

Primulina pseudoroseoalba (Gesneriaceae), a new species from a karst cave in Guangxi, China

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Primulina pseudoroseoalba Jian Li, F. Wen & L.J. Yan, a new species of Gesneriaceae from China, is described and illustrated. It is morphologically similar to *P. roseoalba*, but differs from it in the leaf blade being broadly ovate to elliptic, and its margin entire and abaxially glabrous; peduncle being much shorter; and bracts being ovate to orbicular-ovate, glabrous inside. *Primulina pseudoroseoalba* is rare and currently known only from a karst hill in Guangxi, China.

A population of plants presumed to belong to the extended genus *Primulina* (Gesneriaceae; Weber *et al.* 2011, Xu *et al.* 2012b) was found in a limestone cave in northern Guangxi, China, in 2010. After checking herbarium specimens, floras and relevant literature (Wang *et al.* 1990, 1998, Li & Wang 2004, Wei *et al.* 2010, Liu *et al.* 2011, Huang *et al.* 2012, Li *et al.* 2012, Wen *et al.* 2012a, 2012b, 2012c, 2012d, 2013, Wu *et al.* 2012a, 2012b, Chung *et al.* 2013, Jiang & Li 2013, Lu *et al.* 2013, Ning *et al.* 2013a, 2013b, Pan *et al.* 2013, Xu *et al.* 2012a, 2013, Zhao *et al.* 2013), the collected species was clearly distinct from all previously known species in *Primulina*. Therefore, we describe the new species here.

Primulina pseudoroseoalba Jian Li, F. Wen & L.J. Yan, *sp. nova* (Figs. 1 and 2)

TYPE: China, Guangxi, Guilin city, Xing'an County, Baishi

town, on rock face, in a limestone cave, rare, alt. ca. 495 m a.s.l., 1 July 2010, Fang Wen, Jian Li & Xin Hong 00177 (holotype IBK; isotype ANU).

ETYMOLOGY. The specific epithet is derived from the pink flower, which is similar to *Primulina roseoalba*, especially those individuals with lighter pink flowers.

Perennial, stemless herb. Stem internodes inconspicuous. Leaves basal, opposite, petioles 2.5–4.5 × 0.7–1 cm; leaf blade broadly ovate to elliptic, slightly asymmetric but not falcate, 10–17(–24) × 9–14 cm, papery when dried, adaxially with dense, short hairs, eglandular, abaxially glabrous, base cuneate, margin entire, apex obtuse; lateral veins ca. 4 on each side of midrib, adaxially impressed, abaxially conspicuous. Cymes 2–4 or more, (1–)2–5(–10)-flowered or more; peduncle 3.3–4.2 cm long, glandular puberulent; bracts 2, free, ovate to orbicular-ovate, 1.5–2 × 0.8–1.2 cm, outside densely puberulent, inside glabrous, margin entire, apex acute to obtuse. Pedicel 3.8 cm long, puberulent

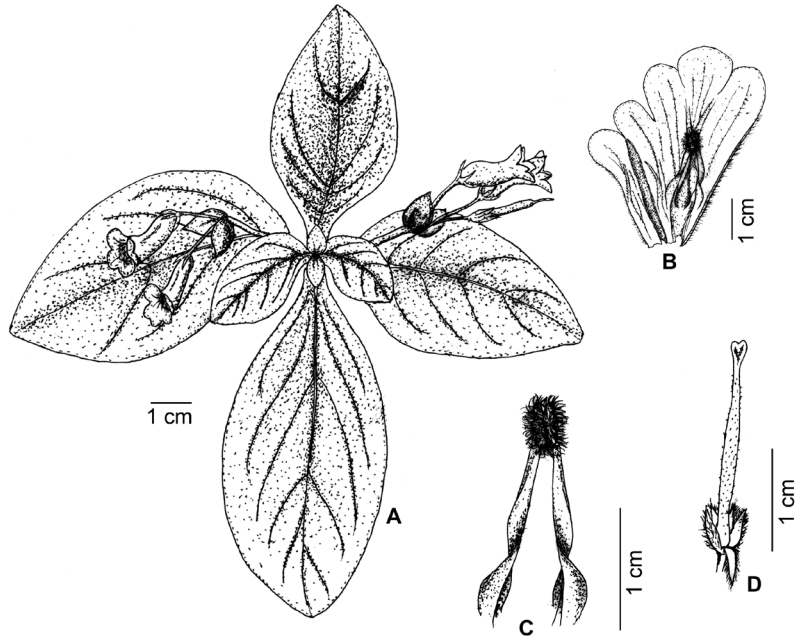


Fig. 1. *Primulina pseudo-roseoalba* (from the holotype, drawn by X. M. Xu). — **A:** Habit. — **B:** Corolla opened, with stamens and staminodes. — **C:** Filaments and anthers. — **D:** Style, stigma, ovary and calyx lobes.

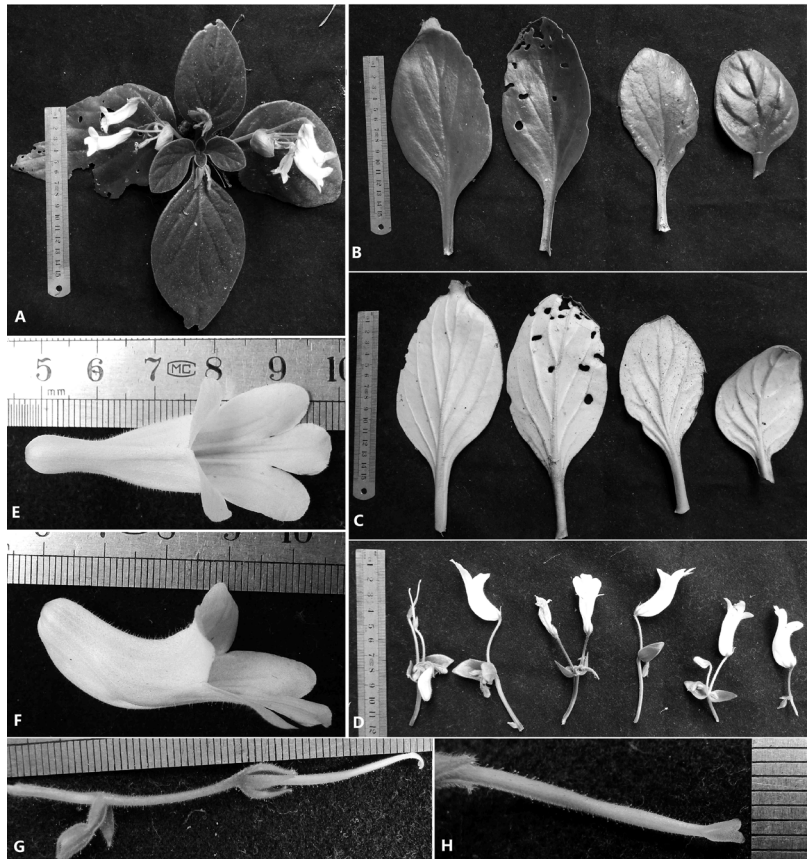


Fig. 2. *Primulina pseudo-roseoalba* (from the holotype). — **A:** Habit. — **B:** Adaxial side of leaves. — **C:** Abaxial side of leaves. — **D:** A range of cymes at different stages and levels of branching. — **E:** Top view of flower. — **F:** Lateral view of flower. — **G:** Single pair-flowered cyme with front flower in bud and top flower with corolla removed, showing calyx lobes and pistil. — **H:** Pistil, showing ovary, style and stigma.

Table 1. Morphological comparison between *Primulina pseudoroseoalba* and *P. roseoalba*.

Character	<i>P. pseudoroseoalba</i>	<i>P. roseoalba</i>
Shape of leaf blade	broadly ovate to elliptic, margin entire	slightly oblique, ovate, margin crenulate to remotely dentate
Leaf blade size (cm)	10–17(–24) × 9–14	6.8–12.5 × 4–8
Indumentum of leaf blade	adaxially with dense, short hairs, eglandular, abaxially glabrous	sparsely strigose on both sides
Peduncle length (cm)	3.3–4.2	9–13
Shape of bracts	ovate to orbicular-ovate	linear-lanceolate
Bract size (cm)	1.5–2 × 0.8–1.2	1.1–1.3 × 2.2–3
Indumentum of bracts	outside densely puberulent, inside glabrous	strigose on both sides
Filaments	white, glabrous	dark brown to black, sparsely glandular hairs
Flowering time	September	July

and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 1–1.3 × 0.1–0.15 cm, outside puberulent and glandular puberulent, inside sparsely puberulent, margin entire, apex acute. Corolla white to fuchsia-red, 3.5–4.5 cm long, outside densely puberulent and glandular puberulent, inside glabrous, base of adaxial lobes sparsely puberulent; tube tubular, 2.5–3 cm long, orifice ca. 1.3 cm in diameter; limb distinctly 2-lipped, adaxial lip 2-partite to base, lobes slightly oblique, ovate, adaxial lobes ca. 0.8–1.0 × 0.9 cm; abaxial lip 3-partite to middle or slightly over middle, lateral lobes obliquely ovate, ca. 1.1 × 0.7 cm, the central one oblong, ca. 1.4 × 0.6 mm. Stamens 2, anterior, adnate to corolla tube ca. 1.3 cm above the base; filaments white, geniculate at base, ca. 1.1 cm long, glabrous; anthers fused by their entire adaxial surfaces, oblong, 3–4 × ca. 1.5 mm, bearded on the back; staminodes 2, translucent, linear, apex capitate, densely glandular puberulent, 0.5–0.6 cm long, adnate to corolla 1–1.2 cm above base. Disc white, annular, glabrous, 0.8–1.0 mm high. Pistil 2.2–2.5 cm long; ovary cylindrical, 1.6–1.8 cm long, ca. 1.5 mm in diameter, densely puberulent and glandular puberulent, 1-loculed, placentas 2, parietal, projecting inward, 2-cleft; style 6–7 mm long, ca. 1.8–2.0 mm in diameter, densely puberulent and glandular puberulent. Stigma translucent to white, cuneate, apex retuse, ca. 2.5 mm long. Capsule linear, slightly curved, 4.5–5.0 cm long, densely hispid when young. Seed brown, spindle-shaped, ca. 0.3 mm long.

Primulina pseudoroseoalba grows in rocky crevices at the entrance of a limestone cave in Xing'an County, China, at an elevation of 495 m a.s.l. in subtropical evergreen broad-leaved forest. It resembles *P. roseoalba*, but can be distinguished by several characters (Table 1).

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References

- Chung K.F., Huang H.Y., Peng C.I. & Xu W.B. 2013: *Primulina mabaensis* (Gesneriaceae), a new species from a limestone cave of northern Guangdong, China. — *Phytotaxa* 92: 40–48.
- Huang Y.S., Xu W.B., Wu L. & Liu Y. 2012: *Primulina gongchengensis* (Gesneriaceae), a new species from Guangxi, China. — *Annales Botanici Fennici* 40: 107–110.
- Jiang N. & Li H. 2013: *Primulina debaoensis* sp. nov. (Gesneriaceae) from a limestone cave in Guangxi, China. — *Nordic Journal of Botany* 31: 631–634.
- Li J., Wang Y., Hua G.J.H. & Wen F. 2012: *Primulina xiziae* sp. nov. (Gesneriaceae) from Zhejiang Province, China. — *Nordic Journal of Botany* 30: 77–81.
- Li Z.Y. & Wang Y.Z. 2004: [*Plants of Gesneriaceae in China*]. — Henan Science Technology Publishing House, Zhengzhou. [In Chinese].

- Liu Y., Xu W.B. & Huang Y.S. 2011: *Primulina guangxiensis* sp. nov. (Gesneriaceae) from a karst cave in Guangxi, China. — *Nordic Journal of Botany* 29: 682–686.
- Lu S.N., Fu L.F., Liang G.Y. & Wen F. 2013: *Primulina bulbata*, a new species of *Primulina* (Gesneriaceae) from Guangxi. — *Guihaia* 33: 42–45.
- Ning Z.L., Li G.F., Wang J., Smith J.F., Rasolonjatovo H. & Kang M. 2013a: *Primulina huaijiensis* (Gesneriaceae), a new species from Guangdong, China. — *Annales Botanici Fennici* 50: 119–122.
- Ning Z.L., Wang J., Smith J.F. & Kang M. 2013b: *Primulina qingyuanensis* (Gesneriaceae), a new species from limestone areas in Guangdong, China. — *Phytotaxa* 137: 48–52.
- Pan B., Wen F., Zhao B., Deng T., Xu W.B. & Huang S.X. 2013: *Primulina beiliuensis* B. Pan & S.X. Huang, a new species of Gesneriaceae from limestone areas in Guangxi, China. — *Guihaia* 33: 591–598.
- Wang W.T., Pan K.Y. & Li Z.Y. 1990: Gesneriaceae. — In: Wang W.T., Pan K.Y. & Li Z.Y. (eds.), *Flora Reipublicae Popularis Sinicae*, vol. 69: 333–409. Science Press, Beijing. [In Chinese].
- Wang W.T., Pan K.Y., Li Z.Y., Weitzman A.L. & Skog L.E. 1998: Gesneriaceae. — In: Wu Z.H. & Raven P.H. (eds.), *Flora of China*, vol. 18: 244–401. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis.
- Weber A., Middleton D.J., Forrest A., Kiew R., Lim C.L., Rafidah A.R., Yao T.L. & Möller M. 2011: Molecular systematics and remodelling of *Chirita* and associated genera (Gesneriaceae). — *Taxon* 60: 767–790.
- Wei Y.G., Wen F., Möller M., Monro A., Zhang Q., Gao Q., Mou H.F., Zhong S.H. & Cui C. 2010: *Gesneriaceae of South China*. — Guangxi Science and Technology Publishing House. [In English and Chinese].
- Wen F., Qin, G.L., Wei Y.G., Liang G.Y. & Gao B. 2012a: *Primulina hochiensis* var. *rosulata* (Gesneriaceae) — a new variety at an entrance of a limestone cave from Guangxi, China. — *Phytotaxa* 54: 37–42.
- Wen F., Xi S.L., Wang Y., Xiang M.S. & Fu L.F. 2012b: *Primulina fengshanensis* (Gesneriaceae), a new species from Guangxi, China. — *Annales Botanici Fennici* 49: 103–106.
- Wen F., Li W.L., Zhao B., Liang G.Y. & Wei Y.G. 2012c: *Primulina purpurea* F. Wen, B. Zhao & Y.G. Wei (Gesneriaceae), a new species from China. — *Bangladesh Journal of Plant Taxonomy* 19: 167–172.
- Wen F., Wang F. & Wei Y.G. 2012d: *Primulina yangshuoensis*, a new species of Gesneriaceae from Guangxi, China. — *Taiwania* 57: 55–61.
- Wen F., Zhao B., Liang G.Y. & Wei Y.G. 2013: *Primulina lutvittata* (Gesneriaceae), a new species from a limestone cave in Guangdong, China. — *Annales Botanici Fennici* 50: 87–90.
- Wu L., Zhang Q., Xu W.B. & Mo S.S. 2012a: *Primulina guigangensis* (Gesneriaceae): a new species from limestone area in Guangxi, China. — *Phytotaxa* 38: 19–23.
- Wu W.H., Meng T., Xu W.B., Liu S.Y. & Zhang Q. 2012b: *Primulina sinovietnamica* (Gesneriaceae), a new species identified by both morphological and molecular characters from the limestone area in Guangxi, China. — *Phytotaxa* 60: 32–40.
- Xu W.B., Pan B., Liu Y., Peng C.I. & Chung K.F. 2012a: Two new species, *Primulina multifida* and *P. pseudomollifolia* (Gesneriaceae), from karst caves in Guangxi, China. — *Botanical Studies* 53: 165–175.
- Xu W.B., Liu Y., Kono Y., Chang H., Peng C.I. & Chung K.F. 2013: *Primulina cardaminifolia* (Gesneriaceae), a rare new species from limestone areas in Guangxi, China. — *Botanical Studies* 54: 19–28.
- Xu W.B., Zhang Q., Wen F., Liao W.B., Pan B., Chang H. & Chung K. F. 2012b: Nine new combinations and one new name of *Primulina* (Gesneriaceae) from South China. — *Phytotaxa* 64: 1–8.
- Zhao B., Pan B., Zhang Y. & Wen F. 2013: *Primulina guizhongensis* (Gesneriaceae), a new species from Guangxi, China. — *Phytotaxa* 109: 27–35.