

中国秋海棠属等翅组的补遗*

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摘要: 报道了中国秋海棠属等翅组一新种, 即赤车叶秋海棠 (*Begonia pellioides* Y. M. Shui & W. H. Chen)。此新种特产于云南东南部的石灰岩山生境, 与海南秋海棠 (*Begonia hainanensis* Chun & F. Chun) 相似, 但不同在于其叶片较长, 叶基楔形, 叶尖渐尖至尾尖, 花被片背面具刺毛, 蒴果具上边缘平截的三角形翅。此外, 补充描述了秋海棠属等翅组拟长柄秋海棠 (*Begonia sublongipes* Y. M. Shui) 的花部特征。

关键词: 秋海棠属; 赤车叶秋海棠; 拟长柄秋海棠; 秋海棠科; 等翅组; 云南; 中国

中图分类号: Q 949

文献标志码: A

文章编号: 2095-0845(2015)05-563-06

Additional Notes on the *Begonia* Sect. *Petermannia* (*Begoniaceae*) from China

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Abstract: *Begonia pellioides* Y. M. Shui & W. H. Chen, a new species of the genus *Begonia* L. (sect. *Petermannia* (Klotzsch) A. DC., *Begoniaceae*), is described and illustrated. The new species is endemic to limestone areas in Southeastern Yunnan Province, China, and is most similar to *Begonia hainanensis* Chun & F. Chun but distinguished by its more elongated leaves with cuneate base and acuminate to caudate apex, tepals adaxially with spiny hairs and sharply triangular capsule-wings with truncate superior margin. Besides, the unknown flower morphology of previously published *Begonia sublongipes* Y. M. Shui in *Begonia* sect. *Petermannia* is described.

Key words: *Begonia*; *Begonia pellioides*; *Begoniaceae*; section *Petermannia*; Yunnan; China

Sect. *Petermannia* (Klotzsch) A. DC. is one of the largest sections in the *Begonia* L. and currently comprises 290 species in Asia (Hughes, 2008; Hughes *et al.*, 2009; Kiew and Sang, 2007; Thomas *et al.*, 2009a, b, 2011; Sang *et al.*, 2013) with Malaysia being a centre of diversity. The section is characterized by its members in having usually upright stems without tubers or rhizomes, 3-locular

fruit with bifid placentae, and protogynous inflorescences with female flowers basal and male flowers distal (Doorenbos *et al.*, 1998).

During the field survey to the Hekou county, southeastern Yunnan Province, China, near northern Vietnam on August 27, 2005, we collected a species of *Begonia* with only male flowers, initially misidentified as *Begonia boisiana* Gagnepain from Vietnam (Shui

* Funding: The National Natural Science Foundation of China (31070174)

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Received date: 2014-11-12, Accepted date: 2015-01-08

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and Chen, 2006). On September 6, 2013, we made a repeat field expedition to the same locality and collected specimens with female flowers and mature fruits. A detailed study of current literature (Averyanov and Nguyen, 2012; Nguyen and Tebbitt, 2005; Huang and Shui, 2006; Hughes, 2007; Kiew, 2007; Ku *et al.*, 2007; Pham-Hoang, 1999; Shui *et al.*, 2002; Shui and Chen, 2004; Wu and Ku, 1995) and herbarium specimens revealed that it represented a remarkable new species of *Begonia* sect. *Petermannia*.

Begonia sublongipes Y. M. Shui was first described in sect. *Petermannia* by SHUI Yu-min & CHEN Wen-hong from Hainan, China (2004). The species has been confirmed as belonging to a clade with other species in sect. *Petermannia*, according to chloroplast genome sequence data (Tian *et al.*, 2014). However, the species remained known only from its type collection that lacked flowers in 1934 before our study. In 2011, during botanical surveys in Hainan, it was rediscovered by one of the authors (SHUI Yu-min), allowing the flowers to be described and confirming its rarity.

赤车叶秋海棠 (新种)

Begonia pellionioides Y. M. Shui & W. H. Chen, sp. nov.

TYPE: China. Yunnan Province, Hekou County, Nanxi Town, Longyinzhong village, 22° 40' 8" N, 104° 1' 16" E, alt. ca. 910 m, in broad-leaved forest on limestone mountain slope, September 6, 2013, Y. M. Shui *et al.* B2013-531 (holotype: KUN; isotypes: E and PE). Paratype: the same locality, August 27, 2005, Y. M. Shui *et al.* 44591 (KUN). (Fig. 1: A–G, Fig. 2).

Diagnostic description: The new species is similar to *Begonia hainanensis* Chun & F. Chun but distinguished by its more elongated leaves with cuneate base and acuminate to caudate apex, tepals adaxially with spiny hairs and sharply triangular capsule-wings with truncate superior margin.

Perennial and monoecious herb. Stems erect, red, up to 80 cm tall, branched or not, glabrous,

swollen at nodes. Internodes 2–8 cm apart, shorter near the stem apex. Leaves cauline, alternate, distichous; stipules membranous, caducous, ovate to triangular, 0.7–1.5 × 0.4–0.7 cm, margin entire, apex acuminate, sub-glabrous; petioles 0.5–1.0 cm long, sparsely to densely pubescent; leaf blade elliptic-lanceolate to lanceolate, sometimes adaxially with white spots in young plants, 12–15 × 3–4 cm, adaxially glabrous, abaxially short hairs restricted to the main veins, basal insertion asymmetric, base rounded to cuneate, margin remotely serrate, apex acuminate to caudate, lateral veins 4–7 pairs, mid-vein and lateral veins raised or slightly raised abaxially. Inflorescence: axillary dichasial cyme, 3–7-flowered; pedicels 0.5–2 cm long, red, glabrous.

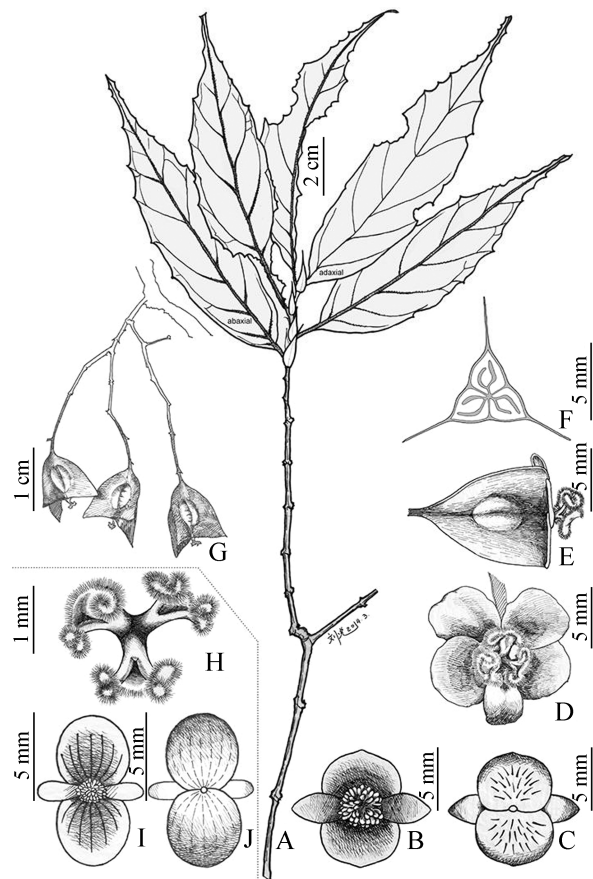


Fig. 1 A–G: *Begonia pellionioides* Y. M. Shui & W. H. Chen. A. Part of a branch; B. Male flower, face view; C. Male flower, posterior view; D. Female flower, face view; E. Female flower, lateral view; F. Middle section of the ovary; G. Fruits. H–J: *Begonia sublongipes* Y. M. Shui; H. Pistil; I. Male flower, face view; J. Male flower, posterior view. (Drawn by LIU Yue)

Male flowers: tepals 4, dark red, outer 2 suborbicular, apex obtuse, base round, margin entire, *ca.* 5

$\times 5$ mm, spiny-pilose on abaxial surface; inner 2 ovate-lanceolate, apex acute, base cuneate, margin



Fig. 2 *Begonia pellionioides* Y. M. Shui & W. H. Chen

A. Habitat; B. Leaves with white dots; C. Male flower; D. Face view of female flower; E. Wing view of female flower; F. Fruits; G. Middle section of the ovary; H. Basal section of the fruit. Scale bars: A, B=3 cm; C, D, G=3 mm; E, H=2 mm; F=1 cm. (Taken by SHUI Yu-min)

entire, *ca.* 4 × 2–3 mm, glabrous; androecium *ca.* 3 mm long, stamens 20–40, filaments *ca.* 1 mm long, fused at the base, anthers *ca.* 2 mm long, oblong. Female flowers: tepals 5, dark red, ovate or broadly ovate, *ca.* 5 × 2–4.5 mm, spiny-pilose on abaxial surface, the inner 3 smaller than the outer 2; styles 3, connate below middle; stigmas bifid, helically contorted, papillate; ovary glabrous, 3-locular, placental branch 2-lobed per locule. Capsule elliptic, red; wings 3, equal or slightly unequal, the front edge truncate, back edge convex, 7–8.5 mm long in the middle, 1–1.5 mm wide. Seeds numerous, brown, *ca.* 0.5 mm long. Flowering in July to August; fruiting in August to September.

Habitat and distribution: This new species only grows on moist soil under mossy evergreen broad-leaved forests (the shrub layer is mainly composed of bamboo) on limestone mountain slopes, at altitudes of *ca.* 910 m in Hekou county of SE Yunnan, China (the type locality).

Conservation status: *B. pellioides* is currently only known from a single site following a year-long survey by two of co-authors (SHUI Yu-Min and CHEN Wen-Hong) in the Southeastern Yunnan, China. Our field observations on September 6, 2013 revealed only about 20 mature individuals (*ca.* ≥ 40 cm tall) and about 10 young individuals (10–30 cm tall) belonging to this population. Although this is a primeval forest, the usage right of the land is held by individual households. The farmers were preparing to deforest this land for agriculture according to our survey. Therefore, a population size reduction of ≥80% may be expected to be met within the next 10 years. Hence we consider a category of Critically Endangered (CR A3c) to be appropriate for this species (IUCN, 2012; IUCN Standards and Petitions Subcommittee, 2013).

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Begonia sublongipes Y. M. Shui in Acta Botanica Yunnanica, **26** (5): 482, 2004. Fig. 1; H–J, Fig. 3

Additional description: Cyme dichasial, 3–4-

flowered, axillary; peduncles 1–1.5 cm long; bracts elliptic, slightly pinkish, 2–3 × 1–1.5 mm, glabrous; pedicels 4–6 mm long, glabrous. male flowers: tepals 4, pinkish, glabrous, outer 2 sub-orbicular, apex obtuse, base rounded, margin entire, *ca.* 4.5 × 4.5 mm; inner 2 elliptic, apex round, base cuneate, margin entire, *ca.* 3 × 1–1.5 mm; androecium 1.4–1.5 mm long, stamens 25–35; filaments *ca.* 0.5 mm long, slightly fused at the base; anthers oblong *ca.* 1.6 mm long, with longitudinal slits, connective slightly extended and retuse at the apex. Female flowers: pedicel with two bracteoles at the apex; bracteoles slightly alternate, ovate, *ca.* 2 × 1.5 mm; tepals 5 (rarely 4), pinkish, ovate, *ca.* 4 mm long, persistent, the inner ones smaller than the outer ones; styles 3, connate below middle; stigmas bifid, helically contorted, papillate; ovary glabrous, 3-locular, with placentas 2-branched. Young fruit wings front edge and back edge convex, *ca.* 0.7 cm long, 0.1 cm wide. Flowering in August.

Additional specimens examined: CHINA: Hainan Province, Qionghai County, Huishan Provincial Natural Reserve, in secondary forests along the wet valley near brook, 19°03'57.50" N, 110°09'18" E, alt. *ca.* 500 m, August 3, 2011, Y. M. Shui *et al.* B2011-116 (KUN).

Notes: The species is unusual amongst Chinese *Begonia* in having two bracteoles near the ovary, which are also seen in *B. hainanensis*, *Begonia yui* Irmsch. (Ku *et al.*, 2007).

Conservation status: The rediscovery of *B. sublongipes* in Hainan Province after nearly 70 years has shown its rarity. The plants are only distributed at the edge of the secondary seasonal rainy forests at the Huishan Provincial Natural Reserve in Hainan Province with some disturbance by local people. Our field observation indicated that only a unique population of about 16 mature individuals existed in an valley of about *ca.* 3 000 m², and thus the conservation status of this species should be classified as Critically Endangered (CR B1, D) (IUCN, 2012; IUCN Standards and Petitions Subcommittee, 2013).

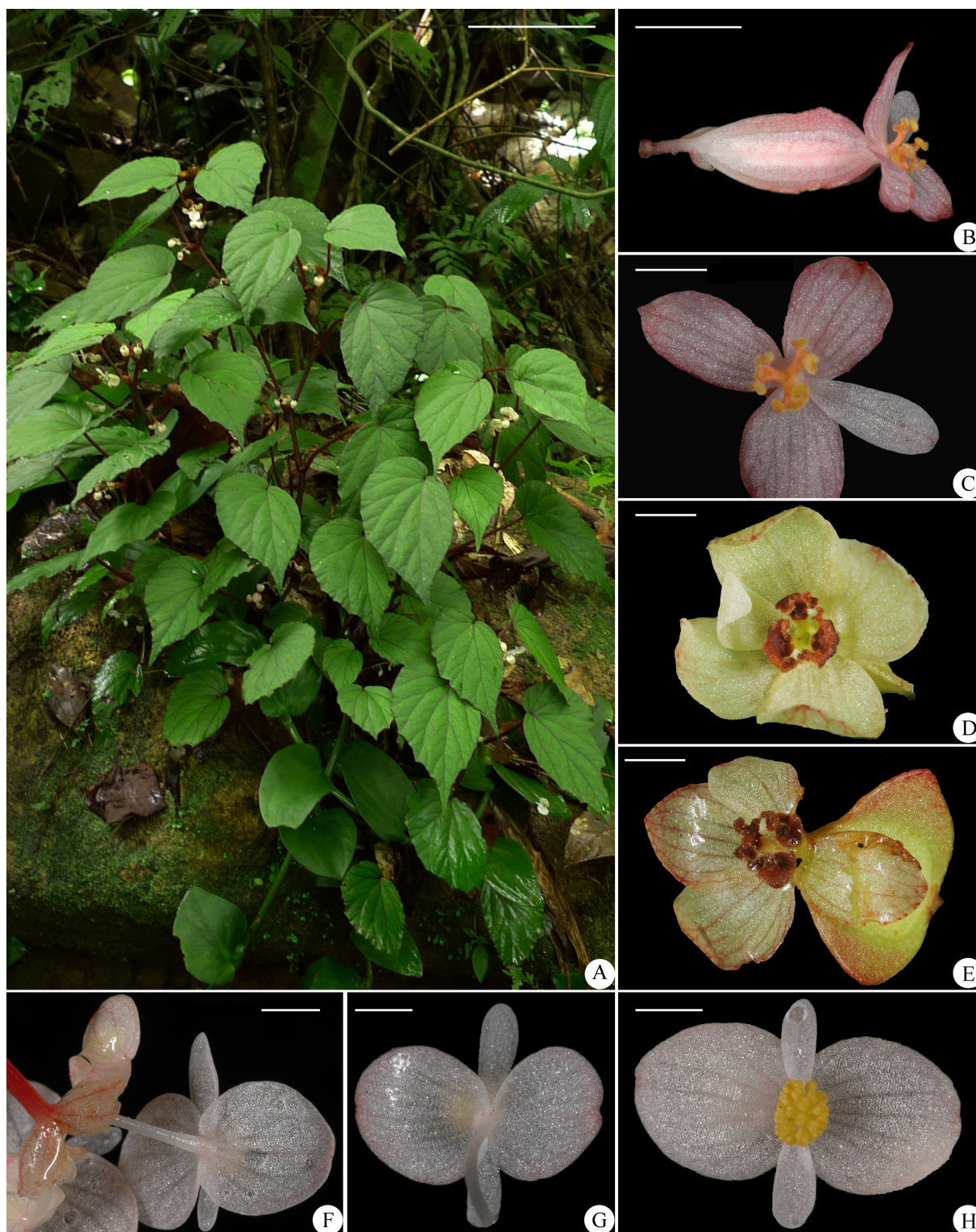


Fig. 3 *Begonia sublongipes* Y. M. Shui

A. Habitat; B. Two bracteoles and female flower, lateral view; C. Female flower, face view; D-E. Fruit, face view; F. Two bracts and male flower, posterior view; G. Male flower, posterior view; H. Male flower, face view.

Scale bars: A=8 cm, B=5 mm, C-H=2 mm. (Taken by SHUI Yu-min)

Acknowledgements: We are thankful to Mr. YU Zhi-yong in Fenshuiling National Natural Reserve, Mr. YANG Jian-guo in Daweishan National Natural Reserve and Mrs LI Jing-xiu in Kunming Botanic Garden for their helps in the surveys. The project of Integrated Scientific Surveys to Daweishan National Park in China. We thank Mrs LIU Yue for making the drawing.

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