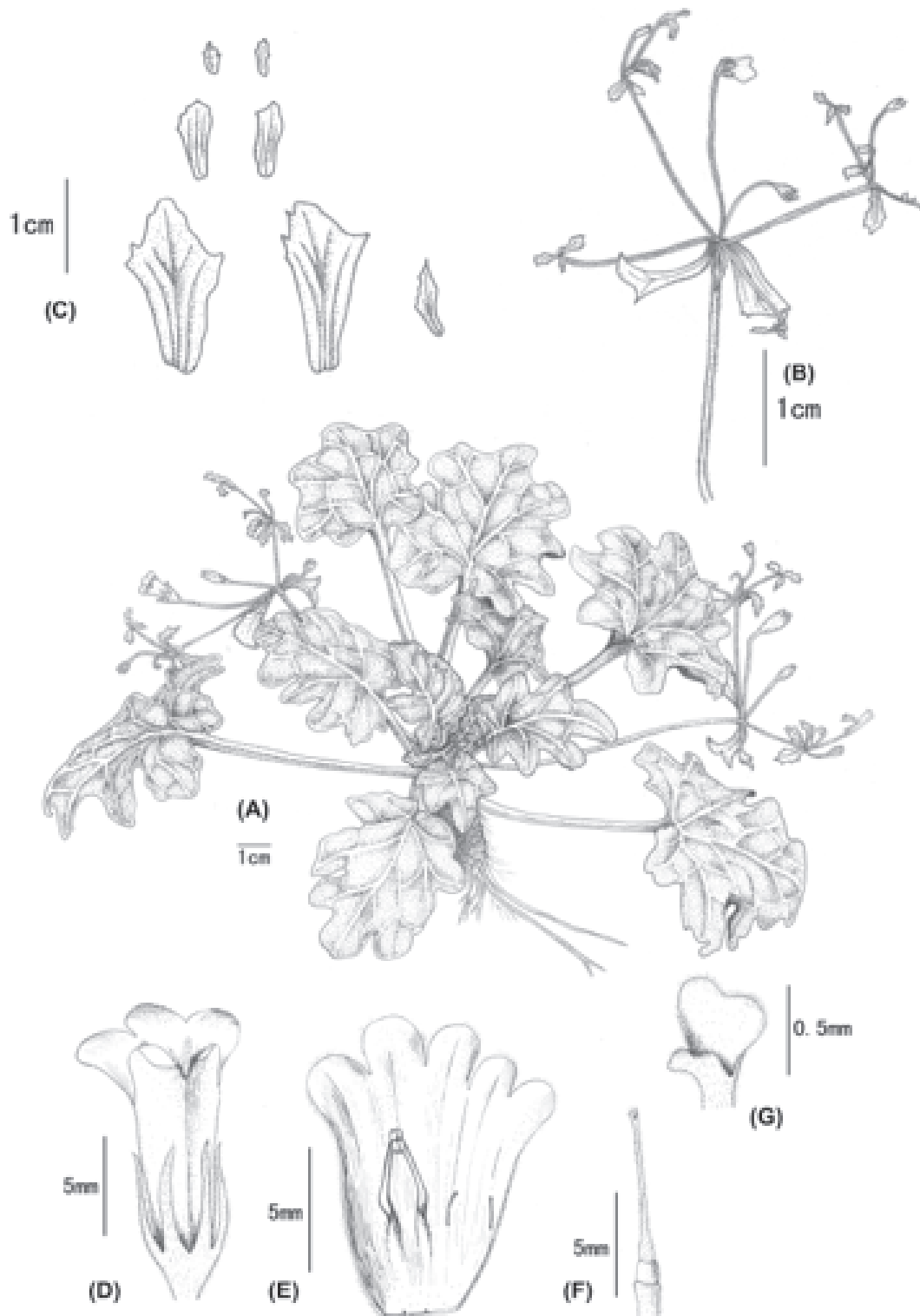


Figure 1. *Primulina maciejewskii* sp. nov. (A) habit, (B) inflorescence, (C) bracts and bracteoles, (D) calyx and corolla, (E) opened corolla showing stamens and staminodes, (F) gynoecium, (G) stigma. From holotype, drawn by Wen Ma.

short puberulent, cross-section nearly circular but adaxially grooved; leaf blades chartaceous, membranous when dried, orbicular or broadly ovate, commonly symmetric, occasionally oblique, 4–5 cm long, ca 4 cm in diameter, subacute to obtuse at apex, cordate at base, sometimes slightly

decurent, their margin lobed with each lobe broadly ovate, rounded to obtuse at apex; veins impressed adaxially and prominent abaxially; puberulent on both surfaces, abaxially more densely puberulent along veins. Inflorescence of pair-flowered cymes, axillary, each plant bearing 4–20 or more

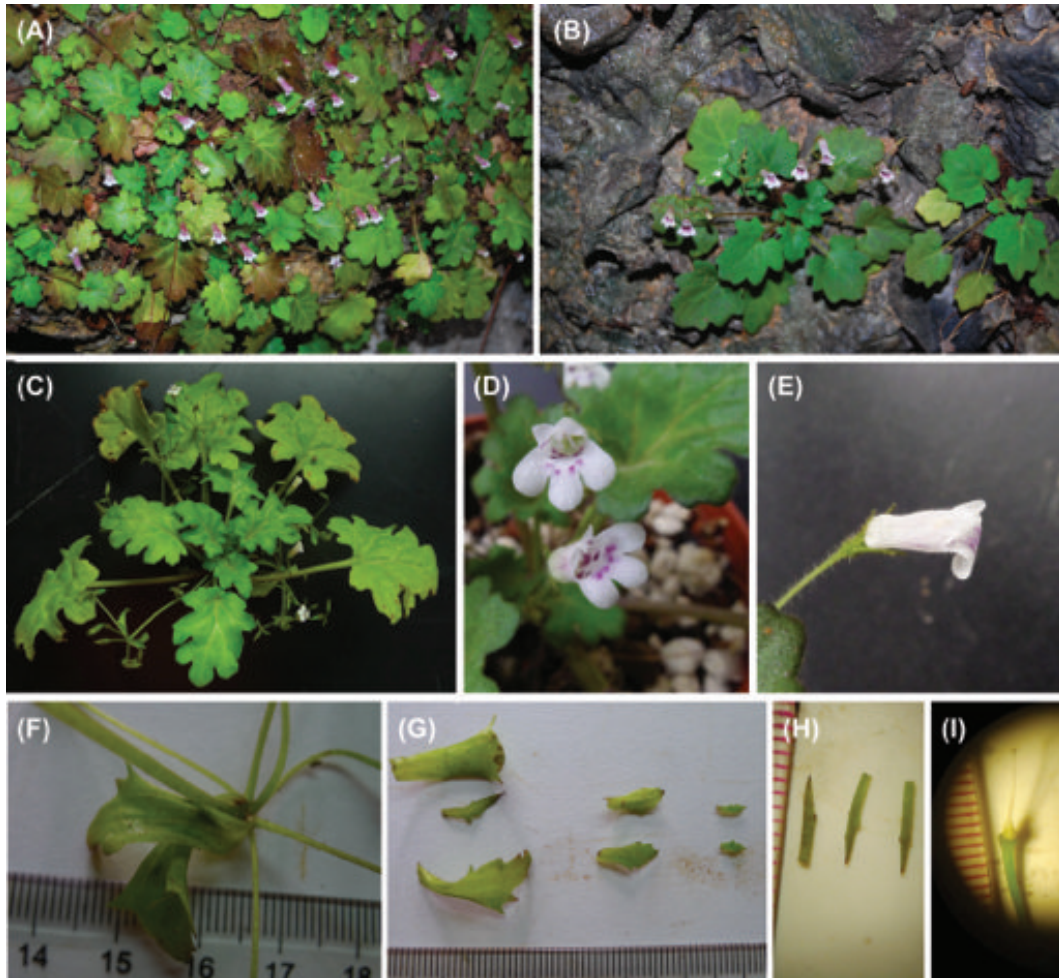


Figure 2. *Primulina maciejewskii* sp. nov. (A) population, (B) plants in the wild, (C) cultivated plant, (D) corolla front and top view, (E) corolla lateral view, (F) bracts on the cyme, (G) bracts, (H) calyx lobes, (I) pistil without calyx lobes. (A)–(B) photos by An-Qiang Dong, (C)–(I) photos by Fang Wen and Rui-Li Zhang.

flowers borne in 1–3(–8) cymes, each cyme with 1–2(–4) branches. Peduncle slender, 6–8 cm long, ca 2 mm wide, densely pubescent to pilose. Bracts 3; lateral two opposite, nearly rhombic to narrowly obovate, usually slightly twisted, 3-nerved, ca 2 × 0.8 cm; the central bract nearly rhombic to narrowly obovate, ca 1.0 × 0.2 cm, with both surfaces densely puberulent and lobed margin with each lobe nearly triangular or irregularly serrate. Bracteoles reduced to small scales, usually 2 per branch, opposite, 0.5–1.0 × 0.2–0.5 cm, puberulent on both surfaces. Pedicel 4–5 cm long, 0.10–0.15 cm wide, puberulent. Calyx 5-lobed, dissected to base; segments nearly equal, narrowly lanceolate, ca 7 × 1 mm, acute at apex, puberulent outside, sparsely puberulent inside, with margin distinctly 1–3-lobed in distal 1/3–1/2 portion; the lobes triangular or obtuse at apex. Corolla 1.0–1.2 cm long, white, brightly reddish with purple stripes or spots in throat, sparsely covered with short glandular hairs on the stripes, sparsely puberulent outside, nearly glabrous inside; tube infundibuliform-tubular, the back of the corolla forming a prominent longitudinal ridge, 6–7 mm long, ca 4 mm wide at the mouth, ca 2 mm wide at base, marked with darker

reddish purple blotches or spots inside the tube. Corolla limb distinctly 2-lipped; adaxial lobes split to the middle, ca 3 × 3 mm, with ovate lobes; abaxial lobes tri-lobed to the base, ca 4 × 3 mm, with oblong lobes. Stamens 2, included, adnate to ca 2.5 mm above the base of the corolla; filaments linear, geniculate at the base, 4–5 mm long, sparsely puberulent; anthers fused for their entire adaxial surfaces, elliptic, ca 1 mm long, yellowish, glabrous; staminodes 2, translucent, linear with capitate apex, adnate to ca 1 mm above the adaxial side of the corolla tube base, glabrous. Disc yellowish, annular, with repand margin, ca 0.8 mm high, glabrous. Pistil ca 8 mm long; ovary ovoid, whitish–green, ca 0.9 mm long, ca 0.6 mm wide, densely puberulent with glandular and eglandular hairs; style translucent to white, 5–6 mm long, glandular-puberulent; stigma bi-lobed, translucent, glabrous, its superior lobe vestigial, semi-orbicular, with retuse apex, ca 0.2 mm long, ca 1 mm in diameter, the inferior lobe obtuse, with slightly 2-lobed apex, slightly asymmetric or symmetric, ca 0.5 mm long. Capsule ellipsoid, shorter than calyx, 2–3 mm long, puberulent. Seeds numerous, ellipsoid or sub-ellipsoid, brown.

Table 1. Diagnostic character differences between *Primulina maciejewskii* sp. nov. and its close relatives *P. lobulata* and *P. danxiaensis*.

Characters	<i>P. maciejewskii</i>	<i>P. lobulata</i>	<i>P. danxiaensis</i>
Peduncle (cm)	6–8	6–10	3–6
Pedicle (cm)	4–5	up to 1	up to 1
Bracts (mm)	3, rhombic to narrowly obovate, lateral two ca 20 × 8	2, oblanceolate to linear, 4–8 × 0.8–3.0	2, oblanceolate to lanceolate, 7–12 × 1.0–2.5
Corolla	white with reddish purple spots and blots	entirely white	yellowish to yellow
Filaments	geniculate at the base, sparsely puberulent	erect, glabrous	geniculate at the middle, glabrous
Anthers	glabrous	glabrous	puberulent
Staminodes	2	1	2
Stigma lobes	2	1	1

Phenology

The new species has been observed flowering from May to July.

Distribution and habitat

Primulina maciejewskii is known only from the type locality, Chengjia Town, Yangshan County, Guangdong, China. It is a rare plant and only five populations have been observed, with all individuals growing on the damp surface of limestone hills at ca 750 m a.s.l.

Provisional conservation assessment

Primulina maciejewskii is currently known from a few local populations in a narrow limestone area in Yangshan

County, Qingyuan City, Guangdong, China. During field surveys in Yangshan County, we found that it grows only on moist rock or tufa faces and in rocky crevices, and it is not locally abundant at every locality. In total, no more than 800 mature individuals have been found. However, it should be provisionally considered as ‘Data Deficient’ (DD) according to the IUCN red list criteria (IUCN 2012) until more thorough population studies have been carried on.

Morphological relationships

Primulina maciejewskii has some morphological similarity to *P. lobulata* and *P. danxiaensis* with respect to leaf shape and the color of flower, but it can be easily distinguished by

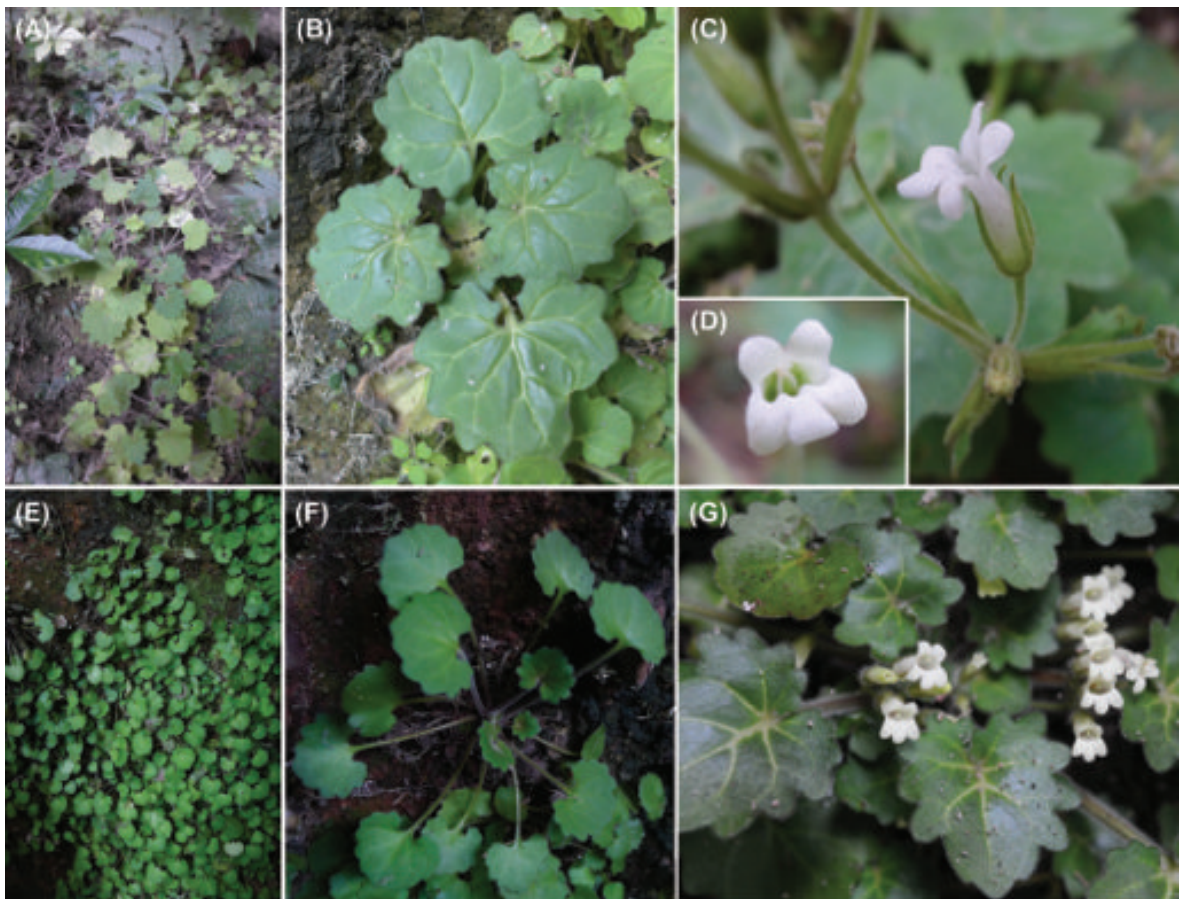


Figure 3. (A)–(D) *Primulina lobulata*. (A) habitat, (B) habit, (C) cyme, (D) corolla frontal view. (E)–(F) *P. danxiaensis*. (E) habitat, (F) habit, (G) cymes. (A)–(C) photos by An-Qiang Dong and Fang Wen, (G) by Rui-Jiang Wang.

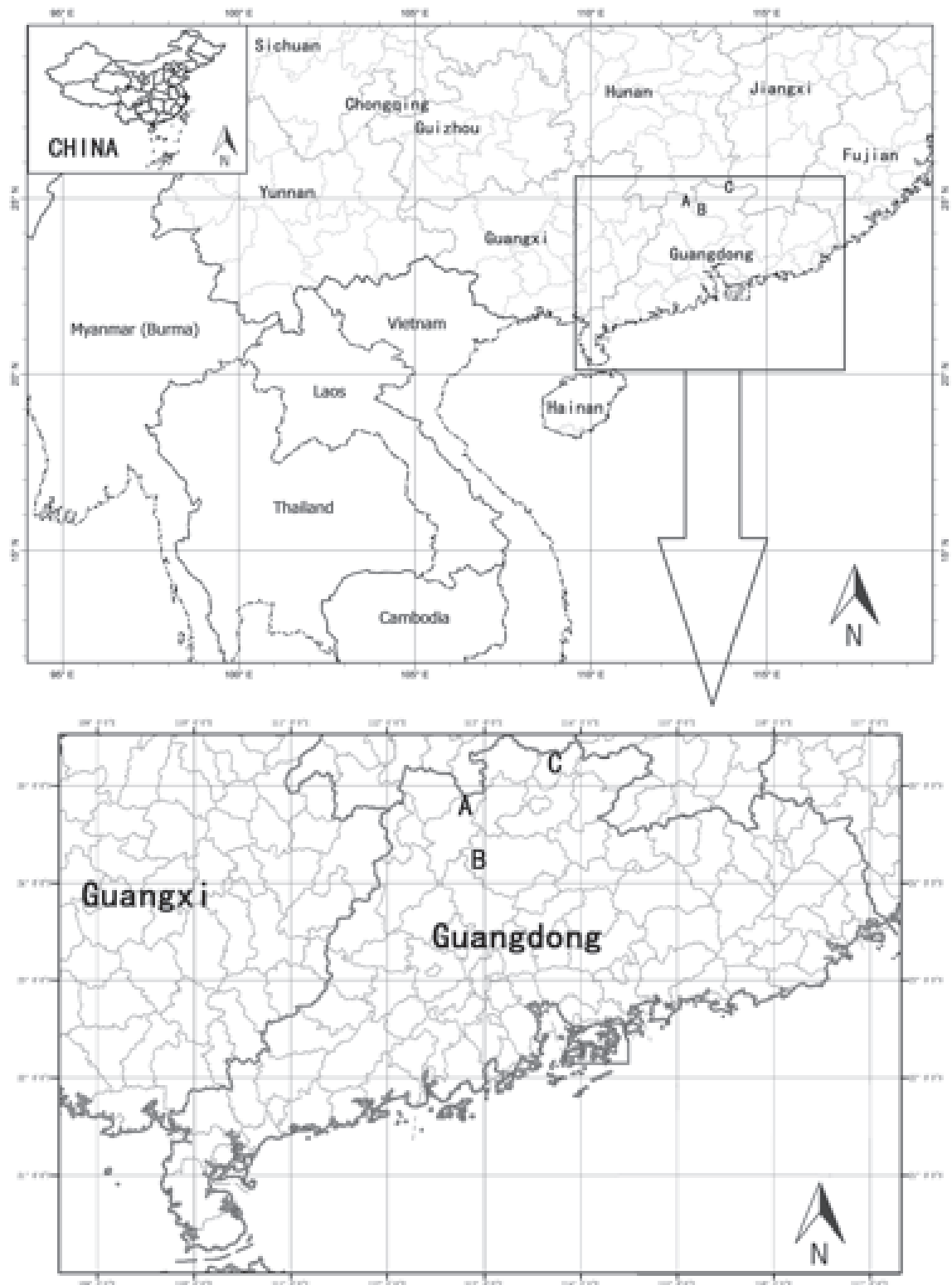


Figure 4. Distribution of *Primulina maciejewskii* sp. nov. and the morphologically similar species. (A) *P. maciejewskii*, (B) *P. lobulata*, (C) *P. danxiaensis*.

other characters. For example, it differs from both by having longer peduncle (6–8 cm), extraordinary long pedicel (4–5 cm long), rhombic to narrowly obovate bracts, white corolla with brightly reddish purple swollen stripes or spots

in throat, sparsely puberulent filaments, glabrous anthers, 2 staminodes, and stigma with a vestigial superior lip (Table 1, Fig. 3). The distribution in China of these species is shown in Fig. 4.

Acknowledgements – The authors are grateful to Yi-Gang Wei for checking the specimens and reviewing the description of this new species, Wen Ma for drawing the illustration. We are indebted to the herbaria that allowed us to consult their collections (ANU, BJFU, CDBI, CTC, HGAS, HIB, HN, IBK, IBSC, KUN, MO, PE, SZ, VMN). Michael LoFurno from the USA provided linguistic comments on the manuscript. This study was supported by Beijing Municipal Natural Science Foundation (6122008), Guangxi forestry science and technology projects (Guilin kezi [2014] no. 27) and the Guangxi Natural Science Foundation (2015GXNSFBB139004).

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