



Petrocosmea funingensis (Gesneriaceae): a new species from southeastern Yunnan, China

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Abstract

Petrocosmea funingensis, a new species from southeastern Yunnan, China is here described and illustrated. Based on morphological characters it is assumed to belong to section *Anisochilus*, because of the shallow or slight split of the corolla lobes with the upper lip being nearly half as long as the lower one. Within the section, the new species is associated with the species from series *Iodioides*, due to the particularly extensive fusion of the two adaxial lobes and is morphologically most similar to *P. huanjiangensis* and *P. iodioides*, especially in floral structure and traits, but can be distinguished from these species by several quantitative and qualitative characters of the leaves, peduncles, calices, stamens, staminodes and styles.

Introduction

Petrocosmea Oliver, with ca. 30 formally recognized species (Wang, 1985, Li & Wang 2004, Wei *et al.* 2010), is a genus of small lithophytic herbs in the family Gesneriaceae. The genus has a centre of diversity in the plateau of southwestern China, where more than 20 species have been recorded (Wang *et al.* 1998, Li & Wang 2004, Wei *et al.* 2010). According to the last complete revision of the genus by Wang (1985), 27 species with 4 varieties were recognized in three sections: section *Deinantha* Wang, which is characterized by its constricted anther apex; section *Anisochilus* Hemsl., which possesses slightly split corolla lobes, with the upper lip nearly half as long as the lower one; and section *Petrocosmea*, which has deeply split and almost equally long lobes (Li & Wang 2004). Almost all the known *Petrocosmea* taxa have been recorded as being restricted to small areas on moist limestone rocks in montane forests, usually at elevations over 1000 meters and several new species have been described in the genus during the last decade (e.g. Wei & Wen 2009, Middleton & Triboun 2010, Zhao & Shui, 2010, Xu *et al.* 2011c, Qiu *et al.* 2012). In addition to new species of *Petrocosmea*, numerous new species of Gesneriaceae have recently been described from southern China, further increasing the knowledge of this diverse family (e.g. Xu *et al.* 2008, Li & Möller 2009, Huang *et al.* 2010, Li & Zhu 2010, Xu *et al.* 2010, Huang *et al.* 2011, Wu *et al.* 2011, Xu *et al.* 2011a, 2011b, 2011c, Hong *et al.* 2012, Huang *et al.* 2012, Qiu *et al.* 2012, Wen *et al.* 2012, Wu *et al.* 2012, Xu *et al.* 2012).

During recent field studies in May 2012, a population of *Petrocosmea* was found flowering at a limestone cave entrance at an elevation of ca. 1400 m in Funing County in the province of Yunnan. This new population has flowers with a slightly divided upper lip that is much shorter than the lower one, so this species can be attributed to *Petrocosmea* section *Anisochilus*. After comparing the plants with all recognized species of the genus in relevant literature (e.g. Wang *et al.* 1998, Li & Wang 2004, Wei & Wen 2009, Middleton & Triboun 2010, Wei *et al.* 2010, Zhao & Shui 2010, Xu *et al.* 2011c) and comparing our plants against other specimens of *Petrocosmea*, the population was confirmed to be distinguishable from all others and therefore it must represent an undescribed species, which we describe below.

Taxonomy

Petrocosmea funingensis Q.Zhang & B.Pan, *sp. nov.* (Fig. 1)

A new species with leaf blades that are significantly larger than those of all other species in *Petrocosmea* sect. *Anisochilus*. Its flowers appear to be associated with the species from series *Iodioides* sect. *Anisochilus* because of the fusion (only slightly divided) of the upper lip and is most similar to *Petrocosmea huanjiangensis* Y.Liu & W.B.Xu in Xu *et al.* (2011: 385) and *P. iodioides* Hemsley (1899: 2599). It is distinguished by the densely lanate filaments that are previously only known from the recently described *P. huanjiangensis*, but the latter differs in having significant smaller and peltate leaves, constricted anthers, glabrous staminodes, densely pubescent styles and green peduncles etc. The diagnostic characters of the new species and the two morphologically similar taxa are listed comparatively in Table 1.

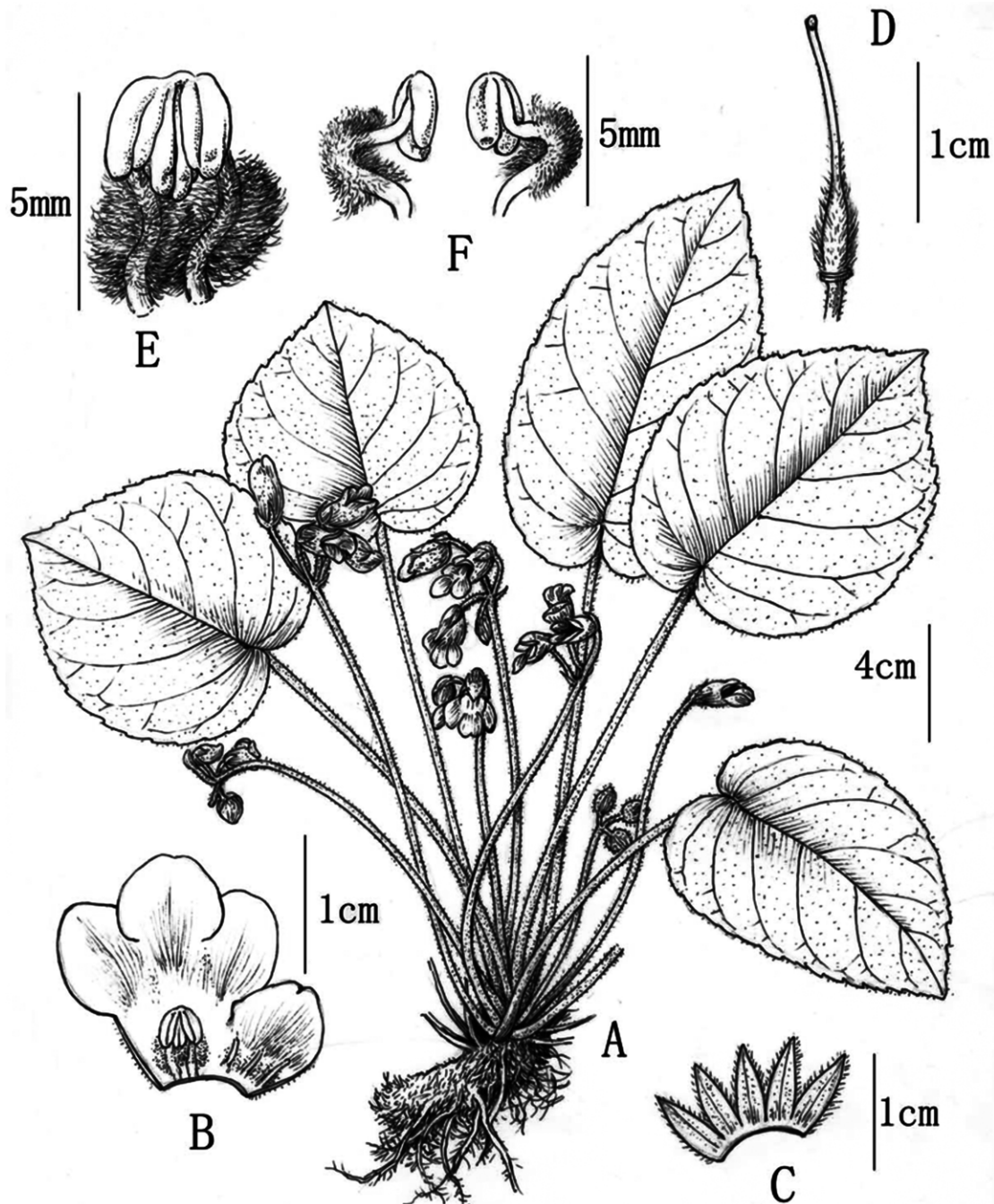


FIGURE 1. *Petrocosmea funingensis*. A) Habit; B) Corolla opened showing stamens; C) Calyx; D) Pistil; E–F) Stamen. Drawn by Wen-Hong Lin.

Type:—CHINA. Yunnan: Funing County, Tianpeng town. 1 400 m, 10 May 2012, *Q. Zhang & B. Pan 1579* (holotype IBK!, isotype PE!).

Perennial, rosette-forming herbs. Rhizomes 2.0–5.5 cm long, 1–2 cm thick with fibrous roots. Leaves 5–20 per plant, basal, long-petiolate, papery when dry; petioles cylindrical, 4–12 cm, pubescent; leaf blades ovate to broadly ovate or broadly elliptic, 5–15 × 4–8 cm, adaxially pubescent, abaxially brown glandular and pilose along the veins, bases cordiform, sometimes inequilateral, margins serrate, apices acute; lateral veins 5–8 on each side of the midrib, adaxially impressed, abaxially conspicuous. Cymes variable in number, 2–4 flowers per inflorescence; peduncles 6–10 cm, pilose; bracts 1, narrowly lanceolate, 5–7 mm, margins entire, pubescent; pedicels 1.5–2.5 cm long, pubescent. Calices red to purple, 5-lobed to the base, lobes almost equal in length, lanceolate, ca. 6 × 1 mm, pubescent outside, glabrous inside. Corolla blue to purple, 1.2–1.5 cm, pubescent outside, glabrous inside; tube ca. 6.5 mm, two yellow spots at the base inside; upper lip ca. 5 mm, slightly 2-lobed; lower lip ca. 1.0 × 1.2 cm, shallowly 3-lobed, central lobe subrotund, lateral lobes broadly ovate. Stamens 2, ca. 5 mm long, adnate to the corolla tube at the base; filaments linear, geniculate near the middle, 4 mm, densely lanate around the middle; anthers oblong, ca. 3 mm, dorsifixed, glabrous; staminodes 3, linear, ca. 2 mm, thinly pubescent at the middle, adnate ca. 1 mm above the corolla base. Pistil ca. 1.2 cm; ovary ca. 4 mm long, 2 mm wide, pubescent; style ca. 7 mm long, glabrous. Fruit not seen.

Distribution, habitat and ecology:—*Petrocosmea funingensis* has hitherto only been found from one locality (at the entrance of a limestone cave) in Tianpeng town, Funing County, Yunnan Province, southwest China. The plants grow on the precipice of a limestone cave entrance at an elevation of ca. 1400 m. The place has a subtropical montane climate and is covered with evergreen forest, with a documented annual average temperature 15.6 °C, an average precipitation of 1210.6 mm annually and an average humidity of 89%.

Phenology:—The specimens of the new species flower in May.

Etymology:—The epithet is derived from the type locality Funing County, Yunnan Province, southwest China.

TABLE 1. Morphological comparisons of *Petrocosmea funingensis* with *P. huanjiangensis* and *P. iodoides*.

	<i>Petrocosmea funingensis</i>	<i>P. huanjiangensis</i>	<i>P. iodoides</i>
Leaf	not peltate	peltate	not peltate
Leaf lade	5–15 × 4–8 cm	1.5–3.5 × 1.5–2.5 cm	1.5–5 × 1.5–4.5 cm
Peduncle	red to purple	green	green
Calyx	outside red to purple	outside green	outside green
Filament	ca. 4 mm long, densely lanate	6–7.2 mm long, densely lanate	2.2–2.5 mm long, puberulent
Anther	not constricted at the apex	constricted near the apex	not constricted at the apex
Staminode	3, thinly pubescent at the middle	3, glabrous	2, glabrous
Style	glabrous	densely pubescent	glabrous

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