



Agapetes lihengiana (Ericaceae), a new species from Yunnan, China

Bin YANG^{1,2,#}, Li-Yan WANG^{3,#}, Ma-Mai YUE³, Xing-Da MA⁴, Yong-Jing-Wen YANG^{1,5}, Jun-Na MA³,
Qiang-Bang GONG³, Yun-Juan ZUO^{1,2,*}, Yun-Hong TAN^{1,2,*}

1. Southeast Asia Biodiversity Research Institute, Chinese Academy of Sciences & Center for Integrative Conservation, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Mengla, Yunnan 666303, China. 2. Yunnan International Joint Laboratory of Southeast Asia Biodiversity Conservation & Yunnan Key Laboratory for Conservation of Tropical Rainforests and Asian Elephants, Menglun, Mengla, Yunnan, 666303, China. 3. Management and Conservation Bureau of Yunnan Tongbiguan Provincial Nature Reserve, Dehong 678400, Yunnan, China. 4. Gardening and Horticulture Department, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Mengla 666303, Yunnan, China. 5. Institute of International Rivers and Eco-Security, Yunnan University, Kunming 650500, Yunnan, China. #contributed equally. *Corresponding authors' emails: YJZ: zuoyunjuan@xtbg.ac.cn; YHT: tyh@xtbg.org.cn;

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ABSTRACT: *Agapetes lihengiana* Bin Yang & Y.H.Tan (Ericaceae) is described and illustrated as a new species endemic to Yunnan, China. It is morphologically similar to *A. epacridea* Airy Shaw and *A. trianguli* Airy Shaw, but clearly differs in having flowers with shorter pedicel and white corolla with 5 vertical pink stripes, and conspicuous secondary veins on the abaxial surface of leaf blades. A detailed description, colour plates, and notes on the new species are provided.

KEY WORDS: *Agapetes*, *Agapetes epacridea*, *Agapetes trianguli*, *Agapetes pensilis*, Floristic exploration, Yingjiang, Taxonomy.

INTRODUCTION

Agapetes D. Don ex G. Don (Don, 1834) comprises approximately 100 species (Fang and Stevens, 2005), most of which are distributed in the Asian subtropical monsoon region (Wang *et al.*, 2021). In China, 59 species and two varieties are recognized (Fang and Stevens, 2005; Tong, 2014, 2016; Tong *et al.*, 2019, 2021, 2023; Wang *et al.*, 2021; Yang *et al.*, 2021a,b, 2022).

During our floristic exploration of Yingjiang County, Yunnan Province from 2021 to 2023, we encountered an interesting *Agapetes* species. At first sight, it resembles *Agapetes epacridea* Airy Shaw (Airy Shaw, 1948) in its small leaves and cylindrical white corollas with five vertical pink stripes. However, the morphology of the leaf blade and the shorter pedicels are very different. After a detailed examination of the morphological characters of our material and similar species (Airy Shaw, 1935, 1948, 1958; Tong *et al.*, 2022), we concluded that the plant represents a species new to science, and is described and illustrated here.

TAXONOMIC TREATMENT

Agapetes lihengiana Bin Yang & Y.H.Tan, *sp. nov.*

Figs.1 & S1

Type: CHINA. Yunnan Province, Yingjiang County, Zhina Township, Zhidong Village, 2140 m, 27 June 2022, L.Y. Wang, YB1176 (holotype: HITBC [0089968]; isotype: KUN).

Diagnosis: *Agapetes lihengiana* is morphologically similar to *A. epacridea* and *A. trianguli* in having spirally alternate leaves no more than 1.5cm long and 1cm wide,

and branchlets densely covered with spreading setae, but can be clearly distinguished from the former by its leaf blade with an acute or apiculate apex (vs. leaf blade apex with a 1–1.5 mm long pungent mucro), secondary veins conspicuous (vs. obscure), and shorter pedicel (ca.1 mm vs. 4–5 mm); and from the latter by its white corolla with five vertical pink stripes (vs. blood red), shorter pedicel (ca.1 mm vs. 3–4 mm), and shorter anther (5 mm vs.7.5 mm) (Table 1).

Description: Shrubs, 25–50 cm tall, epiphytic, evergreen, much branched, with spindly root tubers. **Branchlets** terete, slender, 2–4 mm in diam., densely covered with fuscous spreading setae 2–4 mm long. **Leaves** spirally alternate around stem, crowded. **Petiole** 1.0–1.5 mm long, sparsely puberulent. **Blade** ovate, elliptic-ovate to suborbicular, 8–15 × 6–9 mm, thinly leathery, abaxially almost glabrous, adaxially sparsely puberulent, almost glabrous, slightly transversely wrinkled when dry, midvein impressed adaxially, prominent abaxially, secondary veins 2–4 pairs, inconspicuous or sometimes impressed adaxially, prominent abaxially, especially on young leaves when dry, base obtuse to rounded, margin almost entire, with 6–8 pairs of inconspicuous spiny-glandular teeth, revolute when dry, apex acute to slightly apiculate, with 3 spiny-glandular teeth. **Inflorescences** axillary, 1-flowered, peduncle ca. 0.5 mm long. **Bracts** 3–4, ovate, 0.5–1.0 mm long, glabrous. Flowers articulated between pedicel and calyx, 1.8–2.2 cm long. **Bracteoles** 2, borne at base of pedicel, ovate, 0.5–1.0 mm long. **Pedicel** ca.1.0 mm long, densely white puberulous and glandular pilose. **Calyx** densely white puberulous and glandular pilose, tube cup-shaped, ca. 2.0 × 2.0 mm, limb ca. 4.0 mm long,

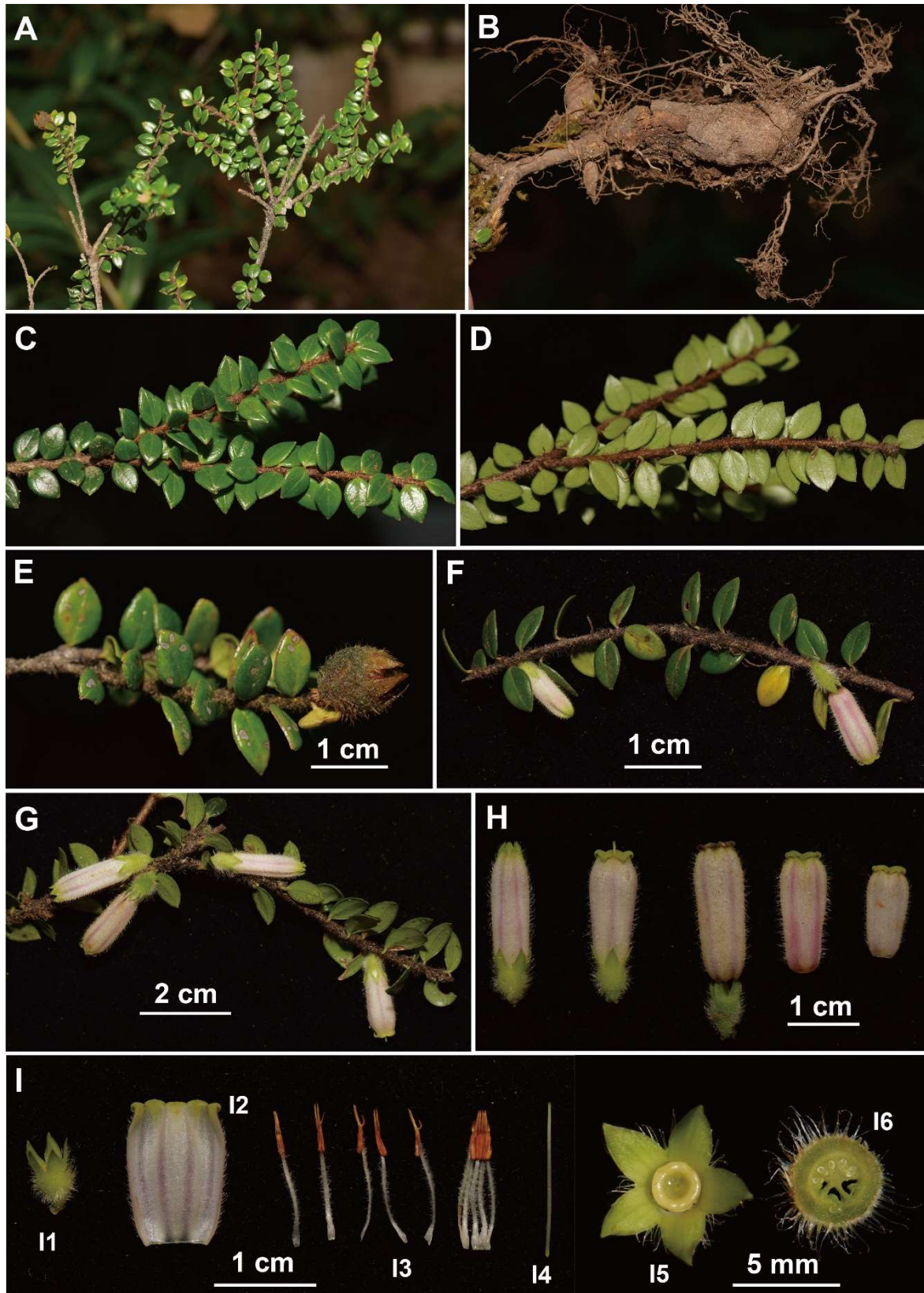


Fig. 1. *Agapetes lihengiana* Bin Yang & Y.H.Tan. **A.** fruiting branch; **B.** tubers and roots; **C.** leafy branch (adaxial view); **D.** leafy branch (abaxial view); **E.** part of fruiting branch; **F & G.** flowering branch; **H.** flowers; **I.** dissection of flower (I1. hypanthium; I2. opened corolla; I3. stamens; I4. style; I5. calyx limb and disk; I6. cross-section of ovary). (Photographed by B. Yang)

**Table 1.** Morphological comparison of *Agapetes lihengiana*, *A. epacridea*, *A. trianguli* and *A. pensilis*.

Characters	<i>A. lihengiana</i>	<i>A. epacridea</i> ¹	<i>A. trianguli</i> ²	<i>A. pensilis</i> ³
Branch	erect	erect	erect	pendulous
Leaf blade	thinly leathery, ovate, elliptic-ovate to suborbicular	coriaceous, ovate to suborbicular,	coriaceous, narrowly elliptic to ovate	coriaceous, ovate to elliptic-oblong
size	8–15 × 6–9 mm	8–15 × 4–7 mm	8–15 × 3.5–8 mm	10–16 × 5–11 mm
apex	acute or apiculate, forming 3 glandular spinies	with a 1–1.5 mm long pungent mucro	obscurely crenulate towards apex, acute or brevi-apiculate	obtuse to subacute, apiculate
indumentum	nearly glabrous on both surfaces	glabrous on both surfaces	sparsely pubescent adaxially, glabrous abaxially	sparingly and shortly pilose on both surfaces when mature but rather densely pubescent when young
margin	almost entire, with 6–8 pairs of inconspicuous spiny-glandular teeth, occasionally sparsely short ciliate	entire, sparsely stipitate-glandular-ciliate towards apex	nearly entire	entire, sparsely setose or sometimes eciliate.
Secondary veins	2–4 pairs, prominent abaxially	obscure on both sides	1–2 pairs, inconspicuous abaxially	obscure abaxially
Pedice length	ca. 1.0 mm	4–5 mm	3–4 mm	1–3 mm
Corolla color in vivo	white, with 5 vertical pink stripes, yellowish green apically	white with five fine red vertical lines, green apically	blood red	white, green to pinkish orange apically
Corolla length	13–18 mm	19–20 mm	ca. 19 mm	ca. 17 mm
Corolla indumentum	sparsely white puberulous and densely glandular pilose	densely white-puberulent and spreading long-stipitate-glandular-hirsute	densely white puberulous and long glandular pubescent	sparsely short pilose and densely white glandular pilose
Filament length	9–13 mm	11.5–13 mm	12–13 mm	ca. 12 mm
Anthers	ca. 5 mm long, with 2 spurs	5.5–6 mm long, with 2 spurs	7.5 mm long, with 2 spurs	ca. 6 mm long, with 2 spurs

Notes: ¹Data from Tong *et al.* (2022); ²Data from Airy Shaw (1958); ³Data from Airy Shaw (1935) and our observation based on the photos taken by Lei Cai & Bing-Mou Wang.

lobes 5, triangular-lanceolate, 3.0–3.5 × 1.0–1.2 mm, sparsely white glandular pilose outside, glabrous inside, apex attenuate. **Corolla** in vivo white, with 5 vertical pink stripes, sometimes stripes inconspicuous, yellowish green apically, cylindrical, slightly expanded towards apex, 13–18 × 4.5–5.5 mm, sparsely white puberulous and densely glandular pilose outside, sparsely puberulent to glabrous inside, lobes 5, reflexed at maturity, ovate-triangular, ca. 1.0 × 1.0 mm, acute apically. **Stamens** 10, 13–18 mm long. **Filaments** parallel, flattened, 9–13 mm long, widening at base, densely white pilose all over except base. **Anthers** adpressed to each other forming a ring around the style, ca. 5.0 mm long; thecae ca. 2.5–3.0 mm long; tubules parallel, ca. 3.0 mm long, with 2 erect dorsal spurs, spurs ca. 1.5 mm long. **Disk** light greenish yellow, ca. 2.0 mm in diam., glabrous. **Ovary** inferior, pseudo-10-locular, 2–3 mm in diam. **Style** 13–18 mm long, stigma punctate. **Mature berry** globose, dark yellow-green, 10–11 mm in diam. in vivo, densely white puberulous and glandular pilose, and with persistent calyx lobes at apex.

Distribution and habitat: *Agapetes lihengiana* is known only from Yingjiang County of West Yunnan, Southwest China. It is epiphytic on the trees of subtropical evergreen broad-leaved forests at 2100–2200 m elevations.

Phenology: Flowering may be from June to July, fruiting from November to December.

Etymology: The specific epithet is named in honor of Prof. Heng Li of Kunming Institute of Botany, who has made great contributions to our knowledge of the flora of Gaoligong Mountains in China.

Chinese name: Li Heng Shu Luo Bo 李恒树萝卜.

Preliminary conservation status: During our survey, only two populations of *Agapetes lihengiana* were encountered. One locality in Sudian Township has *Lanxangia tsaoko* planted under the forest, and this forest is at the edge of the Yunnan Tongbiguan Provincial Nature Reserve. The habitat of this species is under threat from tree felling in the area; thus, this species is assessed as vulnerable (VU) following IUCN guidelines (IUCN, 2022).

Additional specimens examined (paratypes): CHINA. Yunnan Province, Yingjiang County, Zhina Township, Zhidong Village, 2140 m, 16 December 2021, *L.Y. Wang*, YB1104 (HITBC [0089974], PE); Sudian Township, near Lama River, 2104 m, 3 April 2023, *B. Yang*, Y.J.W. Yang, M.M. Yue, YB1261 (HITBC, IBSC, KUN, PE).

Notes: According to Airy Shaw's infrageneric classification (Airy Shaw, 1935, 1958), *Agapetes lihengiana* should be assigned to *Agapetes* sect. *Agapetes* ser. *Longifiles* subser. *Subsessiles* due to its small leaves, solitary flowers with short pedicels, flowers usually densely glandular pilose or setose, elongated filaments longer than anthers, and the anthers with two dorsal spurs. Except the two species mentioned in the diagnosis part, *Agapetes lihengiana* is morphologically also similar to *A. pensilis*, a species distributed in China and Myanmar



(Airy Shaw, 1935; Huang, 1983) in its spirally alternate small leaves, and branchlets densely covered with spreading setae, but can be distinguished from *A. pensilis* by its nearly glabrous leaf blade surfaces (both sides) (vs. sparingly and shortly pilose on both surfaces when mature but rather densely pubescent when young), leaf blade margin nearly entire, with 6–8 pairs of inconspicuous spiny-glandular teeth, occasionally sparsely shortly ciliate (vs. entire, sparsely setose or sometimes eciliate). Moreover, although *A. lihengiana* and *A. pensilis* have a white corolla, the corolla of *A. lihengiana* is mostly with 5 vertical pink stripes, yellowish green apically; whereas the corolla of *A. pensilis* is almost pure white, green to pinkish orange apically (Table 1). More importantly, based on our observation in the field and protologues of *A. pensilis*, the growth pattern of *A. lihengiana* is erect, while that of *A. pensilis* is pendent and hanging from the trees (Airy Shaw, 1935).

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