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Oreocharis uniflora, a new species of Gesneriaceae from Guangdong, China

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Abstract

Oreocharis uniflora, a new species of Gesneriaceae from Guangdong, China, is described and illustrated. The new species is morphologically similar to *O. striata* and *O. lungshengensis*, but differs mainly by its white villous leaf blades and petioles, 1-flowered cymes, shorter peduncles (1.8–3.5 cm long), 3–5-serrate calyx lobes, pale purple to reddish purple corollas, inside with longitudinally purple striations, campanulate-tubular corolla tubes, 4 free stamens, and 1 disc-shaped stigma. Based on the current information, *O. uniflora* should be considered as 'Critically Endangered' (CR), following the IUCN categories and criteria.

Introduction

Recently, several new species have been found from Lianhuashan-Baipanzhu Nature Reserve in southeastern Guangdong, China, such as, *Oreocharis pilosopetiolata* Yang & Kang in Yang *et al.* (2015b: 287) and *Fordiophyton huizhouense* Zeng & Zhuang in Zeng *et al.* (2016: 57). We have focused our research on floristic studies in this area for many years. In October 2012, we found an unknown plant of Gesneriaceae there. Further fieldwork was conducted at the same locality, in March 2015 and 2016, and the flowering specimens were collected. The gross morphology, such as basal leaves, four free stamens, oblong anthers, indicates that this taxon can be assigned to the recently re-circumscribed *Oreocharis* Bentham (1876: 1021), which now embraces eleven formerly monotypic genera based on molecular data and morphological evaluation (Möller *et al.* 2011). At first glance, this species is similar to *O. striata* Wen & Yang in Yang *et al.* (2015a: 369) by the corolla tube with longitudinally purple striations, but distinctively differs by its four free stamens. It can be also related to *O. lungshengensis* (Wang 1975: 102) Möller & Weber in Möller *et al.* (2011: 23) by its similar leaf blade and indumentum throughout the plant, but obviously differs by its 4 free stamens. After comprehensive literature analysis (Pan 1987, Wang *et al.* 1998, Li 2004a,b, Möller *et al.* 2011, Chen *et al.* 2014, Möller *et al.* 2014), we concluded that it is a new species of *Oreocharis*, which we hereby describe and illustrate.

Taxonomic treatment

Oreocharis uniflora L.H.Yang & M.Kang *sp. nov.* (Figs 1 & 2)

Diagnosis:—*Differing from O. striata by its white villous petioles and leaf blades, less lateral veins (5–6 on each side of midrib), 1-flowered cymes, shorter peduncles (1.8–3.5 cm long) and pedicels (1.0–1.5 cm long), 3–5-serrate calyx lobes, campanulate-tubular corolla tube, 4 stamens, and 1 disc-shaped stigma. Differing from O. lungshengensis by its 1-flowered cymes, 3–5-serrate calyx lobes, pale purple to reddish purple corolla, inside with longitudinally purple striations, campanulate-tubular corolla tube, 4 free anthers, and 1 disc-shaped stigma.*

Type:—CHINA. Guangdong: Huidong County, Baipenzhu Town, on rock surface under evergreen broad-leaved forest in the Lianhuashan-

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Baipanzhu Nature Reserve, elevation 300–600 m, 23°05′N, 115°13′E, 3 March 2016 (flowering), *Li-Hua Yang et al. YLH285* (holotype: IBSC!).

Perennial herbs, rosulate, rhizomatous stem, subterete, 0.9–1.3 cm long, 5–8 mm in diameter. Leaves basal, 8–12, clustered at the apex; petiole terete, 1.3–3.5 cm long, 2–3 mm in diameter, densely white villous; leaf blade elliptic to elliptic-ovate, 6–9 × 3.1–5.2 cm, papery when dried, margin serrate to crenate, apex obtuse to subacute, base cordate to broadly cuneate and slightly unequal, adaxial surface densely to sparsely white villous, abaxial surface densely villous along veins; lateral veins 5–6 on each side of midrib, adaxially concave, abaxially prominent. Cymes 1–2, axillary, 1-flowered; peduncle slender, 1.8–3.5 cm long, ca. 1.3 mm in diameter, densely white villous; bracts 2, opposite, 3.5–4.5 × 1.1–1.5 mm, narrowly lanceolate, margin entire, apex acute, outside densely white villous; pedicel 1–1.5 cm long, ca. 1 mm in diameter, white villous. Calyx 5-parted to near base, lobes equal, lanceolate, 5.3–7.8 × 1.4–2.8 mm, margin 3–5-serrate, apex acute, outside white villous and inside glabrescent. Corolla pale purple to reddish purple, inside with longitudinally purple striations, outside sparsely puberulous, inside glabrescent, 3.5–4 cm long, tube campanulate-tubular, not swollen, 2.5–2.9 cm long, ca. 1cm in diameter at the mouth; limb distinctly 2-lipped, all lobes broadly oblong, apex obtuse, margin slightly premorse; adaxial lip 2-lobbed near base, lobes 7.5–8.8 × 7.7–8.5 mm, abaxial 3-lobbed near base, lobes 9.1–10 × 8.4–9.2 mm; stamens 4, free, included, slightly unequal in length, adnated to 1.3–1.7 cm above corolla base; filaments slender, glabrous, the long two 2.5–5.8 mm long, the short two 2.1–4.8 mm long; anthers oblong, basifixed, dehiscing longitudinally, glabrous, 4–5 × 1–1.2 mm; staminode absent. Disc ca. 1.5 mm high, erose. Pistil 2.5–2.9 cm long; ovary linear, 1.4–1.7 cm long, densely pubescent, style 1–1.2 cm long, densely pubescent, stigma 1, disc-shaped, emarginate. ca. 1.2 mm in diameter. Capsule 2.3–3.5 cm, glabrescent, dehiscing loculicidally to base, initially on one side, valves 2, straight, not twisted.

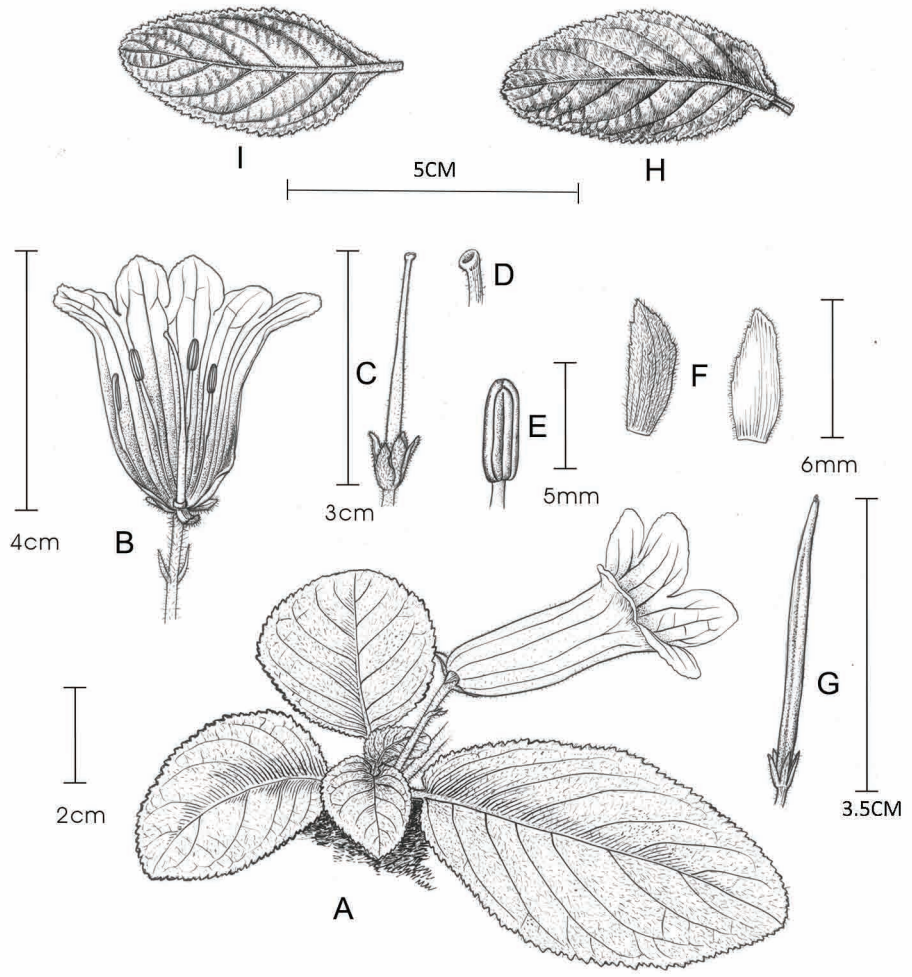

FIGURE 1. *Oreocharis uniflora* sp. nov. (A) habit, (B) opened corolla showing stamens, (C) pistil, (D) stigma, (E) anther, (F) calyx lobes, (G) fruit, (H) adaxial leaf surface, (I) abaxial leaf surface. Drawn by Yun-Xiao Liu from the holotype.

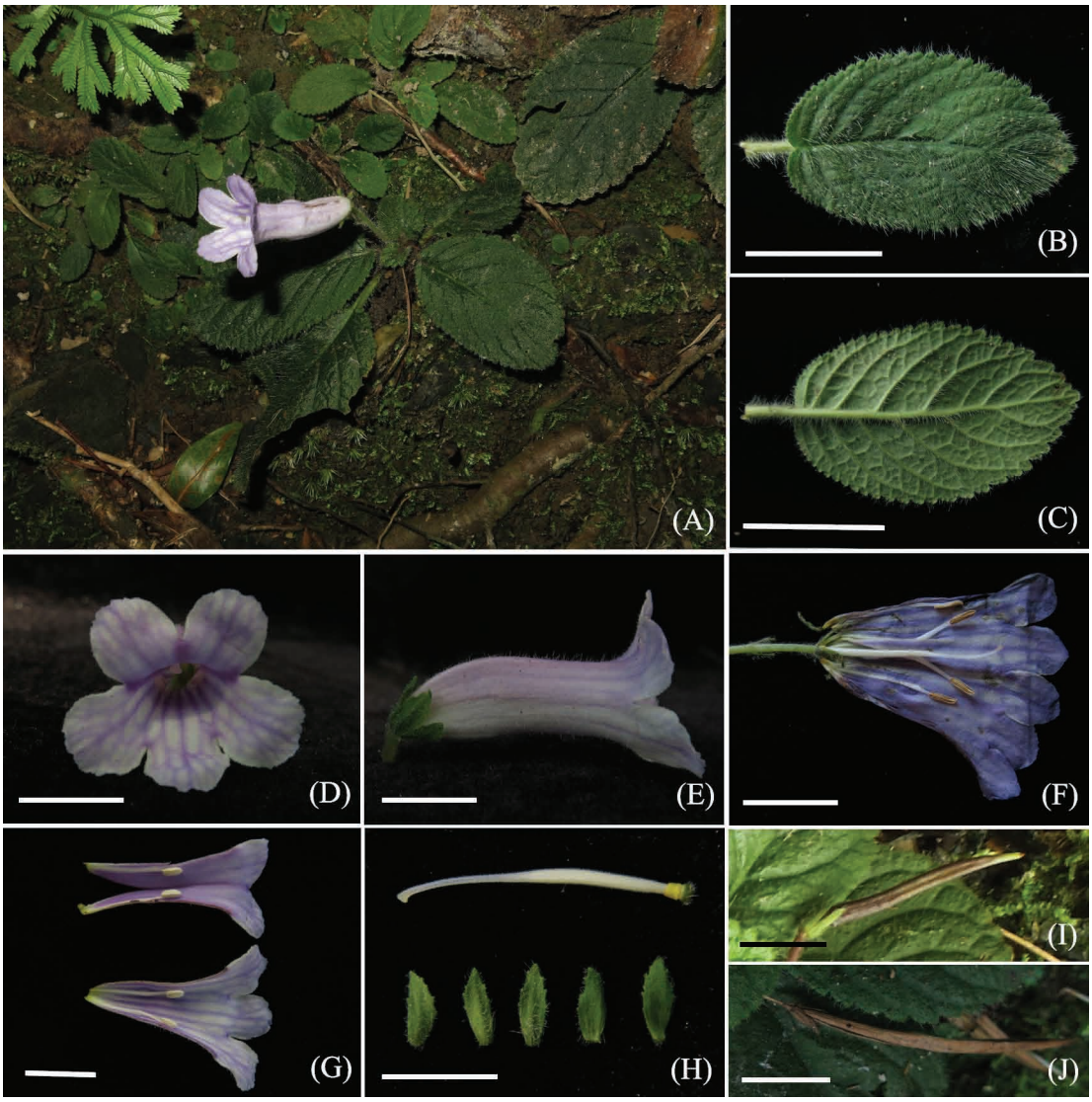

FIGURE 2. *Oreocharis uniflora* sp. nov. (A) habit, (B) adaxial leaf surface, (C) abaxial leaf surface, (D) flower in front view, (E) flower in side view, (F, G) opened corolla showing stamens, (H) pistil and calyx, (I) mature fruits before dehiscence, (J) dehisced fruits. Scale bars: B, C = 3 cm, D–J = 1 cm. Photos by Li-Hua Yang.

Distribution and habitat:—At present, this new species is only known from the type locality, Lianhuashan-Baipanzhu Nature Reserve in southeastern Guangdong, China (Fig 3). Plants grow on moist rock surface under evergreen broad-leaved forests, at an elevation ca. 300–600 m.

Phenology:—This new species flowering from February to March, and fruiting at April.

Etymology:—The specific epithet is derived from the 1-flowered cymes.

Conservation status:—There are only three adjacent and small populations of *Oreocharis uniflora* at the type locality, with no more than 100 mature individuals in all. Based on the current information, *O. uniflora* should be considered as 'Critically Endangered' (CR): B2ab (ii, iii)+C2a(i, ii), following the IUCN categories and criteria (IUCN 2016).

Additional specimens examined (paratype):—CHINA. Guangdong: Huidong County, Baipenzhu Town, same locality as type, 25 March 2015, *Li-Hua Yang et al. YLH198* (Huizhou Forestry Research Institute!).

Discussion:—*Oreocharis uniflora* is morphologically similar to *O. striata* and *O. lungshengensis*. After comparing the specimens and literature of *O. striata* and *O. lungshengensis* with *O. uniflora*, we found that this new species can be clearly differentiated from both by several characters described in the diagnosis, and the detailed morphological comparison is provided in Table 1. In fact, the morphology of *O. uniflora* is somewhere between *O. striata* and *O. lungshengensis*, the characteristics, such as, elliptic to elliptic-ovate leaf blade, white villous pubescence, leaf base cordate to broadly cuneate and 4 stamens are more similar to *O. lungshengensis*, but the corolla pale purple to reddish purple, inside with longitudinally purple striations and free anthers are more like *O. striata*, and the geographic distribution of *O. uniflora* is also between *O. striata* and *O. lungshengensis* (Fig 3). In addition, it is worth noting

that four free stamens and campanulate-tubular tube of this new species are also similar to *Oreocharis cavaleriei* H. Léveillé, but the leaf, cymes, flower color, indumentum and geographical distribution are distinctively different from the latter.

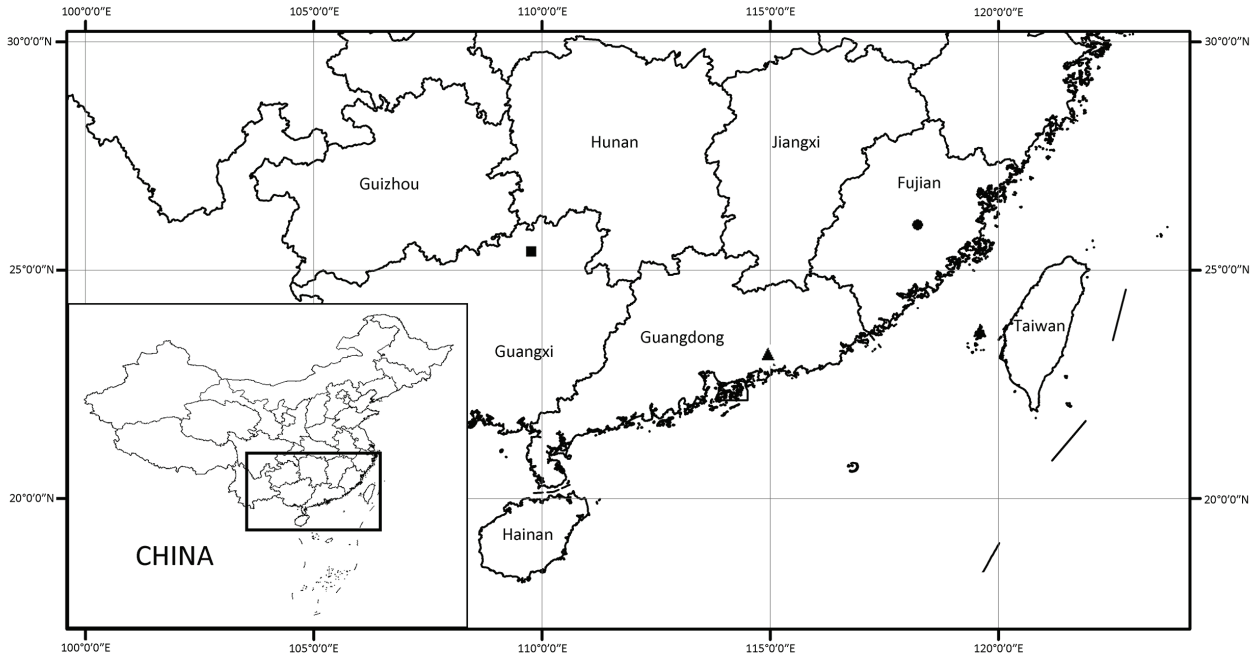

FIGURE 3. Geographic distribution of *Oreocharis uniflora* (triangle), *O. striata* (circle) and *O. lungshengensis* (square).

TABLE 1. Morphological comparison of *Oreocharis uniflora*, *O. striata* and *O. lungshengensis.*

Characters	*O. uniflora*	*O. striata*	*O. lungshengensis*
Petiole	1.3–3.5 cm long, densely white villous	2.5–10.5 cm long, densely appressed rubiginous villous	ca. 8 cm long, densely white villous
Leaf blade indumentum	adaxially densely to sparsely white villous, abaxially densely villous along veins	adaxially densely apressed pubescent, abaxially densely brownish sericeous-woolly along veins	adaxially surface of leaf blade white villous, abaxially pubescent
Leaf blade base	cordate to broadly cuneate	cuneate	rounded to cordate
Lateral veins	5–6 pairs	6–10 pairs or more	4–6 pairs
Cymes	1-flowered	2–5-flowered	2–4-flowered
Peduncle	1.8–3.5 cm long	6–10 cm long	4–9 cm long
Pedicel	1–1.5 cm long	1.8–3.6 cm long	4–7 mm long
Calyx lobe	margins 3–5-denticulate	margin entire	margin entire
Corolla	pale purple to reddish purple, inside with longitudinally purple striations	reddish purple, inside with longitudinally white striations	pink to purple-red, inside with both spots and striations
Corolla tube	campanulate-tubular, 2.5–2.9 cm long	narrowly funnelform, 3–3.5 cm long	tubular, 2.3–3.0 cm long
Stamens	4, anthers free	2, anthers free	4, anthers coherent in pairs
Filament	Glabrous, smooth	Glabrous, verrucose in the upper half portion	glandular puberulent near apex, smooth
Stigma	1, disc-shaped	2, ovate, apex acute	2, ovate, apex acute
Flowering time	February to March	August	September to October

Acknowledgments

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