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Primulina carinata (Gesneriaceae), A New Species from Guangxi, China

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ABSTRACT. *Primulina carinata* Y. G. Wei, F. Wen & H. Z. Lü (Gesneriaceae) is described and illustrated as a new species endemic to Guangxi, China. It is similar to *P. parvifolia* (W. T. Wang) Yin Z. Wang & J. M. Li, but can be distinguished by its lack of stolons, by its longer peduncle 12–20 cm or more (vs. 5.3–5.6 cm in *P. parvifolia*), by the longer pedicels 10–12 mm (vs. ca. 8 mm), by the ventral surface of the corolla tube longitudinally constricted, forming a keel (vs. the upper portion of corolla tube swollen, forming an elevated ridge), by the staminal filaments sparsely glandular puberulent (vs. glabrous), and by three staminodes (vs. two), with the lateral two at different lengths, ca. 4 mm and ca. 2 mm (vs. the staminal pair at equal length, ca. 5 mm).

Key words: China, Gesneriaceae, Guangxi, IUCN Red List, *Primulina*.

Recently, the described species of *Chiritopsis* W. T. Wang and *Chirita* sect. *Gibbosaccus* C. B. Clarke, as well as two species of *Wentsaiboea* D. Fang & D. H. Qin, were merged within *Primulina* Hance (Möller et al., 2011; Wang et al., 2011; Weber et al., 2011; Xu et al., 2012). Thus, this originally monotypic genus has dramatically increased in size, with at least 140 species and nine varieties (Weber et al., 2011, 2013; Möller et al., 2013; Wen et al., 2013). Following examination of specimens collected in 2007 from Guangxi, China, we discovered an evidently rare species of *Chirita* Buch.-Ham. (now *Primulina*) in Wuming County, central Guangxi. Many species of *Primulina* (formerly in *Chirita* sect. *Gibbosaccus*) were reported in the past few years from Guangxi and adjacent provinces (Li & Wang, 2008; Xu et al., 2008; Li & Möller, 2009; Wen et al., 2009;

Huang et al., 2010; Xu et al., 2010; Tang & Wen, 2011; Huang et al., 2011). After carefully consulting specimens and literature related to these known species, including local and national floras on *Primulina* in neighboring regions (Wood, 1974; Wang, 1985, 1990; Wang et al., 1998; Nguyen & Kiew, 2000; Burt, 2002; Li & Wang, 2004; Wei et al., 2010) and including the study of herbarium material, we have concluded that the Guangxi taxon represents a new species, which is described and illustrated herein. In addition, living plants were collected and cultivated and are currently cultivated in the greenhouse at the Guangxi Institute of Botany for ex situ conservation of this rare and poorly known species.

Primulina carinata Y. G. Wei, F. Wen & H. Z. Lü, sp. nov. TYPE: China. Guangxi Zhuang Autonomous Region: Wuming Co., Chengxiang town, growing in transverse crevice of cliff, on top of a limestone hill, 22 Sep. 2007, F. Wang & Y. G. Wei WM-GC0702 (holotype, IBK; isotype, MO). Figure 1.

Chirita vesiculosum Y. G. Wei, Fang Wen & H. Z. Lü, nom. nud. (Wei et al., 2010: 490–491, figs. 1–3).

Haec species *Primulinae parvifoliae* (W. T. Wang) Y. Z. Wang & J. M. Li affinis, sed ab ea stolonibus nullis, pedunculis longioribus 12–20 (vel plus) cm longis, pedicellis longioribus 10–12 mm longis, corollae tubo inferne longitrosum constricto carinam formante, filamentis glanduloso-puberulis atque staminodiis 3 duobus lateralibus inaequalibus ca. 4 mm longis et ca. 2 mm longis mediano 0.8–1 mm longo distinguitur.

Herbs perennial, stemless; rhizome 35–84 mm, 4.5–6.5 mm diam., infrequently sprouting from

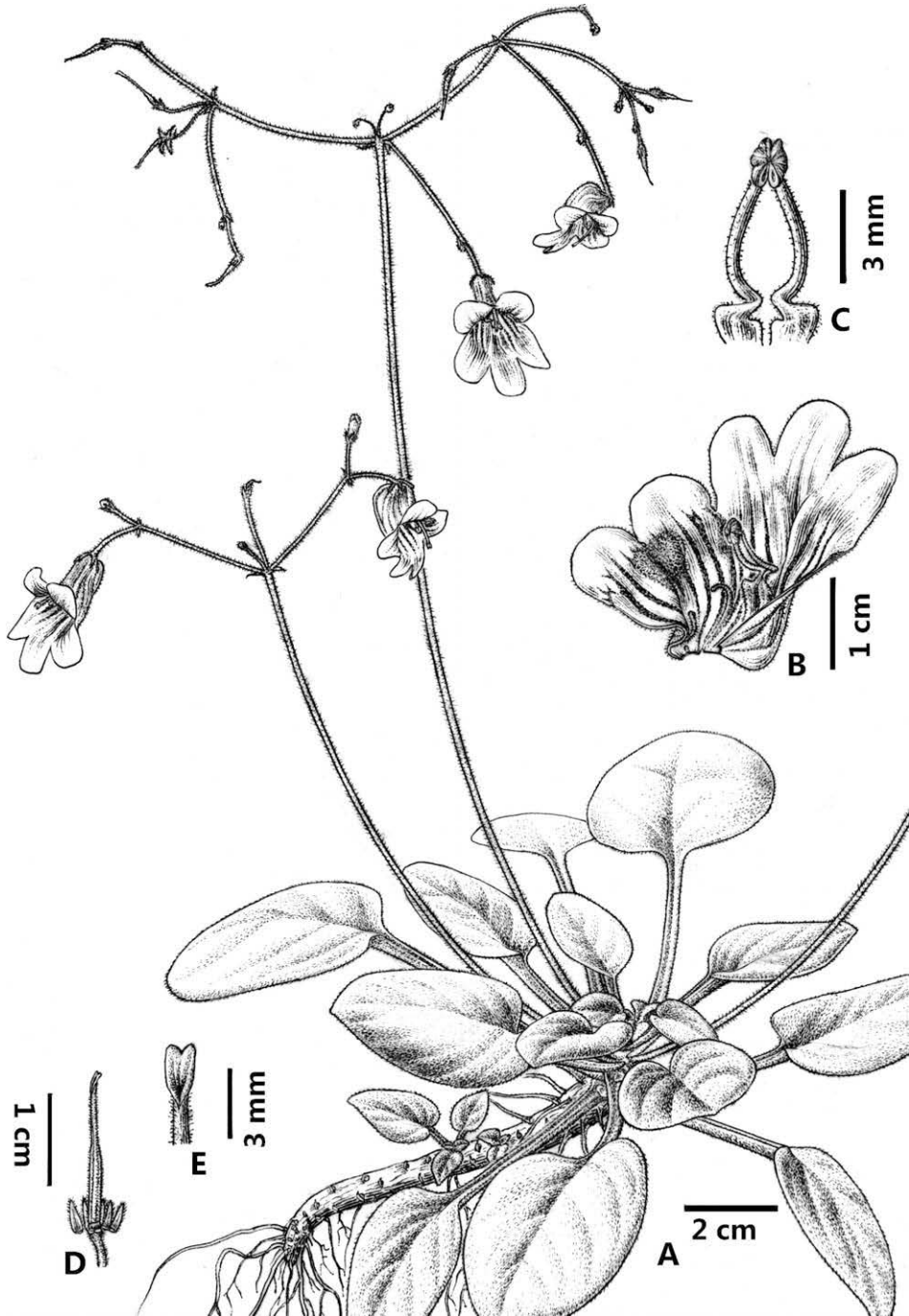


Figure 1. *Primulina carinata* Y. G. Wei, F. Wen & H. Z. Lü. —A. Habit. —B. Corolla dissected open to show stamens and staminodes. —C. Stamens geniculate near the base. —D. Calyx and pistil, with corolla tube removed. —E. Close-up of stigmatic region. Drawn by Y. X. Zhu from the holotype F. Wen & Y. G. Wei WM-GC0702 (IBK).

rhizome node. Leaves 9 to 15 or more, commonly clustered at rhizome apex, with 3 leaves per whorl; petioles flattened, $18.5\text{--}58.5 \times 4\text{--}4.5$ mm, densely appressed puberulent; blades carnosely or leathery,

papyery when dry, broadly elliptic to ovate, $40\text{--}50 \times 30\text{--}40$ mm, dense, white appressed puberulent, base rounded, margin entire, apex obtuse; lateral veins 3 to 5, inconspicuous. Cymes lax, 3 to 5 per rosette,

axillary, 1- or 2-branched, each 6- to 12-flowered or more; peduncle 12–20 cm or longer, densely appressed puberulent; bracts 2, opposite, subulate to lanceolate, 4–5 × 1–1.5 mm, margin entire, appressed puberulent; pedicel 10–12 mm, dense, erect brownish glandular puberulent. Flower with calyx 5-lobed, dissected to near base, base slightly united, calyx segments nearly equal, narrowly lanceolate, 1.2–1.3 × 0.35–0.4 mm, apex acute, externally pubescent, internally glabrous, margins entire; corolla purple or purplish red, externally and internally with purplish brown stripes, 20–27 mm, externally sparsely puberulent, internally glabrous; corolla tube narrowly funnelform, 8–11 mm, ventral surface longitudinally constricted, forming clearly carinate; limb distinctly 2-lipped, purple, adaxial lip ca. 5.5 mm, 2-parted to base, lobes 8–9 mm wide; abaxial lip 10–13 mm, 3-parted to near middle, lobes rounded-ovate, 7.2–7.8 mm wide; stamens 2, adnate to ca. 5 mm above corolla base; filaments lanceolate-subulate, 6.5–8 mm, geniculate near base, sparsely glandular puberulent; staminodes 3, the lateral two unequally long, longer staminode ca. 4 mm, curved, adnate 5–5.4 mm above corolla base, shorter staminode ca. 2 mm, straight, adnate to 2–2.5 mm above corolla base, both sparsely glandular puberulent, linear, apex capitate; middle staminode 0.8–1 mm long, adnate to corolla tube base, glabrous; disc annular, ca. 1 mm high, glabrous; pistil ca. 15–17 mm, ovary linear, 9–10 × 1.5–1.6 mm, puberulent; style 6–6.5 mm, densely glandular puberulent; stigma obtrapezoid, ca. 2.6 mm, 2-lobed. Capsule linear.

Distribution and ecology. Only one population of *Primulina carinata* was found in the crevices of a steep cliff near the top of a limestone hill in Wuming County, Guangxi, China, at ca. 114 m in elevation.

IUCN Red List category. Only a single population with ca. 30 individuals is known to exist at the type locality. All individuals were found growing in a large horizontal crevice close to the top of the limestone hill of a karst tower. The hill is isolated by paddy fields. We therefore assess *Primulina carinata* as Critically Endangered (CR), according to IUCN Red List criteria (IUCN, 2001). The CR category assessment of this new species is based on the distributional range that extends ca. 5 km² around the type locality at present, as observed in the past three years.

Phenology. The flowering specimens of *Primulina carinata* have been collected from August to September; fruiting occurred in October.

Etymology. *Primulina carinata* is named for the corolla tube with the ventral keel that superficially resembles a cariniform shape.

Primulina carinata is easily distinguished from all other species of *Primulina* by its special flower structure. The ventral surface of the corolla tube is longitudinally constricted, to form a distinct carinate shape. This new species is morphologically similar to *P. parvifolia* (W. T. Wang) Yin Z. Wang & J. M. Li in having similar vegetative structures, for example, the broadly elliptic to ovate leaf blades. *Primulina parvifolia* occurs in Guigang, in Guangxi Zhuang Autonomous Region, China. The distributional areas of these two species are not far from each other, only ca. 180 km apart. However, the new taxon differs from *P. parvifolia* by having a more slender and longer peduncle 12–20 cm (vs. a shorter one, only 5.3–5.6 cm) and longer pedicles 10–12 cm (vs. ca. 8 mm), by the longitudinally carinate ventral surface of the corolla tube that forms a keel (vs. the corolla tube swollen dorsally to form an elevated ridge in the other species), by the three staminodes (vs. two), with the lateral two dissimilar in length, ca. 4 mm and ca. 2 mm, respectively (vs. only two staminodes of similar length, ca. 5 mm).

Paratypes. CHINA. **Guangxi Zhuang Autonomous Region:** Wuming Co., Chengxiang town, Dengliu village, in transverse crevice of cliff, on top of a limestone hill, 27 Sep. 2007 (fl.), F. Wen & Y. G. Wei WM-GC0703; 20 Sep. 2008, F. Wen WM0801 (IBK, MO).

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