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Petrocodon multiflorus sp. nov. (Gesneriaceae) from Guangxi, China

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Petrocodon multiflorus F. Wen & Y. S. Jiang sp. nov. (Gesneriaceae) is described and illustrated. It is most similar to *P. dealbatus* Hance, but can be distinguished by its leaf lamina texture, shape of leaf margins, and by the number of cymes borne by an individual plant and the number of flowers in each cyme. A key to the species of *Petrocodon* is provided.

When described in 1883, the genus *Petrocodon* Hance (Gesneriaceae) was comprised of a single species, *P. dealbatus* Hance, known from the provinces Guangxi, Guangdong, Guizhou, Hunan and Hubei in southern China. In 1990, the variety *P. dealbatus* var. *denticulatus* (W. T. Wang) W. T. Wang was described from Hunan and Guizhou (Wang 1990, Wang et al. 1998, Li and Wang 2004). In 2007, a second species *P. ferrugineus* Y. G. Wei was described from Guangxi (Wei 2007).

In April 2009, the authors collected a specimen of *Petrocodon* during a botanical expedition to the subtropical limestone karst in Cangwu County, Guangxi. With respect to habit and leaves it resembled *Calcareoboea* C. Y. Wu ex H. W. Li (Li 1982). The inflorescence and flowers, however, placed this specimen in the genus *Petrocodon.* This specimen differs from other species of *Petrocodon* with respect to its habit, leaves, inflorescence and flower morphology as outlined below.

Material and methods

Herbarium material

Wild plants were collected from a small limestone karst locality in Cangwu County, eastern Guangxi, China. The annual average temperature where the plants were collected is 21.2°C, annual average precipitation is 1507 mm, and the plants grow at 200 m a.s.l. A herbarium specimen was prepared from this locality and deposited at IBK. When comparing it with the diagnostic characters of *Petrocodon* spp. and other Chinese Gesneriaceae (Wang 1990, Wang et al. 1998, Li and Wang 2004, Wei 2007), it was confirmed that this specimen represents a hitherto undescribed species.

Field observations

From April 2009 to April 2010, more than one hundred individuals were observed and recorded in the field at Shiqiao Town (111.541°E, 23.842°N). During this time observations on every mature flowering plant were carried out to enable comparisons with all known taxa of *Petrocodon.* Observations included: leaf lamina texture, shape of leaves, hairs and margins, the number of cymes borne by an individual plant and the number of flowers in each cyme.

Petrocodon multiflorus Fang Wen & Y. S. Jiang sp. nov. (Fig. 1, 2B1–B5)

Petrocodoni dealbato Hance affinis, sed foliis coriaceis vel dure papyraceis, elliptico-ovatis oblongis vel cordato-ellipticis, margine integris, cymis 6–12 per plantam unam, 30–65-floris, 2–4(6)-ramosis differt.

Type: China. Guangxi province, Cangwu County, at Shiqiao Town, limestone mountain side near to a medium sized cave, 111.541°E, 23.842°N, 200 m a.s.l., 4 Apr 2009, Yun-Sheng Jiang, Yi-Gang Wei, Fang Wen 201001 (holotype: IBK!, isotypes: IBK!).

Perennial herb, acaulescent. Rhizome vertical, subterete, 2–8 cm long, 1.0–1.5 cm in diameter. Leaves 10–15 cm long; leaf lamina coriaceous to subcoriaceous, slightly oblique, elliptic-ovate or oblong, 4–8 × 3.0–6.5 cm, base obtuse, broadly cuneate, margin almost entire, apex acute, sparsely appressed strigose above, sparsely appressed short-pubescent beneath, with (6)–8 nerves on each side; petioles 4.0–7.6 cm, appressed short-pubescent. Inflorescence cymose, each plant bearing 180–360 flowers borne

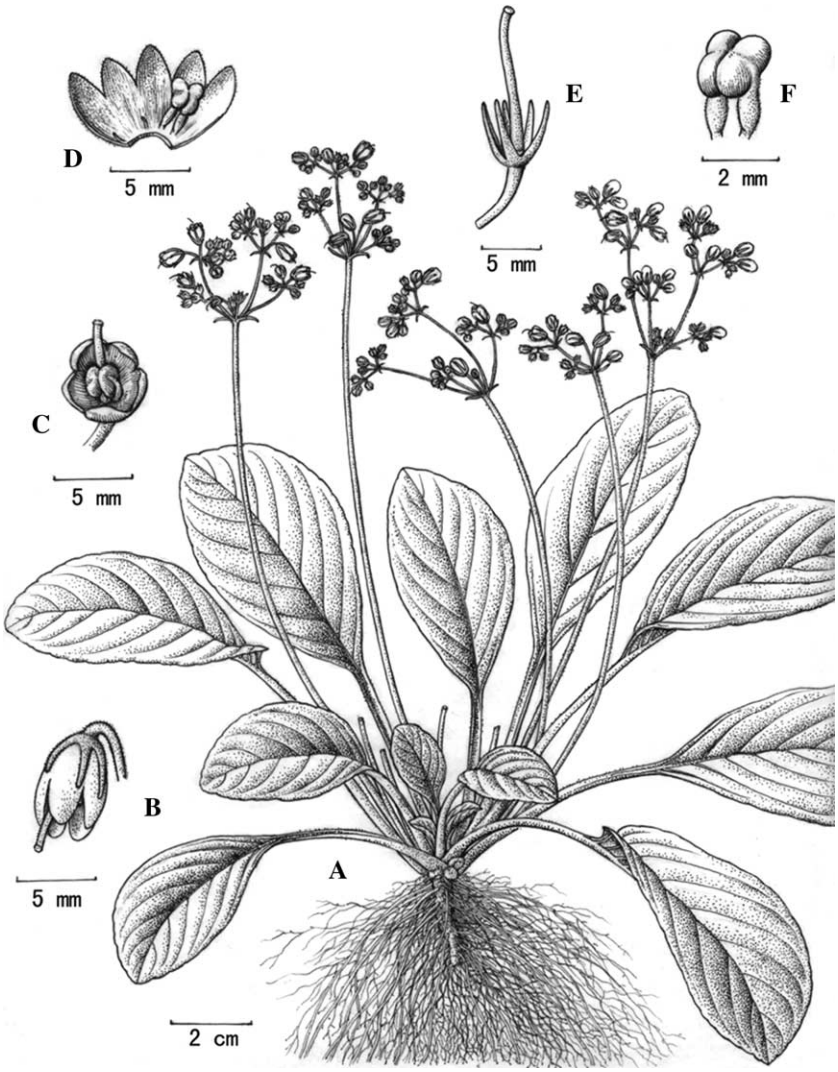

Figure 1. *Petrocodon multiflorus* sp. nov. (A) habit, (B) calyx, corolla and style, (C) corolla, anthers and style, (D) corolla opened with stamens and staminodes, (E) calyx, pistil and stigma, (F) anthers. Drawn by Mr S.-Q. He from holotype.

in 6–12 cymes, each cyme with 2–4 branches, each bearing 15–36 flowers; peduncles 10.0–16.5 cm long, strigose. Bracts 2, linear or lanceolate-linear, 5–6 mm long, strigose. Bracteoles opposite, linear-lanceolate, 2–3 mm long, strigose. Pedicels 4–7 mm long, sparsely strigose. Sepals 5, narrowly lanceolate-linear, 4.0–5.5 × 0.3–0.4 mm, fleshy, outer surface sparsely strigose, inner surface glabrous. Corolla white, campanulate to urceolate-campanulate, zygomorphic, outer surface densely puberulous; corolla lobes 5-divided to one third, lobes equal, 1.8–2.6 mm, ovate-triangular; tube ca 5 × 4 mm. Stamens 2, glabrous, filaments free, anthers adnate to each other 0.5–0.8 cm from the base of the corolla tube, filaments 1.4–1.8 mm long, anthers ellipsoidal, 0.8–0.9 × 1.2–1.3 mm. Staminodes 2, linear, 0.4–0.6 mm from the base of corolla tube, 0.2–0.3 mm long, glabrous. Disc annular, 0.30–0.45 mm high. Pistil 4.2–4.8 mm, glabrous; ovary linear, 3–4 mm with a very short stalk; style linear, exerted ca 3–5 mm from the corolla; stigma solitary, depressed subglobose. Capsule linear, tetragonal, straight, the color of immature fruit from green to lightly brown.

Habitat, distribution and phenology

Petracodon multiflorus grows on the mountain side, on limestone rocks close to (ca 20 m from) a cave, at an altitude of 200 m a.s.l. *Chirita lutea* Yan Liu & Y. G. Wei and *Chiritopsis lobulata* W. T. Wang can be found growing alongside. It is known only from Cangwu County in Guangxi, China. Flowering occurs in Apr–Jul, and fruits ripe during Jul–Sep.

Conservation status

Petrocodon multiflorus is known from a single population in Cangwu County. This population is situated on a rough cliff, and according to our field observations in 2009 it comprises 300–380 plants. According to the IUCN criteria, *P. multiflorus* is facing an extremely high risk of extinction in the wild (IUCN 2001). Thus this species should be

Figure 2. Comparison of macromorphology of cymes and flowers in *Petrocodon dealbatus* and *P. multiflorus*. (A-1) plant and habit of *P. dealbatus*, (A-2) cymes of *P. dealbatus*, (A-3) flowers of *P. dealbatus*, (B-1) plant and habit of *P. multiflorus*, (B-2) cymes of *P. multiflorus*, (B-3) flowers of *P. multiflorus*, (B-4) plants of *P. multiflorus* with immature infructescences, (B-5) infructescence with mature dehiscent capsule.

Table 1. Diagnostic characters of *Petrocodon multiflorus* sp. nov. and the closely related species *P. dealbatus*.

Characters	*P. multiflorus*	*P. dealbatus*
Leaves	coriaceous to subcoriaceous, margin almost entire, elliptic-ovate, oblong or cordiform-elliptic	chartaceous to subcoriaceous, margin shallowly crenate or sinuately dentate to the middle, oblanceolate to elliptic
Cymes	6–12, with 2–4 (–6) branches, bearing 15–36 flowers on each cyme	1–3, 1-branched or unbranched, bearing 4–11 flowers on each cyme
Capsule	linear, tetragonal	linear, cylindric

considered as 'Critically Endangered' (CR), under criteria C2 (i, ii) + D + E.

Similar species

Petrocodon multiflorus is most similar to *P. dealbatus* but can be distinguished morphologically as summarized in Table 1 and Fig. 2.

Key to the species of *Petrocodon* in southern China

1. Cymes 6–12, 2–6-branched, each cyme bearing 30–65 flowers . . . . . *P. multiflorus*
   – Cymes 1–3, each cyme bearing 4–11 flowers 2
2. Leaf lamina oblanceolate or elliptic, margin shallowly crenate or sinuately dentate to the middle, chartaceous or thin chartaceous, petiole short strigose . . . . . *P. dealbatus*
   – Leaf lamina elliptic-ovate or oblong, margin crenate to the middle, densely villous on the abaxial and adaxial surfaces, often purple abaxially, coriaceous to subcoriaceous, petioles with ferrugineus, densely villous pubescence . . . . . *P. ferrugineus*

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