



Petrocosmea qiruniae (Gesneriaceae), a new species from Guizhou, China with supplementary data and revised description of *P. leiandra*

Meng-Qi Han¹, Quan Yuan¹, Tian-Feng Lü^{2,3}, Li-Bing Zhang^{4,5} & Yan Liu⁶

Summary. *Petrocosmea qiruniae* M.Q.Han, Li Bing Zhang & Yan Liu (Gesneriaceae), a new species from Guizhou, China, is described and illustrated. It is most similar to *P. leiandra* (W.T.Wang) Z.J.Qiu in leaf blade shape and corolla type, especially in the colour of corolla throat and spots, indumentum of the stamens and the anther and ovary morphology. It was found on humid cliffs in an enormous limestone cave called the Qingxu Cave. In addition, *Petrocosmea leiandra*, based on *P. martini* H.Lév. var. *leiandra* W.T.Wang, originally published with very few descriptive data, is supplemented with more morphological data and a revised description.

Key Words. Lamiales, Limestone caves, taxonomy.

Introduction

Previously, almost all species of *Petrocosmea* Oliv. were described solely from herbarium specimens which do not show the full range of the corolla coloration and obscure the indumentum of reproductive organs. Comprehensive field observations are therefore indispensable in the taxonomy of this genus.

During recent botanical field work in limestone areas of China in 2015, a plant of *Petrocosmea* from a limestone cave in Guizhou Province was collected. It was readily distinguished from the morphologically most similar species, *P. leiandra* (W.T.Wang) Z.J.Qiu, in having villous filaments. However, *P. leiandra* was poorly known because there were very few specimens available in herbaria and the original description was very simple. In 2016, however, we were fortunate to collect and observe *P. leiandra* from the type locality and establish more differences between the two species. After careful comparison of the material of the putative new species with the morphological characters of other species in the genus known in literature (Wang 1984, 1985; Burt 1998; Li & Wang 2004; Wei & Wen 2009; Gou *et al.* 2010; Middleton & Triboun 2010; Zhao & Shui 2010; Shaw 2011; Xu *et al.* 2011; Qiu & Liu 2015; Qiu *et al.* 2011, 2012, 2015a, 2015b; Wang *et al.* 2013; Zhang *et al.* 2013), as well as studies on herbarium specimens in major herbaria (GXMI, IBK, KUN, PE), we conclude that our specimens represent a new species, which we describe and illustrate here.

Taxonomic Treatment

Petrocosmea qiruniae M.Q.Han, Li Bing Zhang & Yan Liu **sp. nov.** Type: China, Guizhou Province, Dafang County, Yangchang Town, Qingxu Cave, 1500 m, 27°5'54"N, 105°40'16"E, 27 May 2015, M. Q. Han & J. Q. Huang HMQ521 (holotype IBK!, isotypes IBK!, PE!).

<http://www.ipni.org/urn:lsid:ipni.org:names:60478270-2>

Perennial *herbs*, with short rhizomes and crowded fibrous roots. *Leaves* 10 – 15 per plant, all basal, petioles 2 – 5 cm long, pubescent; leaf blades ovate to widely ovate, 1 – 2 × 1 – 2.5 cm, herbaceous, bases cordate, margins serrate, apex obtuse to rounded, both surfaces puberulent to pubescent, lateral veins 2 – 4 on each side, adaxially impressed, abaxially conspicuous. *Cymes* 1 – 5, 1 – 2 flowers per cyme; peduncles 4 – 10 cm long, densely pubescent; bracteole 2, alternate; calyx 5-lobed nearly to base, lobes lanceolate, the adaxial three lobes shorter, c. 3 mm, the abaxial two lobes longer, c. 4 mm, puberulent outside, glabrous inside. *Corolla* light violet, puberulent outside, glabrous inside; tube c. 5 mm, 2 yellow spots inside the tube under the filaments, throat white; adaxial lips c. 3 mm, indistinctly 2-lobed, two lobes are fused nearly their entire length and each lobe is folded and rolled laterally to form a carinate-plicate shape of the adaxial lip that encloses the style, abaxial lips 7 – 9 mm long, 3-lobed to the middle, lobes widely ovate; stamens 2, c. 5 mm, adnate to the corolla tube at the base; filaments c. 3.5 mm, geniculate near the

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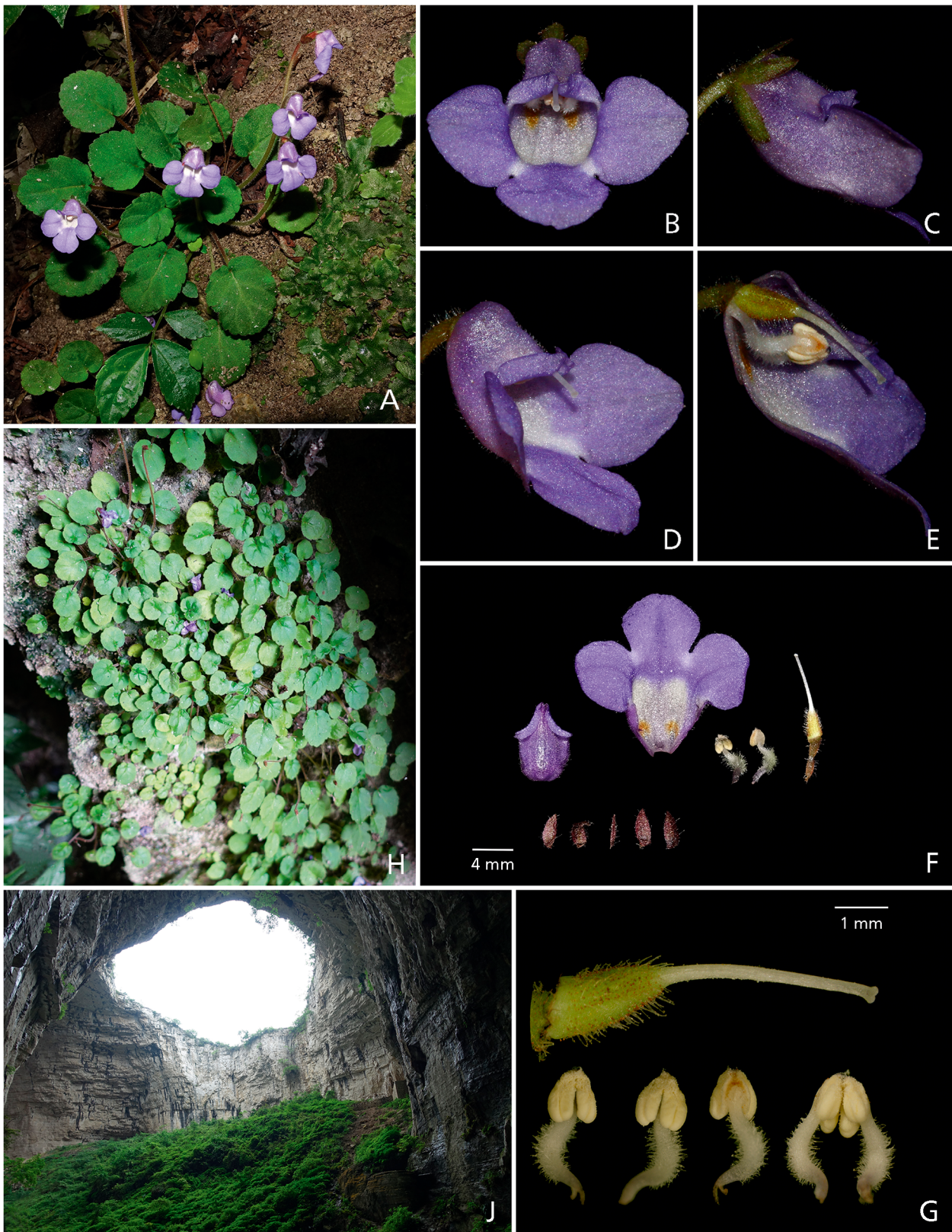


Fig. 1. *Petrocosmea qiruniae*. A habit; B face view of mature flower; C, D side view of mature flower; E, F dissected corollas; G pistil and stamens; H, J habitat.

middle, densely transparent villous around the middle; anthers widely triangular, coherent, poricidal in apex, c. 1.5 mm long, dorsifixed, with brown capitate-glandular hairs on the dorsal side; staminodes 3, adnate to the corolla tube at the base, glabrous; pistil c. 9 mm; ovary lance-ovoid, c. 2 mm, with transparent pilose-glandular hairs and brown capitate-glandular hairs on the surface; style glabrous, c. 7 mm; stigma white. *Capsules* c. 6 mm, brown, long-ellipsoid, both loculicidally and septicidally dehiscent. Fig 1.

RECOGNITION. Morphologically, *Petrocosmea qiruniae* is most similar to *P. leiandra*, but differs in having a white corolla throat without any spots (vs violet with 2 white spots), corolla tube under the filaments with 2 yellow spots (vs 2 wine-red spots merging into one inside the corolla tube under the anthers), filaments villous (vs glabrous), anthers with brown capitate-glandular hairs at the dorsal side (vs glabrous), and ovary with pilose-glandular hairs and brown and transparent capitate-glandular hairs on the surface (vs transparent pilose-glandular hairs).

DISTRIBUTION. China, Guizhou Province, Dafang County.

SPECIMENS EXAMINED. CHINA. Guizhou Province, Dafang County, Yangchang Town, Qingxu Cave, elev. 1500 m, 27°5'54 N, 105°40'16 E, 27 May 2015, *M. Q. Han & J. Q. Huang* HMQ520 (IBK!, PE!), HMQ521 (holotype IBK!, isotypes IBK!, PE!); HMQ522 (IBK!); 11 April 2016, *M. Q. Han, Y. Dong & T. F. Lü* HMQ970 (IBK!).

HABITAT. *Petrocosmea qiruniae* was observed to grow on moist shady cliffs in a limestone cave at an elevation of 1500 m.

CONSERVATION STATUS. *Petrocosmea qiruniae* was only found from the type locality. The total number of individuals was approximately 200. Suitable habitats might be found in two inaccessible caves not far from the Qingxu Cave. Based on current information to date, the new species should be classified as 'Data Deficient' (DD) according to the IUCN Red List criteria (IUCN 2015) until more exploration has been carried out in neighbouring regions.

PHENOLOGY. The new species has been collected in flower in May; its fruiting time is unknown.

ETYMOLOGY. The specific epithet commemorates Miss Qi-Run He, a friend of the first author. Her Chinese pinyin name "Qi-Run" means "incomparable fine jade" perfectly representing the characteristics of this new *Petrocosmea*.

VERNACULAR NAME. Chinese mandarin: Qi run shi hu die (琦润石蝴蝶), which can be translated as "incomparable fine *Petrocosmea*".

NOTES. Morphologically, *Petrocosmea qiruniae* is similar to *P. leiandra* and a detailed morphological comparison of the two species is shown in Table 1.

Petrocosmea leiandra (*W.T.Wang*) *Z.J.Qiu* (*Qiu & Liu* 2015: 116). Type: China, Guizhou, Qingzhen City, Qinglong Mountain, 30 May 1936, *S. W. Deng* 90396 (holotype PE!, isotype A).

Perennial *herbs*, with short rhizomes and crowded fibrous roots. *Leaves* 8 – 15 per plant, all basal, petioles 2 – 5 cm long, pubescent; leaf blades ovate to elliptic, 1 – 2 × 1 – 2.5 cm, herbaceous, bases cordate, margins serrate, apex obtuse or rounded, both surfaces pubescent, lateral veins adaxially impressed, abaxially conspicuous, 2 – 3 on each side. *Cymes* 1 – 5, 1 flower per cyme; peduncles 4 – 10 cm long, densely pubescent; bracteole 2, opposite; calyx 5-lobed nearly to base, lobes lanceolate, the adaxial three lobes shorter, c. 3 mm, the abaxial two lobes longer, c. 4 mm, pilose outside, glabrous inside. *Corolla* violet, pubescent outside, glabrous inside; tube c. 5 mm, two wine red spots merge into one inside the tube under the anthers, throat violet, 2 white spots on the throat; adaxial lip c. 3 mm, indistinctly 2-lobed, two lobes are fused nearly their entire length and each lobe is folded and rolled laterally to form a carinate-plicate shape of the adaxial lip that encloses the style, abaxial

Table 1. Morphological comparison between *Petrocosmea qiruniae* and *P. leiandra*.

	<i>P. qiruniae</i>	<i>P. leiandra</i>
Leaf shape	ovate to widely ovate	ovate to elliptic
Leaf hairs	both surfaces puberulent or pubescent	both surfaces pubescent
Cymes	1 – 2 flowers per cyme	1 flower per cyme
Bracteole	alternate	opposite
Corolla colour	light violet	violet
Corolla throat	white	violet, 2 white spots on the throat
Corolla tube	2 yellow spots inside the abaxial corolla tube under the filaments	base white, 2 wine-red spots merged into 1 inside the corolla tube under the anthers
Filaments	densely villous around the middle	glabrous
Anthers	with brown capitate-glandular hairs on the dorsal side	glabrous
Ovary	with both pilose-glandular hairs and brown capitate-glandular hairs	with pilose-glandular hairs only

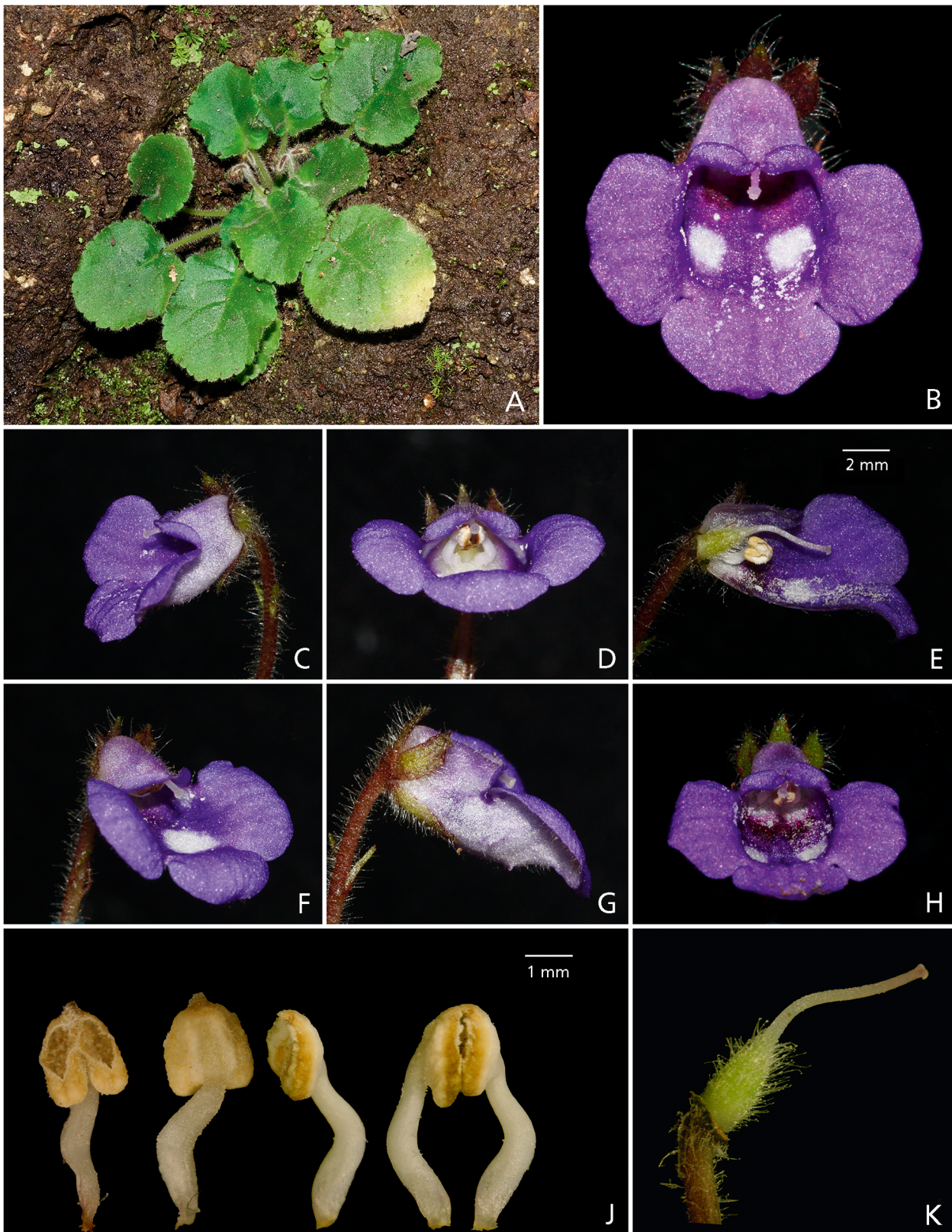


Fig. 2. *Petrocosmea leiandra*. A habit; B – D face view of mature flower; E, F, G side view of mature flower; H dissected corolla; J stamens; K pistil.

lip 7 – 9 mm, 3-lobed to the middle, lobes deltoid; stamens 2, c. 5 mm; adnate to the corolla tube at the base, filaments c. 3.5 mm, geniculate near the middle, glabrous; anthers ovate, coherent, poricidal, c. 1.5 mm long, glabrous, dorsifixed; staminodes 3, adnate to the corolla tube at the base, glabrous; pistil c. 9 mm; ovary lance-ovoid, c. 2 mm, with pilose-glandular hairs; style glabrous, c. 7 mm; stigma white. *Capsules* c. 6 mm, brown, long-ellipsoid, both loculicidally and septically dehiscent. Fig 2.

DISTRIBUTION. China, Guizhou Province, Qingzhen City.

SPECIMEN EXAMINED. CHINA. Guizhou, Qingzhen City, Qinglong Mountain, 15 May. 1984, J. Q. Wu & J. H. Zhao 712 (PE); 11 April 2016, M. Q. Han, Y. Dong, & T. F. Lü HMQ968 (IBK!).

HABITAT. *Petrocosmea leiandra* was observed to grow in moist rocky crevices on a limestone hill at an elevation of 1300 m.

CONSERVATION STATUS. *Petrocosmea leiandra* was only found in moist rocky crevices on a limestone hill, Qinglong Mountain, Qingzhen City, Guizhou. The total number of individuals was approximately 100. The habitat of *P. leiandra* has been threatened and damaged by tourism. Thus, we assess it to be Critically Endangered CR B1ab(iii) according to the IUCN red list criteria (IUCN 2015).

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