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Oreocharis pilosopetiolata, a new species of Gesneriaceae from southeastern Guangdong, China

LI-HUA YANG[1,2,3], JI-GANG ZHOU[1], PING XU[1], ZHI-TAO CHEN[1], YONG-HUI LU[1] & MING KANG[2*]
[1]*Huizhou Forestry Research Institute, Huizhou, Guangdong 516001, China*
[2]*South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, Guangdong 510650, China.*
[3]*University of Chinese Academy of Sciences, Beijing 100049, China.*
**Author for correspondence: mingkang@scbg.ac.cn*

Abstract

Oreocharis pilosopetiolata, a new species of Gesneriaceae from southeastern Guangdong, China, is described and illustrated. This species resembles *O. benthamii* var. *benthamii*, *O. benthamii* var. *reticulata* and *O. xiangguiensis*, but it differs from these species by its leaf and indumentum characters, which are discussed in this paper.

Introduction

Oreocharis Bentham (1876: 1021) was previously a genus with ca. 28 species, with a predominant distribution in China (Wang *et al*. 1998). However, based on molecular data and morphological evaluation, Möller *et al.* (2011) demonstrated that the former *Oreocharis* was phylogenetically closely related to ten mostly small Chinese genera, and they transferred all species of *Ancylostemon* Craib (1920: 233), *Bournea* Oliver (in Hooker 1893: 2254), *Dayaoshania* Wang (1983: 319), *Deinocheilos* Wang (1986: 1), *Isometrum* Craib (1920: 250), *Opithandra* Burtt (1956: 162), *Paraisometrum* W.T.Wang (in Weitzman *et al.* 1997: 431), *Thamnocharis* Wang (1981: 485) and *Tremacron* Craib (1918: 217), and four species of *Briggsia* Craib (1920: 236) including the type to *Oreocharis*. After this redefinition, the new *Oreocharis* included 88 species, and the further transfers from *Briggsia* and *Ancylostemon* to *Oreocharis* increased the number to over 100 (Chen *et al*. 2014; Möller *et al*. 2014). All of these made the genus one of the morphologically most diverse groups within Old Word Gesneriaceae

Over the past decade, our and others' botanical explorations into karst areas of southern China have greatly improved our knowledge of the diversity of Gesneriaceae, including the description of more than 50 species. However, only a few new species have been described for *Oreocharis*, such as, *O. dayaoshanioides* Yan Liu & W. B. Xu (in Liu *et al*. 2012: 393), *O. jinpingensis* W.H. Chen & Y.M. Shui (in Chen *et al*. 2013: 312), *O. yunnanensis* Rossini & J.Freitas (2014: 283), *O. tsaii* Y.H. Tan & J.W. Li (in Tan *et al.* 2015: 188), *O. brachypodus* J.M. Li & Z.M. Li (2015: 296) and *O. striata* Fang Wen & C.Z. Yang (in Yang *et al.* 2015: 369). In October 2012, during a field investigation in the Lianhuashan Baipanzhu Nature Reserve in southeastern Guangdong, China, we found an unknown plant of Gesneriaceae growing on rock surfaces. The characters of flower (such as slightly zygomorphic corolla, four separated stamens, oblong anthers, and so on) indicated that this species belonged to *Oreocharis*, and is similar to *O. benthamii* C.B. Clarke (1883: 63), *O. benthamii* var. *reticulata* Dunn (1908: 362) and *O. xiangguiensis* W.T. Wang & K.Y. Pan (in Pan 1987: 285), but differs in leaf and indumentum characters. After detailed morphological and literature analyses (Wang *et al.* 1998, Li and Wang 2004, Wei *et al.* 2010, Möller *et al.* 2011, Chen *et al*. 2014, Möller *et al*. 2014), we are convinced that this is a new species of *Oreocharis*, which is described and illustrated here.

Taxonomic treatment

Oreocharis pilosopetiolata L.H. Yang & M. Kang, *sp. nov.* (Figs. 1–2)

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Diagnosis:—*Oreocharis pilosopetiolata* is similar to *O. benthamii* var. *benthamii*, *O. benthamii* var. *reticulata* and *O. xiangguiensis*, but differs from these species by its chartaceous and elliptic to ovate leaf blades with crenate to serrate margin and cuneate base, 4–6 lateral veins, 1.7–3.6 cm long pedicel, 1.9–2.9 mm long calyx lobes, and dense or spare white or rust-brown villous indumenta on the petioles, leaf blade, peduncles, bracts, pedicels and calyx lobes. The new species also differs from *O. xiangguiensis* by its corolla tube, which is narrowly funnelform and gradually ampliate from base to mouth.

Type:—CHINA. Guangdong: Huidong City, Baipenzhu Town, on rock surfaces under evergreen broad-leaved forests in the Lianhuashan Baipanzhu Nature Reserve, 270–600 m, 23°05′52.88″ N, 115°13′9.78″ E, 15 September 2015 (flowering and fruiting), *L.H. Yang et al. YLH223* (holotype: IBSC!). Same locality, 25 March 2015, *L.H. Yang et al. YLH197* (paratype: Huizhou Forestry Research Institute!).

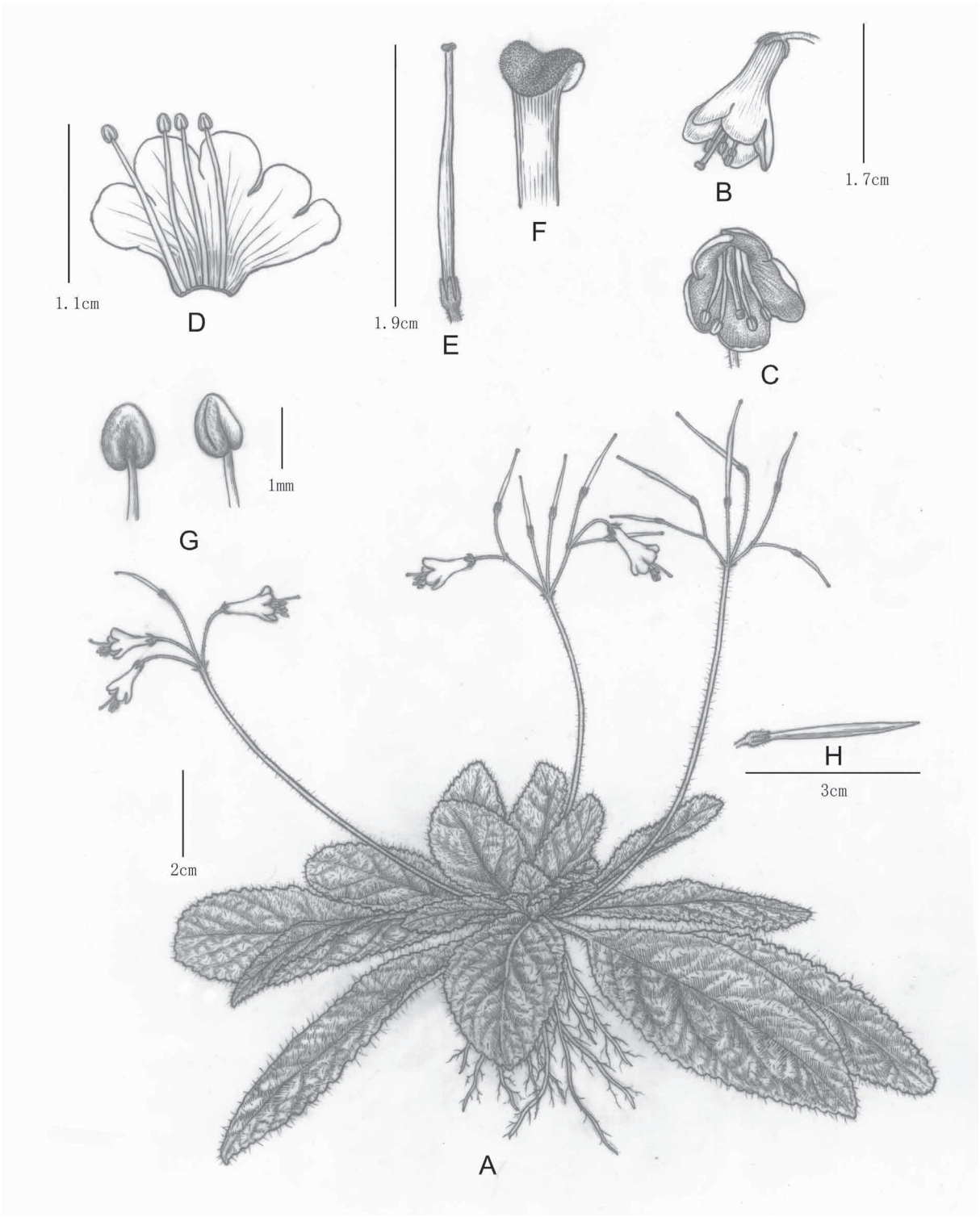

FIGURE 1. *Oreocharis pilosopetiolata*: A) habit; B) flower in side view; C) flower in front view; D) opened corolla showing stamens; E) pistil; F) stigma; G) anthers; H) fruit. Drawn by Yun-Xiao Liu from the holotype, *L.H. Yang et al. YLH223* (IBSC).

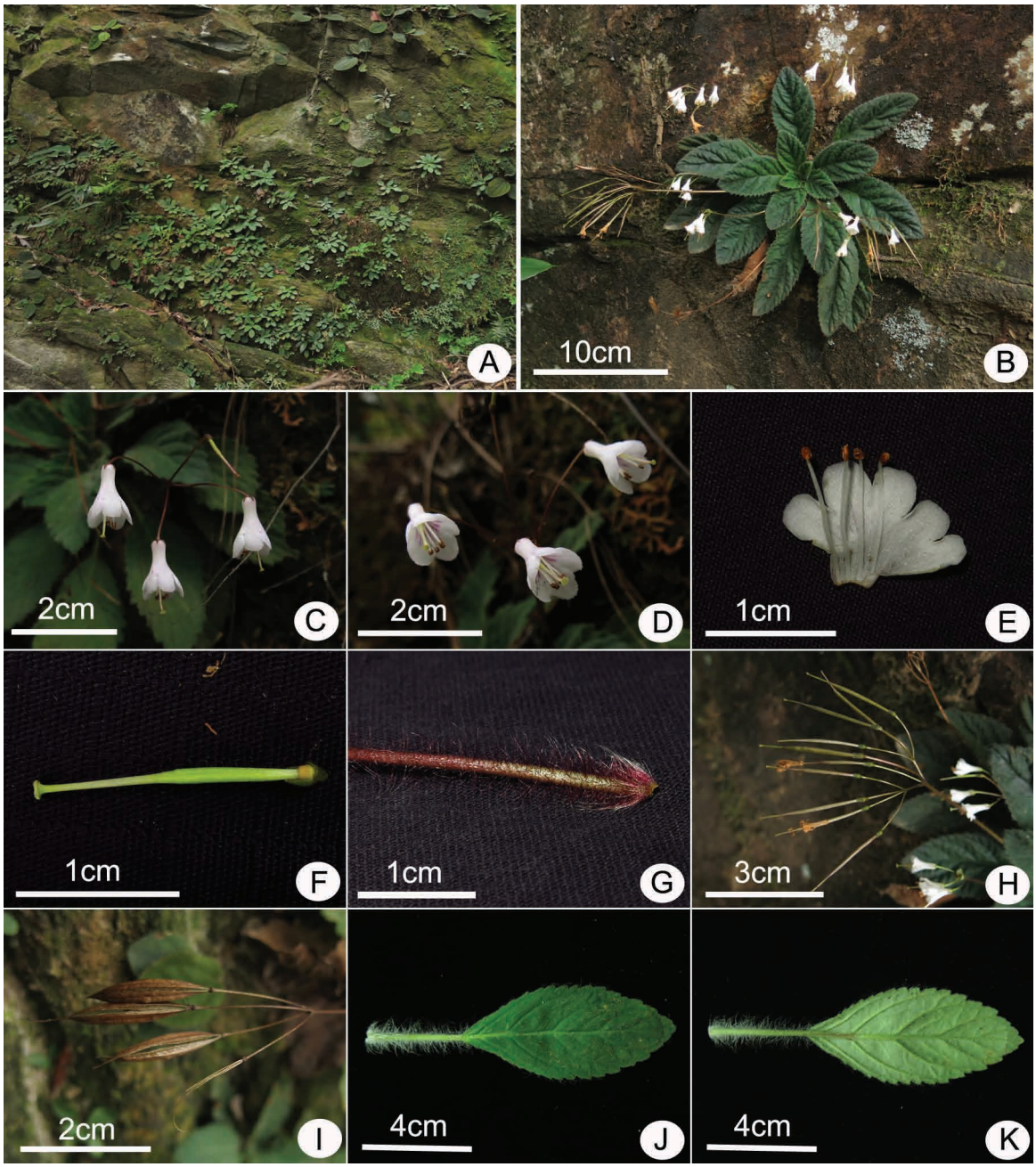

FIGURE 2. *Oreocharis pilosopetiolata:* A) habitat; B) habit; C) flower in side view; D) flower in front view; E) opened corolla showing stamens; F) pistil; G) base of peduncle; H) mature fruits before dehiscence; I) dehisced fruits; J) adaxial leaf surface; K) abaxial leaf surface. Photos by Li-Hua Yang.

Perennial herbs, rosulate, rhizomatous stems, subterete, 0.7–2.8 cm long, 2–9 mm in diameter. Leaves basal, 8–22, clustered at the apex; petioles terete, 1.3–6.0 cm long, 2–4 mm in diameter, white or rust-brown villous, especially at the base of petioles, hairs 1.9–6.7 mm long; leaf blade elliptic to ovate, 4.2–8.5 × 2.0–4.0 cm, chartaceous in dried, margins crenate to serrate, apices acute to obtuse, bases cuneate and slightly unequal, adaxial surface green, densely to sparsely white villous, abaxial surface pale green, white villous along veins, hairs 1.8–4.5 mm long, lateral veins 4–6 on each side of midrib, distinct, concave adaxially, prominent abaxially. Cymes 1–7, axillary, 1–10-flowered; peduncles brown to brownish red, 4.1–19.1 cm long, ca. 1 mm in diameter, densely rust-brown villous especially at the base, hairs 1.3–4.5 mm long; bracts 2, 1.5–2.8 × 0.4–1.0 mm, narrowly lanceolate to lanceolate, margins entire, with rust-brown villous outside; pedicels 1.7–3.6 cm long, ca. 0.5 mm in diameter, rust-brown villous. Calyx 5-parted to near base, lobes equal, lanceolate or triangular lanceolate, 1.9–2.9 × 0.7–1.0 mm, apex acuminate, rust-brown villous outside and glabrous inside. Corolla white or light purple red, with some purple stripes inside, glabrescent, 1.1–1.6 cm long, tube broadly tubular to narrowly funnelform, gradually ampliate from base to mouth, 8.0–10.7 mm long, 4.6–8.3

mm in diameter at mouth, 2.3–4.0 mm in diameter at base; limb slightly 2-lipped, all lobes wide oval to suborbicular; adaxial lip 2-sect from near base, lobes 2.5–4.9 × 2.8–5.0 mm, abaxial 3-sect from near base, lobes 3.5–5.7 × 3.3–6.4 mm; four separated stamens adnate to corolla base, nearly equal in length, 12.0–16.4 mm long; filaments slender, glabrescent; anthers broadly oblong, free, 2–loculed, dehiscing longitudinally, glabrescent, 1.3–1.9 × 0.8–1.2 mm; staminode 1, ca. 0.2 mm. Disc ca. 1.0 mm high, entire. Pistil 1.7–2.1 cm long, glabrescent; ovary oblong, 8.6–11.3 mm long. Stigma 1, disc-shaped, 0.6–1.5 mm in diameter. Capsule 2.3–3.5 cm, glabrescent, dehiscing loculicidally to base, initially on one side, valves 2 straight, not twisted.

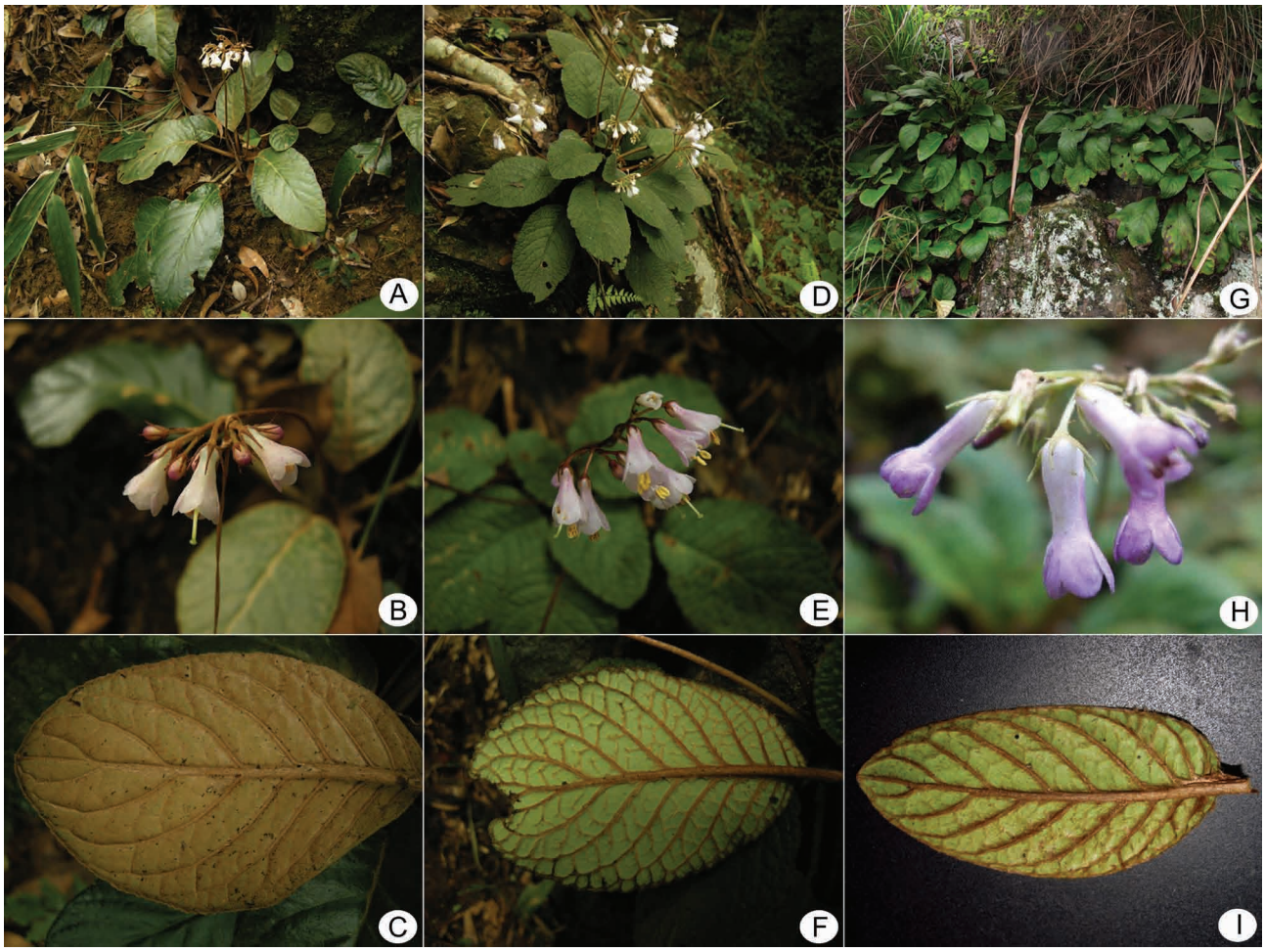

FIGURE 3. *Oreocharis benthamii* var. *benthamii* (A–C), *O. benthamii* var. *reticulata* (D–F) and *O. xiangguiensis* (G–I). A, D, &G) habit; B, E &H) flowers; C, F & I) abaxial leaf surface. *O. benthamii* var. *benthamii* and *O. benthamii* var. *reticulata* photos by Li-Hua Yang; *O. xiangguiensis* photos by Bo Pan.

Distribution and habitat:—*Oreocharis pilosopetiolata* is currently known only from Lianhuashan Baipenzhu Nature Reserve, Baipenzhu Town, Huidong City, Guangdong Province. Two populations have been found there, at the foot of the mountain (elevation ca. 274 m, 23°05′52.88″N; 115°13′9.78″E) and halfway up the mountain (elevation ca. 570m, 23°04′53.95″N; 115°13′16.70″E). The plants grow on rock surfaces under evergreen broad-leaved forests at both sites. The two populations are both less than 1000 individuals.

Phenology:—Flowering from August to September and fruiting from September to October.

Etymology:—The species epithet is based on the indumentum of the peduncle and petiole.

Relationships:—The new species most closely resembles *O. benthamii* var. *benthamii* (Fig. 3. A–C), *O. benthamii* var. *reticulata* (Fig. 3. D–F) and *O. xiangguiensis* (Fig. 3. G–I). The two varieties of *O. benthamii*, which is the type of *Oreocharis* (Möller *et al.* 2011), have too much overlapping characters that Wei *et al.* (2010) thought to combine the two varieties. Similarly, there is too little difference between *O. benthamii* and *O. xiangguiensis,* which were also considered as conspecific by Weitzman and Skog (Wang *et al.* 1998). But, the leaf and indumentum characters of this species can easily distinguish from its congeners, and the detailed morphological differences between these species are described in the diagnostics above and summarized in Table 1.

TABLE 1. Morphological comparisons between *Oreocharis pilosopetiolata*, *O. benthamii* var. *benthamii*, *O. benthamii* var. *reticulata* and *O. xiangguiensis*.

Characters	*O. pilosopetiolata*	*O. benthamii* var. *benthamii*	*O. benthamii* var. *reticulata*	*O. xiangguiensis*
Leaf blade texture	chartaceous	thick chartaceous or slight leathery	thick chartaceous or slight leathery	thick chartaceous or slight leathery
Leaf blade shape	elliptic to ovate	oblong to ovate	ovate-orbicular	elliptic to oblanceolate or narrowly ovate
Leaf blade edge	crenate to serrate	shallow serrate or crenate to entire	shallow serrate or crenate to entire	crenate to serrate
Leaf blade base	slight oblique, cuneate	oblique, cordate to cuneate	oblique, cordate to cuneate	oblique, rounded to cuneate
Lateral veins	4–6, concave adaxially, prominent abaxially	6–9, concave adaxially, prominent and unobvious reticulate abaxially	6–9, concave adaxially, prominent and more reticulate abaxially	7–10, concave adaxially, prominent and slight less reticulate abaxially
Cymes	1–10 flowered	8–15 flowered	8–15 flowered	5–15 flowered
Pedicels	1.7–3.6 cm long	0.5–1.5 cm long	0.5–1.5 cm long	0.5–1.8 cm long
Calyx lobes	1.9–2.9 mm long	4–7 mm long	4–7 mm long	3–5 mm long
Corolla shape	Corolla tube narrowly funnelform, gradually ampliate from base to mouth	Corolla tube narrowly funnelform, gradually ampliate from base to mouth	Corolla tube narrowly funnelform, gradually ampliate from base to mouth	Corolla tube nearly cylindric, slightly ampliate from base to mouth
Indumentum characters	white or rust-brown villous on the petioles, both side of leaf blade, peduncles, pedicels, outside of bracts and calyx lodes	brown woolly on the petioles andabaxial leaf surface; brown woolly or pubescent on adaxial leaf surface, peduncles, pedicels, outside of bracts and calyx lobes	brown woolly on the petioles and abaxial leaf surface; brown woolly or pubescent on adaxial leaf surface, peduncles, pedicels, outside of bracts and calyx lobes	brown woolly on the petioles and abaxial leaf surface; sparsely puberulent to pubescent on adaxial leaf surface, peduncles, pedicels, outside of bracts and calyx lobes

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References

Bentham, G. (1876) Gesneriaceae. *In:* Bentham, G. & Hooker, J.D. (Eds.) *Genera Plantarum* 2 (2). Lovell Reeve & Co., London, pp. 990–1025.

Burtt, B.L. (1956) An independent genus for *Oreocharis primuloides*. *Baileya* 4: 161–162.

Chen, W.H., Wang, H., Shui, Y.M., Möller, M. & Yu, Z.Y. (2013) *Oreocharis jinpingensis* (Gesneriaceae), a new species from Yunnan, China. *Annales Botanici Fennici* 50: 312–316. http://dx.doi.org/10.5735/086.050.0504

Chen, W.H., Shui, Y.M. & Möller, M. (2014) Two new combinations in *Oreocharis* (Gesneriaceae) from China. *Candollea* 69 (2): 179–

182.
http://dx.doi.org/10.15553/c2014v692a10
Clarke, C.B. (1883) Cyrtandreae. *In:* De Candolle, A. & De Candolle, C. (Eds.) *Monographiae Phanerogamarum* 5/1. Masson G., Paris, pp. 1–303.
Craib, W.G. (1918) Gesneracearum Novitates Nonnullae. *Notes from the Royal Botanic Garden Edinburgh* 10: 211–219.
Craib, W.G. (1920 ["1919"]) Gesneracearum Novitates. *Notes from the Royal Botanic Garden Edinburgh* 11: 233–254.
Dunn, S.T. (1908) A botanical expedition to central Fokien. *Journal of the Linnean Society, Botany* 38: 350–373.
http://dx.doi.org/10.1111/j.1095-8339.1908.tb00858.x
Hooker, J.D. (1893) *Icones Plantarum, or figures, with brief descriptive characters and remarks, of new or rare plants, selected from the author's herbarium.* Vol. 23, ser. 4, 3. Longman, Reese, Orne, Brown, Green & Longman, Kew, Bentham-Moxon Trust, London, t. 2254.
Li, Z.Y. & Wang, Y.Z. (2004) *Plants of Gesneriaceae in China*. Henan Science & Technology Publishing House, Zhengzhou, Henan, 721 pp.
Li, J.M. & Li, Z.M. (2015) *Oreocharis brachypodus* (Gesneriaceae), a new taxon from Guizhou, China. *Phytotaxa* 204 (4): 296–299.
http://dx.doi.org/10.11646/phytotaxa.204.4.6
Liu, Y., Xu, W.B., Huang, Y.S., Peng, C.I. & Chung, K.F. (2012) *Oreocharis dayaoshanioides*, a rare new species of Gesneriaceae from eastern Guangxi, China. *Botanical Studies* 53: 393–399.
Möller, M., Middleton, D., Nishii K., Wei Y.G., Songtag S. & Weber, A. (2011) A new delineation for *Oreocharis* incorporating an additional ten genera of Chinese Gesneriaceae. *Phytotaxa* 23: 1–36.
Möller, M., Chen, W.H., Shui, Y.M., Atkins, H. & Middleton, D.J. (2014) A new genus of Gesneriaceae in China and the transfer of *Briggsia* species to other genera. *Gardens' Bulletin Singapore* 66 (2): 195–205.
Pan, K.Y. (1987) Taxonomy of the genus *Oreocharis* (Gesneriaceae). *Acta Phytotaxonomica Sinica* 25: 264–293
Rossini, J., Freitas, J. (2014) *Oreocharis yunnanensis*, a new name for the illegitimate *Oreocharis glandulosa* (Gesneriaceae) from China. *Phytotaxa*, 163 (3): 180–180.
http://dx.doi.org/10.11646/phytotaxa.163.3.5
Tan, Y.H., Li, J.W. & Yin, J.T. (2015) *Oreocharis tsaii*, a new species of Gesneriaceae from southernYunnan, China. *Phytotaxa* 195 (2) : 188–192.
http://dx.doi.org/10.11646/phytotaxa.195.2.9
Wang, W.T. (1981) Genus novum primitivum Gesneriacearum e Sina. *Acta Phytotaxonomica Sinica* 19: 485–489.
Wang, W.C. (1983) Duo genera nova Gesneriacearum e Sina. *Acta Phytotaxonomica Sinica* 21 (3): 319–324.
Wang, W.T. (1986) Notulae de Gesneriaceis Sinensibus, VII. *Guihaia* 6: 6–11.
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. Scrophulariaceae through Gesneriaceae. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis, pp. 244–401.
Weitzman, A.L., Skog, L.E., Wang, W.T., Pan, K.Y. & Li, Z.Y. (1997) New taxa, new combinations, and notes on Chinese Gesneriaceae. *Novon* 7: 423–435.
http://dx.doi.org/10.2307/3391777
Wei, Y.G., Wen, F., Möller, M., Monro, A., Zhang, Q., Gao, Q., Mou, H.F., Zhong, S.H. & Cui, C. (2010) *Gesneriaceae of South China*. Guangxi Science and Technology Publishing House, Yanshan, Guilin, Guangxi, 777 pp.
Yang, C.Z., Cai, D.L. & Wen, F. (2015) *Oreocharis striata* (Gesneriaceae), a new species from Fujian, China. *Annales Botanici Fennici* 52: 369–372.
http://dx.doi.org/10.5735/085.052.0517