

Primula pengzhouensis (Primulaceae), a new species from Sichuan, southwestern China



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ABSTRACT

A new species, *Primula pengzhouensis* (Primulaceae), from central Sichuan, China, is described and illustrated. It is assigned to *Primula* sect. *Aleuritia* subsect. *Yunnanensis*, and is most similar to *P. socialis*, but can be easily distinguished from that species by its much larger flower and elliptic or ovate-elliptic leaves.

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Primula L., comprising more than 500 species, is the largest genus of Primulaceae (Hu and Kelso, 1996; Mast et al., 2006; de Vos et al., 2013, 2014; APG (Angiosperm Phylogeny Group), 2016). The genus is mainly distributed in the North Temperate Zone, with only a few outliers in the mountainous regions of Africa, tropical Asia, and South America. Its modern species richness center is in West China, with approximately 300 species, most of which occur in western Sichuan, eastern Tibet, and northwestern Yunnan, which are largely located in the Himalayan-Hengduan Mountains region (Hu, 1990, 1994; Hu and Kelso, 1996). In the course of revising the genus *Primula*, a new species was discovered along the marginal regions of the Hengduan Mountains in central Sichuan. Here, we describe this species.

Primula pengzhouensis C.M. Hu, G. Hao & Y. Xu. sp. nov. (Figs. 1 and 2).

Type: CHINA. Sichuan, Pengzhou City, Bailu Zhen, Tangba village, Xiaodong. 31°11'35.57"N, 103°56'29.44"E. Alt. 1170 m. 2016-04-6, Y. Xu Xu16009 (holotype IBSC).

Diagnosis: Planta farinosa scapo subnullo flore solitario bractea unica lineari ad basin pedicelli inserta in sectione *Aleuritia* subsectione *Yunnanensi* (Balf. f.) Smith & Fletcher bene notata; inter species descriptas tantum cum *P. socialis* Chen et C. M. Hu

comparanda, a qua foliis ellipticis vel ovato-ellipticis, nec oblanceolatis, floribus majoribus, praeter alia signa divergit.

Herbs perennial. Leaves forming a rosette girt at base with the remains of old foliage in flowering time; roots many, fibrous. Petioles of outer leaves usually as long as leaf blade, 2–2.5 cm, those of inner leaves 1/3–1/2 the length of leaf blade; leaf blade elliptic to ovate-elliptic, 2–3.5 × 1.5–2.2 cm, broadly obtuse to sub-rounded at apex, gradually tapering into the narrowly winged petiole, margin serrate-dentate, membranous when dry, adaxially farinose, but often with farina extend from petiole to the lower part of the midrib, abaxially more or less covered with a fugacious yellow farina; lateral nerves slender, usually 7 on each side of the midrib. Scape almost obsolete, at most 2 mm tall, immersed in the leaves, bearing one terminal flower. Pedicel up to 10 mm tall, sparsely farinose, with a single linear bract of 0.5–1 mm long inserted at the base. Flowers distylous. Calyx narrowly campanulate, 5–7 mm long, sparingly yellow farinose outside, parted slightly beyond middle, 5-veined; lobes lanceolate, apex acute. Corolla rose or pale purple, exannulate; limb ca. 2 cm wide; tube slender, ca. 1.5 cm long, sprinkled with yellow farina outside; lobes obovate, ca. 10 mm long and 8–9 mm wide at the broadest part, deeply emarginated, with a sinus of 3–4 mm between the two lobules. Pin flowers: stamens ca. 3 mm above base of corolla tube; style ca. 2/3 as long as corolla tube. Thrum flowers: stamens up to 2/3 of corolla tube; style ca. 3 mm.

Distribution and habitat: The new species is presently known only from a small area of Pengzhou, central Sichuan. It grows on

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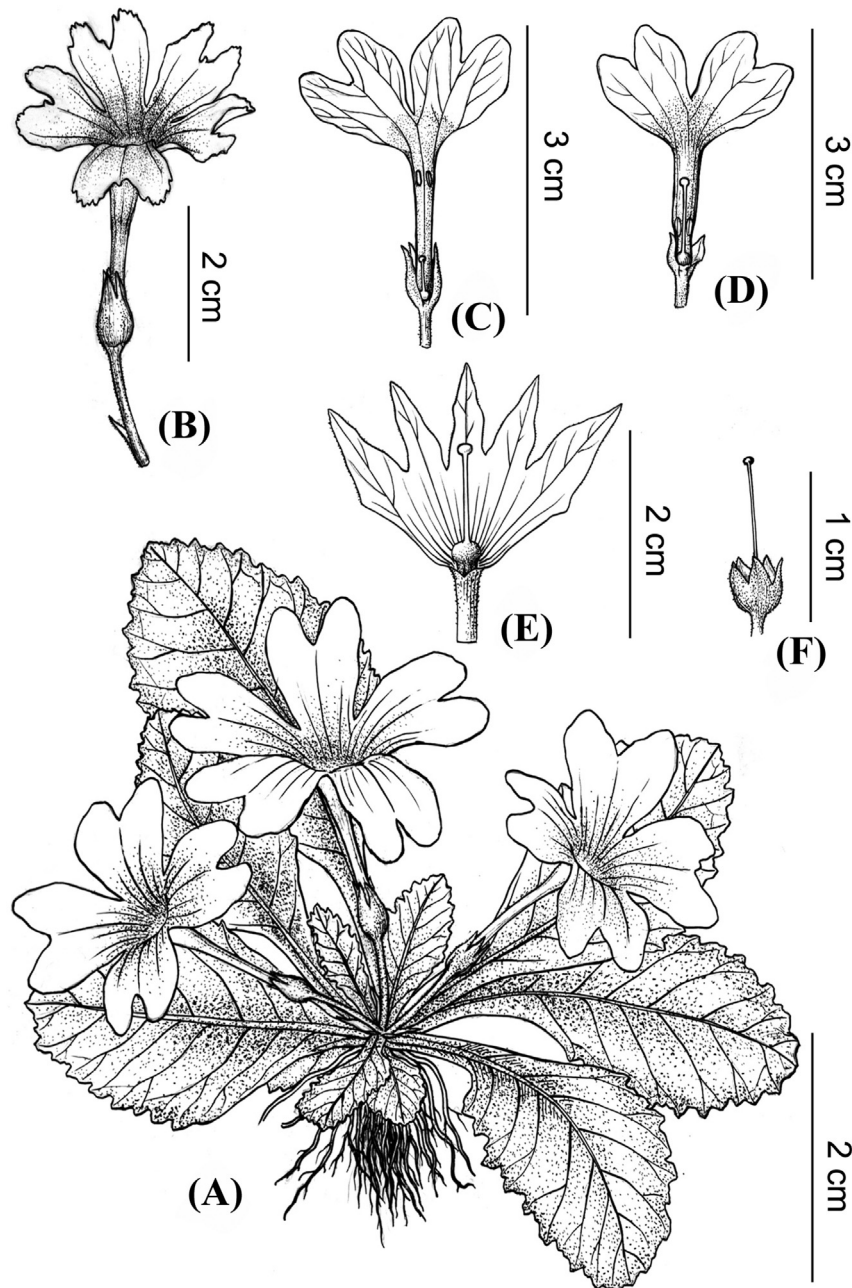


Fig. 1. *Primula pengzhouensis*. **A:** Habit; **B:** Calyx and corolla; **C:** Short-styled flower; **D:** Long-styled flower; **E:** Calyx dissected to show pistil (long-styled flower); **F:** Persistent calyx. Drawn by Yunxiao Liu, from the holotype.

shade and moist cliffs in thin forest, at altitude of 1170 m. Flowering occurs in March to April. Presently only one population with approximately 500 individuals has been found in an area of 3 km². According to IUCN red list criteria (IUCN, 2012), this species should be included in the category ‘Critically Endangered’ (CR) (B2abiii).

Etymology: The epithet of the new species is taken from the Chinese pinyin, “pengzhou”, the name of the city in central Sichuan, China, where the type was collected.

Similar species and remarks: In a previous study (Wu et al., 2013) we made some comments on the non-scapose species in the genus *Primula*, which are uncommon, but sporadically occur in sections *Petiolares* Pax, *Minutissimae* Pax and *Aleuritia* Duby. Based on its leathery capsule opening by teeth (not submembranous and crumbled irregularly as in sect. *Petiolares*), and its habitats in sub-

alpine area with comparatively robust stature (not very tiny plants growing in high mountains as in sect. *Minutissimae*), we assigned the new species to sect. *Aleuritia* subsect. *Yunnanensis* W. W. Smith & Fletcher (Smith et al., 1941–1949). Including the recently described *P. mianyangensis* G. Hao & C.M. Hu, the new species is the third non-scapose species in *Yunnanensis* group. Its affinity is with *P. socialis* Chen & C.M. Hu from southern Yunnan, but can be easily distinguished from that species by its much larger flower and elliptic or ovate-elliptic leaves. Its long corolla tube resembles that of *P. membranifolia* Franch., while its vegetative growth is also somewhat similar to *P. kialensis* Franch, but these two species both have conspicuous scape bearing a 2–6-flowered umbel. Seven species are thus included in subsect. *Yunnanensis*, which can be distinguished from one another by the following key.

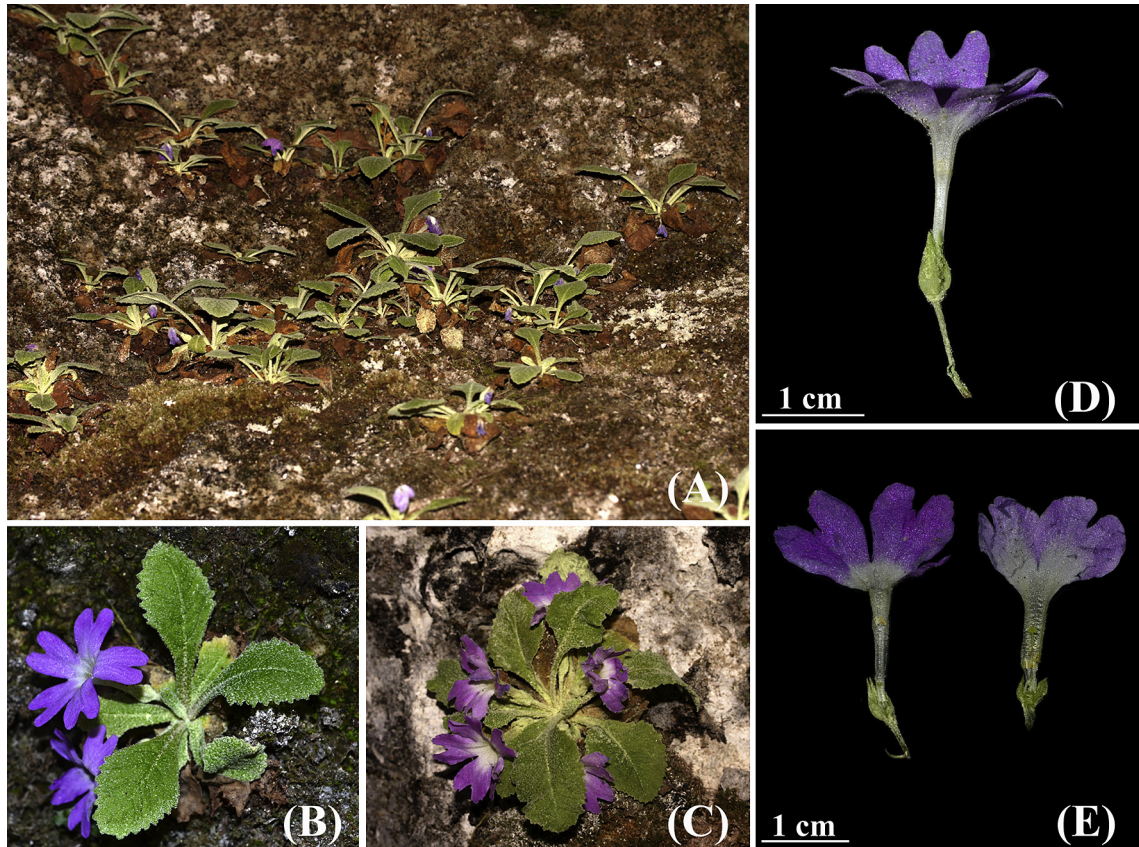


Fig. 2. *Primula pengzhouensis* in the wild. **A.** Type locality; **B.** Habit in flowering, showing entire margin of the corolla lobe; **C.** Habit in flowering, showing the occasionally finely toothed corolla lobes apically; **D.** Calyx and corolla; **E.** Pin and thrum flowers. Photographed by Yuan Xu.

- 1. Corolla funnelform.....2
- 1. Corolla campanulate..... *P. nutantiflora*
- 2. Scapes obsolete; bracts 13.
- 2. Scapes well developed; bracts 2 to many.....5
- 3. Pedicel length 3–4.5 cm..... *P. mianyangensis*
- 3. Pedicel length less than 2 cm.....4
- 4. Petiole very short to nearly as long as leaf blade, corolla tube ca. 7 mm long.....*P. socialis*
- 4. Petiole usually as long as leaf blade, corolla tube ca. 1.5 cm long.....*P. pengzhouensis*
- 5. Corolla tube 3–4 × as long as calyx; leaf blade membranous *P. membranifolia*
- 5. Corolla tube ca. 2 × as long as calyx; leaf blade not membranous.....6
- 6. Scapes 1–1.5 × as long as pedicel *P. kialensis*
- 6. Scapes at least 3 × as long as pedicel.....*P. yunnanensis*

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