



Briggsia leiophylla, a new species of Gesneriaceae from southern Guizhou, China

FANG WEN^{1,2}, STEPHEN MACIEJEWSKI², XIANG-QIAN HE³, JING HAN³ & YI-GANG WEI^{1,2}

¹ Guangxi Key Laboratory of Plant Conservation and Restoration Ecology in Karst Terrain, Guangxi Institute of Botany, Guangxi Zhuang Autonomous Region and Chinese Academy of Sciences, CN-541006, Guilin, China

² Gesneriad Conservation Center of China, Guangxi Zhuang Autonomous Region and Chinese Academy of Sciences, CN-541006, Guilin, China

³ College of Life Science, Anhui Normal University, CN-241000, Wuhu, China

Corresponding author: Fang Wen (wenfang760608@139.com), Yi-Gang Wei (weiyigang@aliyun.com)

Abstract

Briggsia leiophylla, a new species of Gesneriaceae from southern Guizhou, China, is here described and illustrated. It is morphologically similar to *B. longipes* (Hemsl. ex Oliv.) Craib, but can be easily distinguished by only one flower per cyme (rare two), brightly yellow and nearly glabrous corolla, anthers thecae confluent.

Keywords: Cave flora, *Briggsia leiophylla*, New Species, Gesneriaceae, Guizhou, China

Introduction

Consisting of around or at least 22 species of herbaceous perennials, the former genus *Briggsia* Craib (1919: 235) is a member of the family Gesneriaceae is native to the Himalayas, China and neighboring countries and regions (Sikkim, Burma, Bhutan, India and Vietnam); China being the center of distribution where 21 species and 4 varieties can be found (Li *et al.*, 2004). However, this genus was revised mainly based on molecular evidences. Four species and four varieties were split off and moved to *Oreocharis* Benth (1876: 1021). The rest, 17 species, still keep in *Briggsia* (Möller *et al.* 2011). Based on the newest formal classification of Gesneriaceae was published by Weber *et al.* (2013), this re-defined genus belongs to Subtribe Didymocarpaceae G. Don (1838: 644, 658), Tribe Trichosporeae Nees (1825: 143), Subfam. Didymocarpoideae Arn. (1832: 121), Gesneriaceae. Hitherto five species were recorded in Guizhou, China (Li *et al.*, 2004; Wei *et al.*, 2010) before this new one, *Briggsia leiophylla*, is described and illustrated.

In January 2009, the authors collected an unknown *Briggsia* specimens in a limestone cave from a karst region of Guizhou, China. Only 20 individuals grow on a damp surface of limestone rock in a large cave. During the past 5 years, the living plants were monitored in the field and an ecological survey was carried out. After thoroughly comparisons of diagnostic characters of *Briggsia* specimens from China (Wang 1990, Li *et al.* 2004, Wei *et al.*, 2010, Wu *et al.*, 2012), we concluded that it was an undescribed species.

Taxonomic Treatment

Briggsia leiophylla Fang Wen & Y.G.Wei *sp. nov.* (Figs. 1 & 2 A–H)

It differs from *Briggsia longipes* by only one flower per cyme (rare two), brightly yellow and nearly glabrous corolla, anthers thecae confluent.

Type:—CHINA. Guizhou Province: Huishui County, growing on damp surface of rock in a limestone cave, 25°49'N, 106°43'E, elevation ca. 1000 m, 10 December 2009 (fl.), *Fang Wen 091201* (holotype IBK!, isotype IBK! ANU!).

Description

Perennial herbs. Rhizome subterete, glabrous, with obvious internodes but irregular intervals, 2–8 cm long, 0.3–0.5 cm in diameter. Leaf 5–8 or more, commonly clustered at the top of extended rhizomes, or irregularly alternate on rhizome. Petiole 1–4 cm long, 2–4 mm in diameter, glabrous; The shape of leaf blades changeable, lanceolate, narrow obovate or obovate, oblong, rounded, occasionally spatulate, glabrous, dark green, thin coriaceous, 3.5–15.5 cm × 1.5–10 cm; apex changeable, acute, subacute, obtuse, rounded, mucronate or occasionally retuse, margin entire, lateral nerves 3, rare 4 on each side of the midrib, glabrous, prominent adaxially and abaxially. Cymes 1–2, single flower per cyme, rare double, axillary; peduncle 5–9 cm long or longer, 0.9–1.1 mm in diameter, mint-green, slender, sparsely erect glandulous hairs, hairs 0.3–0.5 mm long; bracts 2, opposite, tiny, green, narrowly triangle, ca. 1.5 × ca. 1 mm, margin entire, apex acute, outside sparsely pubescent, caducous or withered before full-blooming period. Pedicel 9–11 mm long, 0.8–1.0 mm in diameter, hairs and color same as peduncle. Calyx 5-lobed, dissected to the base, segments lanceolate, the top central one ca. 6.0 mm long, base ca. 1.5 mm wide, the others ca. 6 mm long, base ca. 2 mm wide, apex acute, external inconspicuously brownish strumose, but internal glabrous, margin entire; corolla pale yellow to bright yellow, 4–4.5 cm long, orifice 1.4–1.7 cm in diameter, the thickest of corolla ca. 2 cm in diameter, base ca. 3.5 mm in diam., externally glabrous, occasionally very sparsely pubescent, internally glabrous; corolla tube swollen campanulate, externally pale yellow with light brown spot, with dark brown spots inside, gibbous abaxially, 3.8–4.1 cm long; limb distinctly 2-lipped, bright yellow; adaxial lip 2-parted to base, lobes semiorbicular, apex emarginated, ca. 1.1 × 0.5 cm, abaxial lip 3-parted to near middle, the lateral lobes indistinctively obliquely ovate or oval, apex rounded, the central one cordate, apex acute, 0.7–0.9 × ca. 0.6 cm. Stamens 4, the shorter pair of adaxial stamens respectively adnate to ca. 12 mm above corolla tube base, ca. 10 mm long, the longer pair of abaxial stamens respectively adnate to ca. 8 mm above corolla tube base, 14–15 mm long; filaments glabrous; anthers oblong, thecae confluent, glabrous; staminodes 1, adnate to ca. 0.9 cm above corolla tube base, ca. 0.5 mm long. Disc annular, ca. 1.8 mm in height, glabrous, margin subentire. Pistil ca. 2.7 cm long, ovary sparsely glandulosa hairs, narrowly oblong-ovoid, brownish purple, ca. 10 mm long, ca. 1.8 mm in diameter, 1-loculed; placentas 2, parietal, projecting inward, 2-cleft. Style white, ca. 12 mm long, 0.8–1 mm in diameter, glandular-pubescent; stigma 2, equal, undivided, liguliform, 3–4 × 1.5–1.8 mm, apex obtuse, margin irregularly repand. Capsule unseen. Fl. Dec.–Jan.

Distribution:—China (narrow endemic and only known from the type locality, i.e. Duanshan Town, Huishui County (25°49'N, 106°43'E) in south Guizhou Province of SW China.

Habitat & Ecology:—*Briggsia leiophylla* is known only from the type locality near to Huishui County, Guizhou province. All plants grow on a damp limestone rock in a large cave, at an elevation ca. 1000 m a.s.l. Flowering is in December through January of next year.

Etymology:—This scientific and vernacular name of this new species refers to its glabrous leaf blades.

Vernacular name:—Guāngyè Cūtǒngjùtái.

Population Status: Initially we only found one population in one locality, in a limestone cave, a narrow area on damp cliff, ca. 20 individuals. Its symbiotic plants mainly are two species of *Elatostema* J. R. & G. Forst. and one species of *Begonia* Linn..

Endangered status: Now only one distributing point survived, and the area is very small. The amount of individuals is seriously smaller than the lowest standard of an endangered status.

Proposed IUCN Category: We carefully investigated the type locality and adjacent regions for many times in past five years. The new species described here appears to be restricted to its type locality, a limestone cave. All individuals are less than 30. Using the IUCN Red List categories and criteria version 3.1 (IUCN 2001), a provisional conservation status of Critically Endangered (CR C12a (i, ii); D; E) is assessed for this species.

Notes:—This species is special at morphology. It can be differentiated from other species in *Briggsia* because of the extended mode of its rhizomes. Besides this new species, there are two Chinese species in *Briggsia* are almost glabrous, namely *Briggsia mihieri* (Franchet 1885: 450) Craib (1919: 262) and *B. longipes* (Hemsl. ex Oliv. 1895: 2379) Craib (1919: 262) Burt. *B. leiophylla* is similar to *B. longipes* in several characters, especially in flower (Figure 3). However, it can be easily distinguished by extended rhizomes, commonly one flower on one cyme, corolla yellow, etc (Table 1).

Additional specimens examined:—*Briggsia longipes* (Hemsl. Ex Oliv.) Craib: CHINA. Guizhou: Anlong County, Xianheping, 29 October 2012, *Fang Wen 121029-3* (IBK); Guangxi: Xing'an County, Baishi village, 13 October 2013, *Fang Wen 131013-1* (IBK). *Briggsia leiophylla* Fang Wen & Y.G.Wei: CHINA. Guizhou: Huishui County, Duanshan Town, Huishui County, 04 February 2015, *Fang Wen & Hua-Fei Cen 150204-1* (IBK).

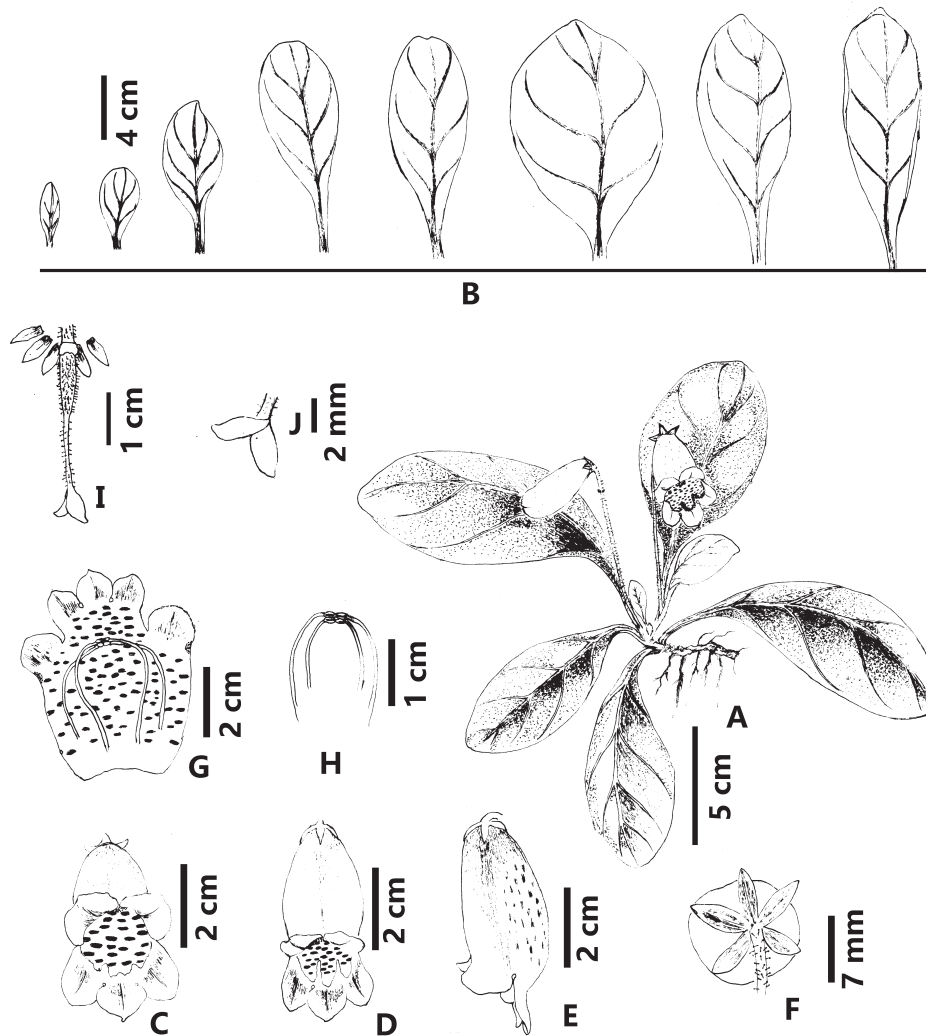


FIGURE 1. *Briggsia leiophylla*. **A)** Habit. **B)** Different shape of leaf blades. **C)** Frontal view of corolla. **D)** Top view of corolla. **E)** Lateral view of corolla. **F)** Back view of corolla for showing calyx lobes. **G)** Opened corolla. **H)** Stamens and filaments. **I)** Pistil. **J)** Stigma.

TABLE 1. Morphological comparison of *Briggsia leiophylla* and *B. longipes*

Characters	<i>B. leiophylla</i>	<i>B. longipes</i>
Leaf blade	lanceolate, narrow obovate or obovate, oblong, rounded, occasionally spatulate, margin entire	narrowly obovate to obovate or elliptic, margin irregularly crenate to serrate
Cyme	1-flowered, rare 2	1–5-flowered or more
Peduncle and pedicel	shorter glandulous hairs, hairs 0.3–0.5 mm long	longer glandulous hairs, hairs 0.5–1.2 mm long
Calyx lobes	lanceolate, external inconspicuously brownish strumose, but internal glabrous	narrowly ovate to narrowly triangular, outside glabrous to glabrescent, obscurely 3-veined
Corolla	pale yellow to bright yellow	blue-purple or pale purple
Anthers	thecae confluent	thecae not confluent
Style	glandular-pubescent	glabrescent to sparsely pubescent
Flowering	December–January	September–October

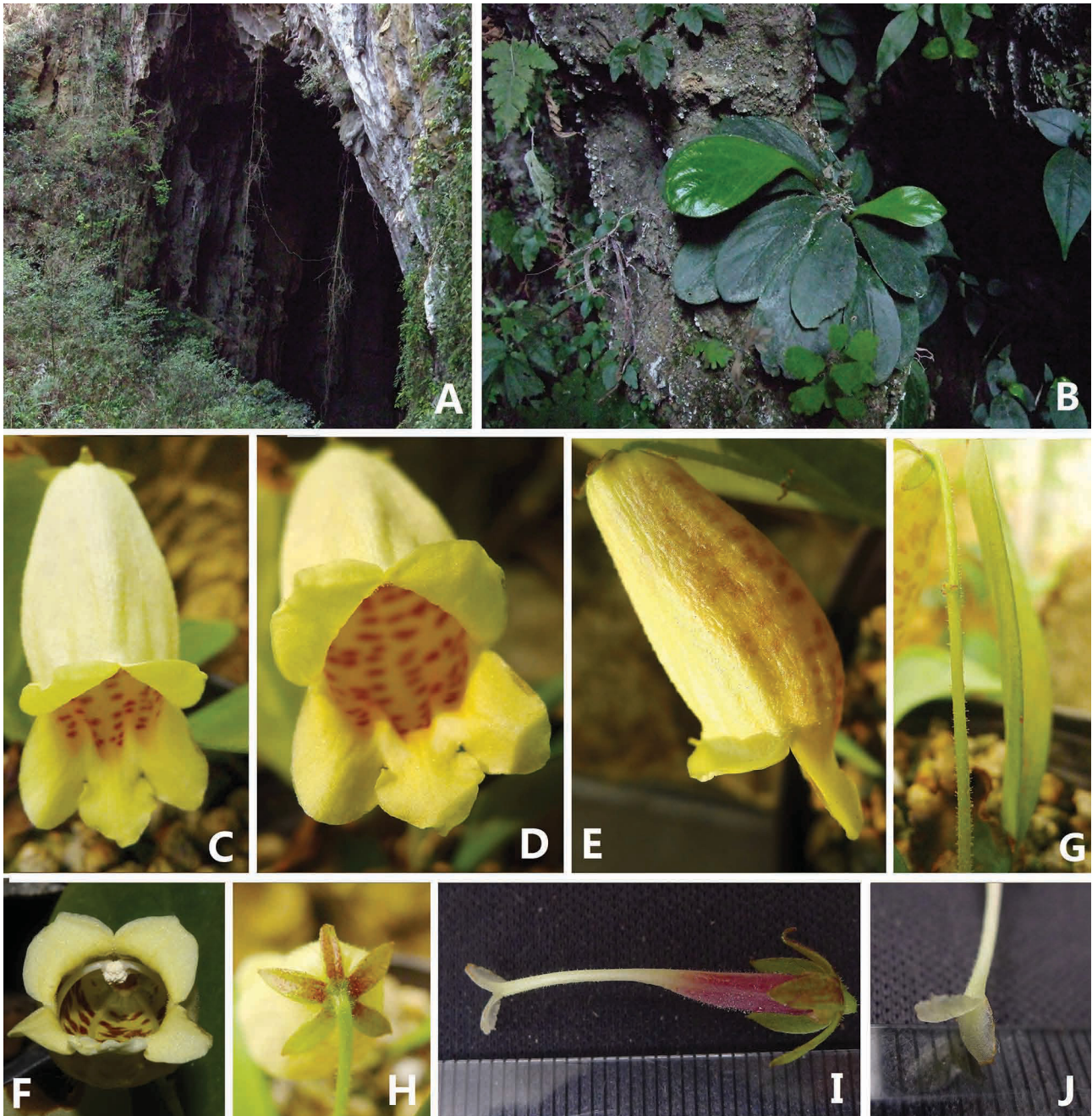


FIGURE 2. *Briggsia leiophylla*. **A)** Habitat. **B)** Habit. **C)** Top view of corolla. **D)** Frontal view of corolla. **E)** Lateral view of corolla. **F)** Frontal view of corolla for showing anthers. **G)** Pedicel and peduncle. **H)** Calyx lobes. **I)** Pistil. **J)** Stigma.

Acknowledgements

We are grateful to Mr. Wen-Hua Xu for the botanical drawings. This study was financially supported by Guangxi Forest Science & Technology Foundation (Gui Lin Ke Zi [2014] No.27), the Guangxi Natural Science Foundation (2013GXNSFAA019071), Science Research Foundation of Guangxi Academy of Sciences (no. 12YJ25ZW013), and International S & T Cooperation Projects of Guangxi (Guikehe 1347004-4) and Guilin (20130412).

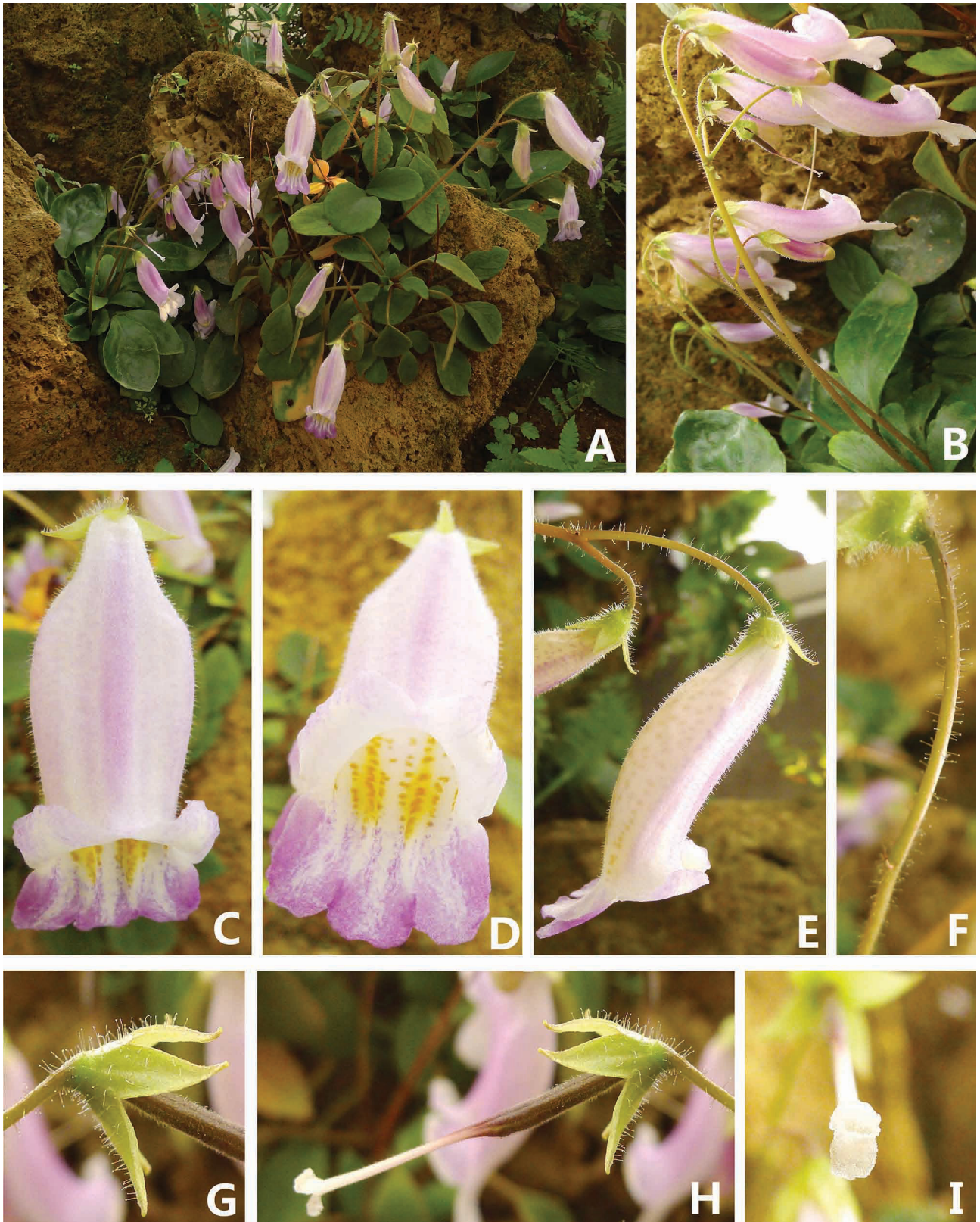


FIGURE 3. *Briggsia longipes*. **A)** Habit. **B)** Cymes and flowers. **C)** Top view of corolla. **D)** Frontal view of corolla. **E)** Lateral view of corolla. **F)** Pedicel. **G)** Calyx lobes. **H)** Pistil. **I)** Stigma.

References

- Craib, W.G. (1919) *Didissandra* and allied genera. *Notes from the Royal Botanic Garden, Edinburgh* 11(55): 262.
- Franchet, A. (1885) Cyrtandracées nouvelles de la Chine. *Bulletin mensuel de la Société linnéenne de Paris* 1(52–81): 450.
- Hemsley, W.B. (1895) Icones plantarum or figures, with brief descriptive characters and remarks, of new or rare plants, selected from the author's herbarium. *Hooker's Icones Plantarum* 24(4): 2379.
- IUCN (2001) *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK, pp. 16–18.
- Li, Z.Y. & Wang, Y.Z. (2004) *Plants of Gesneriaceae in China*. Henan Science and Technology Publishing House, Zhengzhou, pp. 67–79.
- Möller, M., Middleton, D., Nishii, K., Wei, Y.G., Sontag, S. & Weber, A. (2011) A new delineation for *Oreocharis* incorporating an additional ten genera of Chinese Gesneriaceae. *Phytotaxa* 23: 1–36.
- Wang, W.T., Pan, K.Y. & Li, Z.Y. (1990) Gesneriaceae. In: Wang, W.T. (Ed.) *Flora Reipublicae Popularis Sinicae* 69. Science Press, Beijing, pp. 203–226.
- Wang, W.T., Pan K.Y., Li Z.Y., Weitzman A.L. & Skog L.E. (1998) Gesneriaceae. In: Wu, Z.Y., Raven, P.H. (Eds.) *Flora of China* 18. Science Press and Missouri Botanical Garden Press, Beijing, St. Louis, pp. 272–280.
- Weber, A., Clark, J.L. & Möller, M. (2013) A new formal classification of Gesneriaceae. *Selbyana* 31(2): 68–94.
- Wei, Y.G., Wen, F., Möller, M., Monroe, A., Zhang, Q., Gao, Q., Mou, H.F., Zhong, S.H. & Cui, C. (2010) *Gesneriaceae of South China*. Guangxi Science and Technology Publishing House, Nanning, 777 pp. [in Chinese and English]
- Wu, L., Pan, B., Yang, J.C. & Xu, W.B. (2012) *Briggsia damingshanensis* (Gesneriaceae), a new species from Guangxi, China. *Annales Botanici Fennici* 49: 79–82.
<http://dx.doi.org/10.5735/085.049.0111>