

NORDIC JOURNAL OF BOTANY

Research

***Petrocosmea chrysotricha* sp. nov. (*Petrocosmea*, Gesneriaceae), a species previously mistaken for *P. begoniifolia* on marlstone cliffs in Yunnan, China**

Meng-Qi Han, Quan Yuan, Tian-Feng Lü, Hong Jiang and Yan Liu

M.-Q. Han (<http://orcid.org/0000-0002-9059-7255>), Q. Yuan and Y. Liu (gxibly@163.com), Guangxi Inst. of Botany, Guangxi Zhuang Autonomous Region and the Chinese Academy of Sciences, Guilin, China. – T.-F. Lü, State Key Laboratory of Systematic and Evolutionary Botany, Inst. of Botany, Chinese Academy of Sciences, Beijing. – H. Jiang, Yunnan Academy of Forestry/Yunnan Laboratory for Conservation of Rare, Endangered and Endemic Forest Plants, State Forestry Administration, Kunming, China.

Nordic Journal of Botany

2018: e01664

doi: 10.1111/njb.01664

Subject Editor: Du Cheng

Editor-in-Chief: Torbjörn Tyler

Accepted 28 November 2017

Petrocosmea chrysotricha M.Q.Han, H. Jiang & Yan Liu, a new species from Yunnan, China, is described and illustrated. *Petrocosmea chrysotricha* was found growing with *P. melanophthalma* on damp marlstone cliffs in evergreen broad-leaved forest on Mopan Shan. The new species has been grown for decades by Gesneriad enthusiasts under the name *P. begoniifolia* for decades and it is indeed similar to *P. begoniifolia* in its oblique campanulate corolla tube, but differs by having filaments covered with golden lanate indumentum in the middle part and by having primrose yellow flowers at the beginning of anthesis, then turning white.

Keywords: *Petrocosmea melanophthalma*, *Petrocosmea begoniifolia*, new species, Yunnan

Introduction

Petrocosmea Oliv. (1887, p. 1716) was established by Daniel Oliver with the single species *P. sinensis* Oliv. The genus belongs to Gesneriaceae subfam. Didymocarpoideae and to date more than 50 species have been described (Qiu et al. 2015a, Han et al. 2017). *Petrocosmea* species are perennials that usually grow in damp habitats in limestone areas, except *P. melanophthalma* Huan C. Wang, Z. R. He & Li Bing Zhang (2013, p. 486) and *P. begoniifolia* C. Y. Wu ex H. W. Li (1983, p. 22), which inhabit marlstone cliffs.

In order to study *P. melanophthalma* and *P. begoniifolia*, we went to the type habitat to investigate them, and accidentally, we found another species of *Petrocosmea* accompanying *P. melanophthalma*. After a careful re-planting, they blossomed in June of 2017 with very special flowers. We then noticed that this particular species has been grown by Gesneriad enthusiasts under the name *P. begoniifolia* for decades. However, in several characters the new species differs from *P. begoniifolia*, including its



densely golden-lanate filaments, floral color and leaf shape. We compared our specimens with other herbarium specimens available at GXMI, IBK, KUN, PE. The images of specimens available in virtual herbaria including A, E, K, MO and P were also consulted. After reviewing all relevant literature (Wang 1985, Wang et al. 1990, 1998, Burt 1998, Li and Wang 2004, Wei and Wen 2009, Gou et al. 2010, Middleton and Triboun 2010, Zhao and Shui 2010, Shaw 2011, Xu et al. 2011, Qiu et al. 2011, 2012, 2015a, 2015b, Wang et al. 2013, Zhang et al. 2013) and the specimens, we conclude that our species is morphologically distinguishable

from all others and represent an undescribed species, which we describe below.

***Petrocosmea chrysotricha* M.Q. Han, H. Jiang & Yan Liu sp. nov. (Fig. 1)**

A species similar to *P. begoniifolia* (Fig. 2), but differing by having rounded leaf base (vs cordate and oblique), a corolla that is yellow at beginning of flowering and then turn white (vs white throughout flowering), a white corolla throat with 2 light yellow spots located at the projection of the

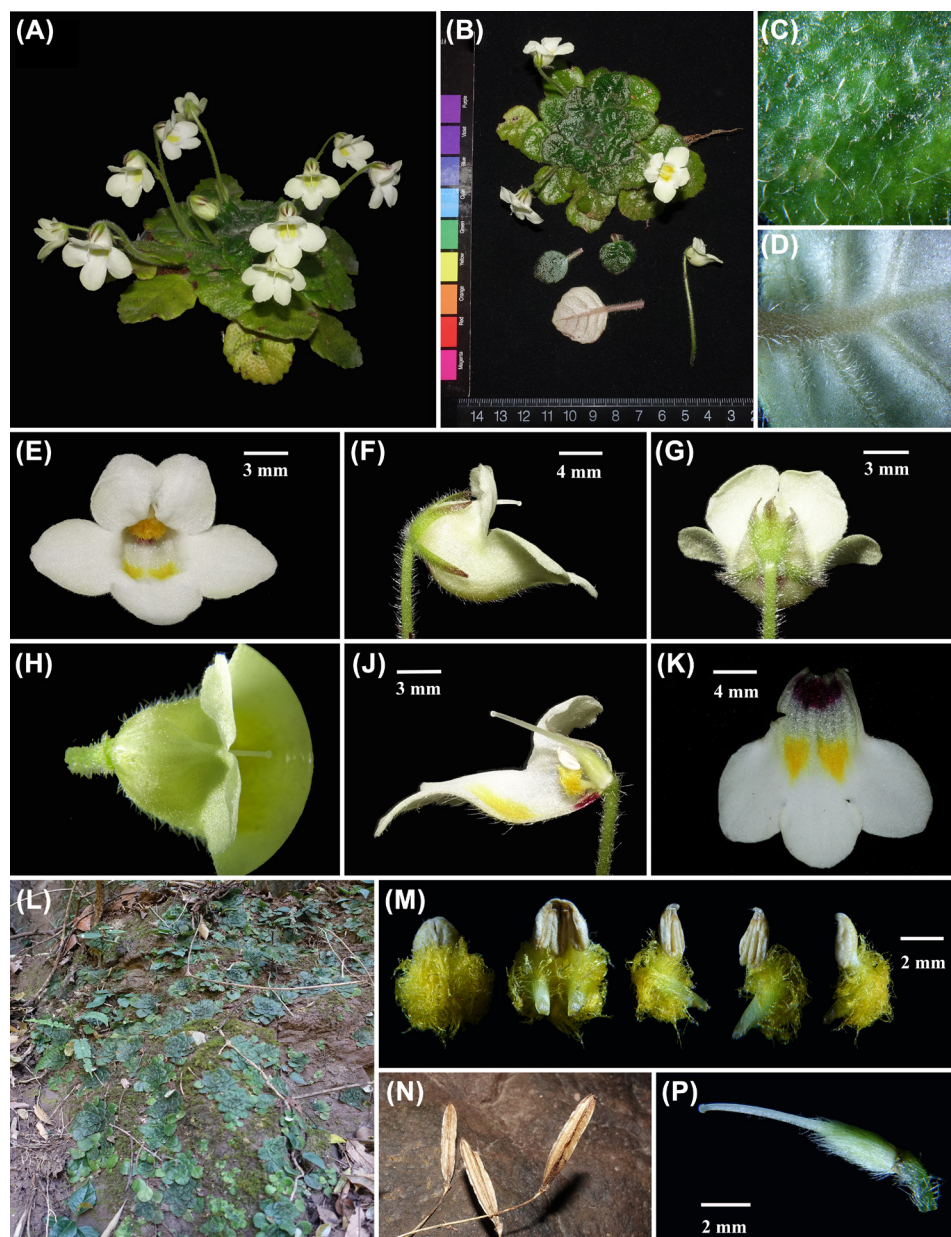


Figure 1. *Petrocosmea chrysotricha* sp. nov. (A)–(B) habit, (C) adaxial leaf blade surface, (D) abaxial leaf blade surface, (E) flower in front view, (F) flower in side view, (G) calyx, (H) adaxial lip, (J) dissected corollas, (K) abaxial lip, (L) habitat, (M) stamens, (N), capsules and (P) pistil.

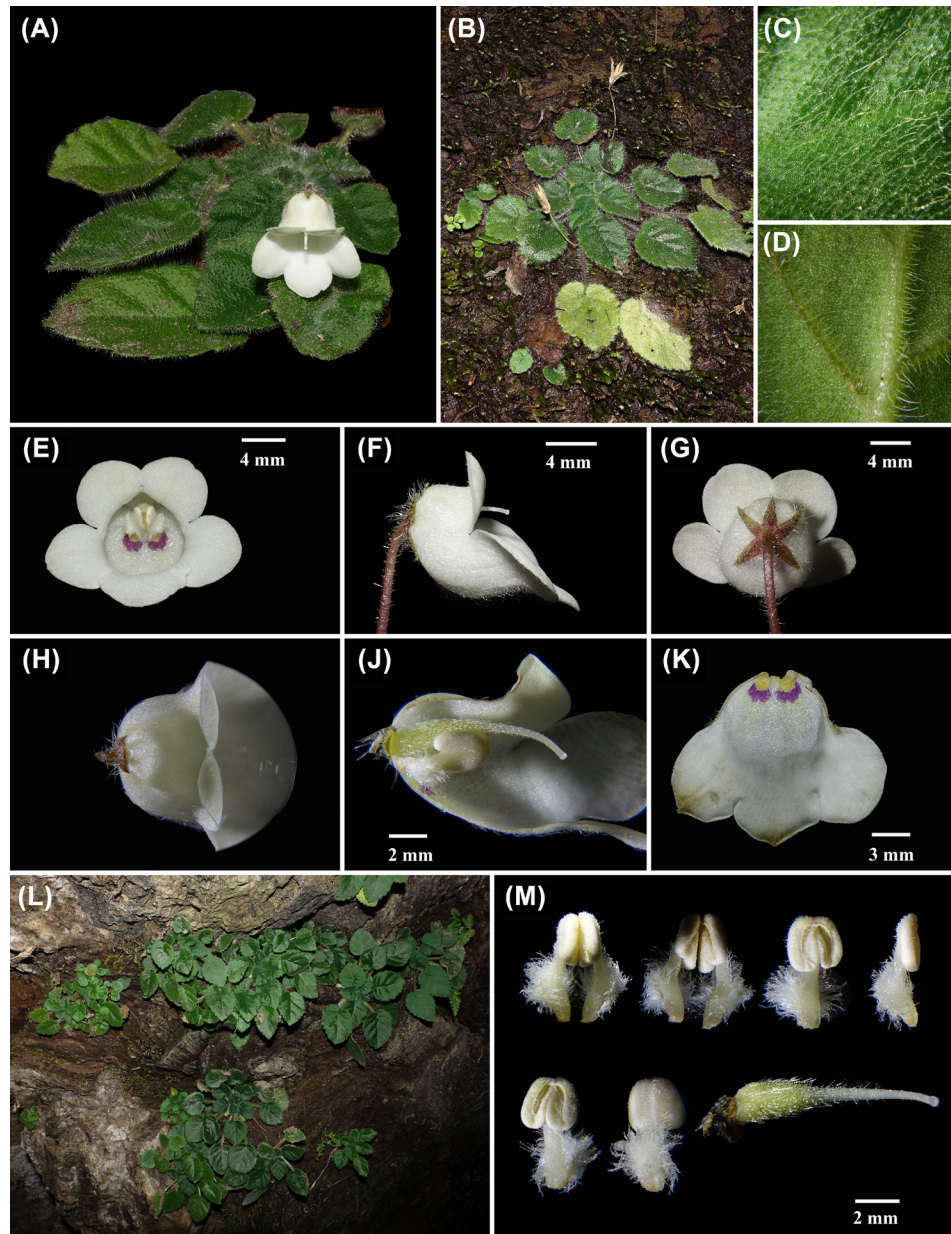


Figure 2. *Petrocosmea begoniifolia*. (A)–(B) habit, (C) adaxial leaf blade surface, (D) abaxial leaf blade surface, (E) flower in front view, (F) flower in side view, (G) calyx, (H) adaxial lip, (J) dissected corollas, (K) abaxial lip, (L) habitat and (M) stamens and pistil.

style (vs all white), a corolla tube with one claret red spot inside the tube under the stamens (vs with 2 glitter purple spots inside the abaxial corolla tube under the filaments, and two luminous yellow spots at the basal ventral floral tube), filaments with golden lanate indumentum around the middle (vs transparent lanate around the middle), and anthers that are poricidal near apex of anther (vs narrow-ellipsoid poricidal at base of anther).

Type: China. Yunnan Province, Xinping County, Mopan mountain national forest park, 2300 m a.s.l., 23°57'N, 101°56'E, 8 Jun 2017, M. Q. Han HMQ1385 (holotype: IBK!, isotypes: IBK!, PE!).

Etymology

The epithet refers to the filaments with golden lanate indumentum around the middle.

Description

Perennial rosular herb, with short rhizomes and crowded fibrous roots. Leaves all basal, 20 to 25 per plant; petioles 5–60 mm long, purple or green, both with brown pilose and yellow capitate-glandular trichomes on the surface; leaf blades broadly ovate or rotund, 5–25 × 5–30 mm, succulent, rounded at base, equilateral, with crenate margins and obtuse apex; adaxial side sparsely pilose with blade surface pustulose at base of hairs; abaxially densely pubescent, with

Table 1. Morphological comparison of *Petrocosmea chrysotricha* sp. nov. with *P. begoniifolia*.

Characters	<i>P. chrysotricha</i>	<i>P. begoniifolia</i>
Leaf blade		
shape	ovate or rotund	obliquely ovate
base	rounded	cordate or obliquely cordate
texture	succulent	herbaceous
Corolla		
calyx	zygomorphic, unequally divided into 5 unequal lobes	actinomorphic, equally divided into 5 lobes from base
color	primrose yellow at beginning of flowering, then turning white	white
throat	white with 2 light yellow spots located at the projection of the style	white
tube	with 1 claret red spots inside the tube under the stamens	with 2 glitter purple spots inside the abaxial corolla tube under the filaments, and two luminous yellow spots at the basal ventral floral tube
filaments	golden-lanate around the middle	transparent-lanate around the middle
anthers	long-ovoid, poricidal at near apex of anther	ovoid, narrow-ellipsoid poricidal to base of anther
style	glabrous	sparsely pubescent at base
Capsules	ensiform, about 15 mm	ellipsoid, 3–4 mm

both pilose and yellow capitate glandular trichomes on the veins; lateral veins adaxially impressed, abaxially conspicuous, 3–4 on each side. Cymes 3–15, 1–2 flower per cyme; peduncles 4–6 cm long, densely pilose; bracts 2, ensiform, about 2 mm long, opposite. Calyx zygomorphic, 6–7 mm, unequally divided into 5 lobes, with outer surface densely pilose and inner surface glabrous; adaxial lobe shorter than the others, 3-dentate almost to middle, 6 mm long; abaxial lobes longer, entire, narrowly triangular to lanceolate, 7 mm long. Corolla primrose yellow at the beginning of flowering, then turning white, about 20 × 20 mm, pubescent outside, glabrous inside; tube ca 7 mm, with one claret red spot inside the tube under the stamens; throat white with 2 light yellow spots located at the projection of the style; adaxial lip about 10 × 15 mm, 2-lobed to base, forming a carinate-plicate shape that encloses the style; abaxial lip about 12 × 20 mm, 3-lobed to the middle, with wide-ovate lobes. Stamens 2, about 6 mm long, adnate to the base of the corolla tube; filaments about 4 mm long, geniculate near the middle with an angle of about 100°, golden-lanate around the middle; anthers long-ovate, about 2 mm long, poricidal, with brown capitate glandular trichomes on the surface, dorsi-fixed, coherent at apex; staminodes 3, adnate to the corolla tube at the base, glabrous. Pistil ca 10 mm; ovary densely pilose, narrow-ellipsoid, about 4 mm long; style glabrous, white, ca 6 mm long; stigma white. Capsules straight, brown, ensiform, about 15 mm.

Phenology

The new species was collected in flower in June and July.

Distribution, habitat and ecology

Petrocosmea chrysotricha has been observed to grow on moist shady cliffs near a small waterfall in a sandstone valley, at 2300 m a.s.l. in Mopan mountain national forest park, Xinning County, Yunnan Province, China.

Vernacular name

Chinese mandarin: Jīn sī shí hú dié (金丝石蝴蝶), which can be translated as ‘Golden filamentous *Petrocosmea*’.

Similar species

Morphologically, *P. chrysotricha* is similar to *P. begoniifolia*. A detailed morphological comparison of the two species is provided in Table 1.

Additional specimens examined (paratypes)

China. Yunnan Province, Xinning County, Mopan mountain national forest park, 2300 m a.s.l., 23°57'N, 101°56'E, 22 Mar 2017, M. Q. Han HMQ1278 (IBK, PE), 13 Jun 2017, H. Jiang, W. P. Zhang and Z. D. Han 6493 (YAF).

Acknowledgments – The authors are grateful to Dr Wei-Bing Xu, Yang Dong, and Miss Meng-Qing Han for their constructive suggestions and comments on the manuscripts, to Mr Zhou-Dong Han for the assistance in the field work. We thank two anonymous reviewers for helpful comments.

Funding – This study was supported by the National Natural Science Foundation of China (grant no. 41161011, 41661012).

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