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Primulina spiradiclioides (Gesneriaceae), a new species from limestone areas in Guangxi, China

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Received 17 Apr. 2020, final version received 21 May 2020, accepted 26 May 2020

Xin Z.B., Huang Z.J., Fu L.F., Li S., Wang B.M. & Wen F. 2020: *Primulina spiradiclioides* (Gesneriaceae), a new species from limestone areas in Guangxi, China. — *Ann. Bot. Fennici* 57: 245–248.

Primulina spiradiclioides Z.B. Xin & F. Wen (Gesneriaceae), a new species from limestone areas in Guangxi, China, is described and illustrated. It resembles *P. curvituba*, but can be easily distinguished from it by several characters, especially by its straight corolla tube. We found only one population with fewer than 200 mature individuals at the type locality.

The circumscription of *Primulina* has been revised based on molecular evidence (Wang *et al.* 2011, Weber *et al.* 2011) and now *Primulina s. lato* is the most speciose genus in Chinese Gesneriaceae. Over 50 new species were described within the past five years (e.g., Ning *et al.* 2016, Ma *et al.* 2017, Qin *et al.* 2018, Jiang *et al.* 2019, Pan *et al.* 2020). Currently the genus comprises more than 220 taxa (infraspecific taxa included; Möller 2019; see also <http://gcc.cn/gxib.cn/cn/about-68.aspx> and https://www.ipni.org/?f=f_generic%2Cf_specific&q=Primulina).

During a botanical survey for limestone karst plant biodiversity in Guangxi in late July 2016, an unknown species of *Primulina* was discovered and collected by the members of the Gesneriad Conservation Center of China (GCCC). It resembled *P. curvituba* (Yang *et al.* 2017), but there were also notable differences. We con-

cluded that it was an undescribed species of *Primulina* which we describe and illustrate here.

Primulina spiradiclioides Z.B. Xin & F. Wen, *sp. nova* (Figs. 1 and 2)

TYPE: China. Guangxi: Hechi City, Huanjiang County, Longyan Town, growing on shaded and moist rock surface on the cliff, 25°16'29.55"N, 108°29'41.19"E, 245 m a.s.l., 23 July 2016, flowering, Wen Fang *et al.*, WF20160723-01 (holotype IBK, isotype IBK).

ETYMOLOGY: The specific epithet "*spiradiclioides*" is derived from corolla which is similar to that in the genus *Spiradiclis*.

Herbs perennial, acaulescent, lithophytic. Leaves 12–25, crowded on a basal rosette; petiole 1–2 cm long, densely white lanate; leaf blades oblong or oblanceolate, 4–6 cm long,

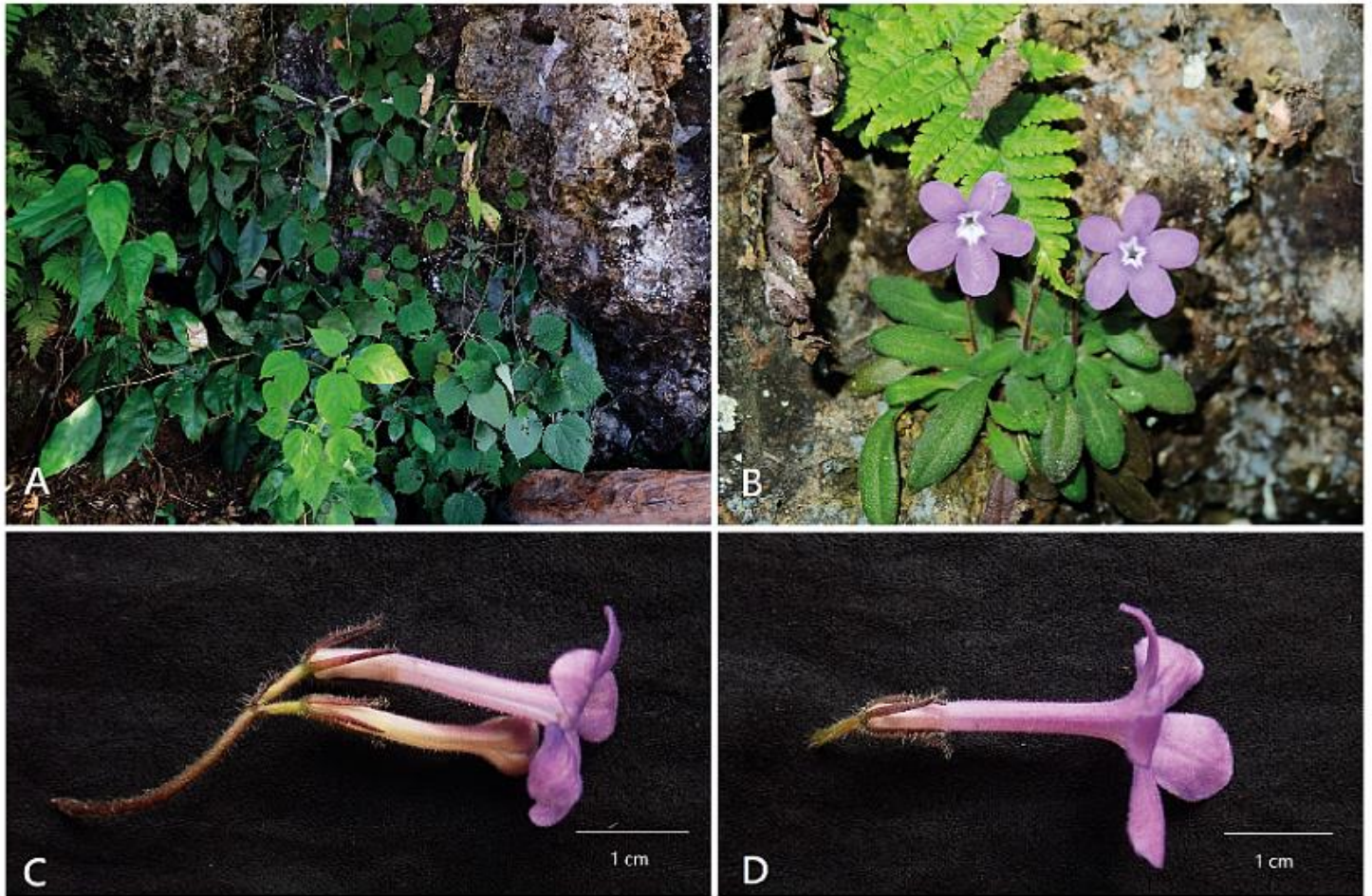


Fig. 1. *Primulina spiradiclioides* (type material). — **A:** Habitat. — **B:** Habit. — **C:** Cymes, with lateral view of corolla. — **D:** Top view of corolla.

1–2.5 cm wide at its widest point, base cuneate, margin serrate, adaxial and abaxial surfaces densely whitish villous; lateral veins 3–4 on each side of midrib, inconspicuous on adaxial surfaces; distinctly raised on abaxial surface. Cymes 2–4, lax, axillary, 1–2(5)-flowered; peduncles brown, 2–4 cm long, whitish lanate; bracts 2, opposite, linear, ca. 6 mm long, 1 mm wide, margin entire, both side whitish pubescent; pedicels ca. 5 mm long, whitish pubescent. Calyx 5-lobed, free from base; lobes equal, linear, ca. 8 mm long, ca. 1 mm wide, margin entire, outside densely pubescent, inside sparsely pubescent. Corolla 3.5–4 cm long, purple, corolla mouth with white, zygomorphic; corolla tube straight, tubular, 2.4–2.9 cm long; 2.5–3.5 mm in diameter; limb 2-lipped, adaxial lip short, 2-lobed, lobes broadly ovate, ca. 8.5 mm long, ca. 6 mm wide; abaxial lip 3-lobed, lobes equal, broadly ovate, ca. 10 mm long, 8 mm wide; corolla mouth white, forming a conspicuous pentagon. Stamens 2, adnate to ca. 1.7 mm from base of corolla tube, filaments ca. 5 mm long, white, linear, straight, glandular-pubes-

cent; anthers dorsi-fixed, reniform to elliptic, ca. 2 mm long, 1 mm wide, coherent in pairs, thecae confluent at middle, glabrous; staminodes 3, adnate to base of corolla tube, lateral ones ca. 0.5 mm long, middle one ca. 0.3 mm long. Disc annular, ca. 0.75 mm high, margin entire. Pistil densely glandular-pubescent; ovary ovate, 2–2.5 mm long, ca. 1.5 mm wide, densely covered with glandular hairs, 1-loculed, placentas 2, parietal; style ca. 2.5 mm long, ca. 0.6 mm wide, densely glandular pubescent; stigma bilobed, ca. 1.2 mm long, 1 mm wide, puberulent. Fruit 1–1.5 cm long, apex acute, capsule cylindrical, 4-valved, densely pubescent. Flowering from middle of June to August, fruiting from July to September.

DISTRIBUTION AND HABITAT. *Primulina spiradiclioides* is hitherto known only from the type locality, Longyan Town, Huanjiang County, Hechi City, Guangxi, China, where fewer than 200 mature individuals grow on shaded and moist rock surface on the cliff, located in subtropical broad-leaved evergreen monsoon forest with sufficient seasonal runoff water.

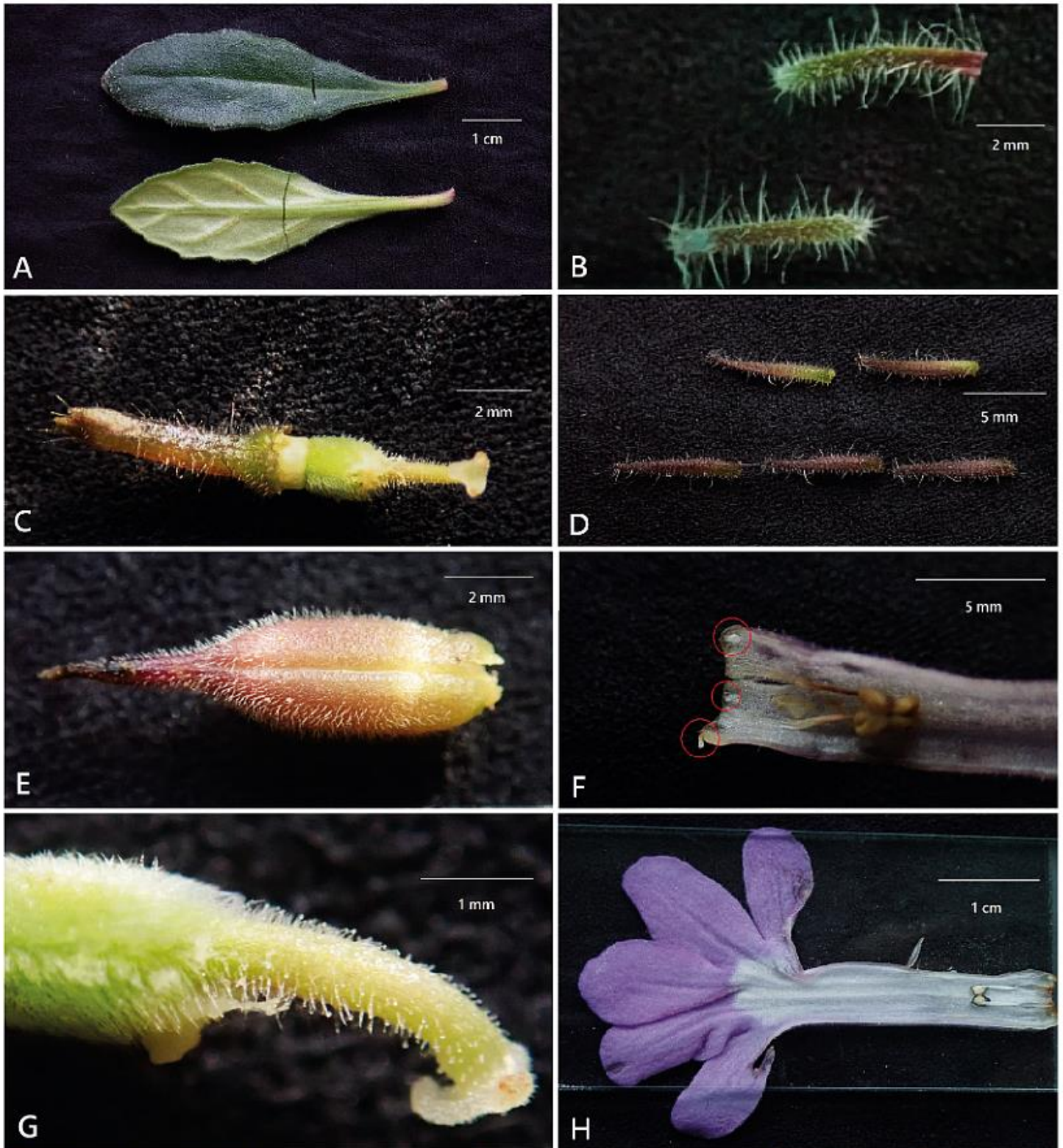


Fig. 2. *Primulina spiradiclioides* (type material). — **A:** Adaxial and abaxial surfaces of leaf blade. — **B:** Bracts. — **C:** Pistil. — **D:** Calyx lobes. — **E:** Fruit. — **F:** Stamens and staminodes (the latter within red circles). — **G:** Indumentum on pistil. — **H:** Opened corolla.

Primulina spiradiclioides is morphologically close to *P. curvituba*, but can be distinguished by several characters (Table 1).

ADDITIONAL SPECIMEN EXAMINED. — *Primulina curvituba*. China. Guangxi: Guilin City, cultivated in Guilin Botanical Garden, introduced from the same locality as its holotype, 23 July 2012 (flowering), *Bo Pan*, PB285 (paratype, IBK).

Acknowledgements

We thank Mr. Wang Jian, who first discovered this species. This study was financially supported by the Foundation of Guangxi key Laboratory of Plant Conservation and Restoration Ecology in Karst Terrain (19-050-6), the Guilin Science and Technology Foundation (20180107-6), the Guangxi Natural Science Foundation (2017GXNSFAA198006), the National Natural Science Foundation (31860047), the Science Research Foundation of Guangxi Academy of Sci-

Table 1. Morphological comparison between *Primulina spiradiclioides* and *P. curvituba* (Yang et al. 2017).

	<i>P. spiradiclioides</i>	<i>P. curvituba</i>
Terrestrial stem	acaulescent	30–75 mm long
Leaf blades	oblong or oblanceolate, 40–60 × 10–25 mm, densely whitish villous, margin serrate	elliptical to linear–elliptical, 14–33 × 9–15 mm, white pubescent, margin entire and revolute
Petiole	white lanate	white pubescent
Cymes	2–4	6–11
Bracts	linear, ca. 6 × ca. 1 mm	lanceolate, 2–3.5 × 1–1.5 mm
Pedicel length (mm)	ca. 5	20–30
Calyx lobes	linear, ca. 8 × ca. 1 mm	lanceolate, 2–3 × 1–1.5 mm
Corolla length (cm)	3.5–4	2–2.8
Corolla tube	straight, tubular, 2.4–2.9 cm long, 2.5–3.5 mm in diameter	strongly curved, infundibuliform, 1.6–2 cm long, 5–7 mm (mouth), 2–3 mm (base)
Corolla throat	pentagonal	elliptical
Stamens	adnate to ca. 1.7 mm above corolla tube base	adnate to 3–4 mm above corolla tube base
Staminode	lateral ones ca. 0.5 mm long, middle one ca. 0.3 mm long	lateral ones 1–2 mm long, middle one ca. 1 mm long
Ovary	ovate, 2–2.5 × ca. 1.5 mm	cylindrical, 5–6 × ca. 1 mm
Capsule	cylindrical	linear

ences (2017YJJ23022), the STS Program of the Chinese Academy of Sciences (KFJ-3W-No1), the Key Science & Technology Research & Development Project of Guangxi (Guike AB16380053), Basal Research Fund of GXIB (Guizhiye20009) and 21st Talent project “Ten-Hundred-Thousand” in Guangxi.

References

- Jiang H., Deng T., Lv X.Y., Zhang R.B. & Wen F. 2019: *Primulina serrulata* (Gesneriaceae), a new species from southeastern Guizhou, China. — *PhytoKeys* 132: 11–18.
- Ma H.S., Pan B. & Xu W.B. 2017: *Primulina lutescens* sp. nov. (Gesneriaceae) from southern Guangxi, China. — *Nordic Journal of Botany* 35: 687–691.
- Möller M. 2019: Species discovery in time: An example from Gesneriaceae in China. — *Guangxi Sciences* 26: 1–16.
- Ning Z.L., Pan B., Wen F., Kang M. & Zhuang X.Y. 2016: *Primulina yingdeensis*, a new species from Guangdong, China, and *P. rosulata*, a new combination (Gesneriaceae), based on morphological and molecular evidence. — *Willdenowia* 46: 399–409.
- Pan B., Xu M.Z., Tang W.X. & Yang L.H. 2020: *Primulina zixingensis* (Gesneriaceae), a new species from Hunan, China. — *Annales Botanici Fennici* 57: 55–59.
- Qin Y., Yuan Q., Xu W.B. & Liu Y. 2018: *Primulina yandongensis* (Gesneriaceae), a new species from southwestern Guangxi, China. — *Taiwania* 63: 305–310.
- Wang Y.Z., Mao R.B., Liu Y., Li J.M., Dong Y., Li Z.Y. & Smith J.F. 2011: Phylogenetic reconstruction of *Chirita* and allies (Gesneriaceae) with taxonomic treatments. — *Journal of Systematics and Evolution* 49: 50–64.
- Weber A., Middleton D.J., Forrest A., Kiew R., Lim C.L., Rafidah A.R., Sontag S., Triboun P., Wei Y.G., Yao T.L. & Möller M. 2011: Molecular systematics and remodeling of *Chirita* and associated genera (Gesneriaceae). — *Taxon* 60: 767–790.
- Yang L.H., Pan B. & Kang M. 2017: *Primulina curvituba* sp. nov. (Gesneriaceae) from a limestone area in Guangxi, China. — *Nordic Journal of Botany* 35: 578–581.