Taiwania 71(4): 709–714, **2026**
DOI: 10.6165/tai.2026.71.709

Two new species and a new record of the genus *Pinalia* (Orchidaceae) from China

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(Manuscript received 13 July 2026; Accepted 12 September 2026; Online published 21 September 2026)

ABSTRACT: Two new orchid species, *Pinalia fuscinervia* J.D. Ya, Z.D. Han & H. Jiang and *P. brevistyla* J.D. Ya, Z.D. Han & H. Jiang, are described and illustrated from Yunnan, China. In addition, *Pinalia leucantha* Kuntze is newly recorded for China. *Pinalia fuscinervia* is morphologically distinct from *P. japonica* in its brown-veined leaf sheaths, falcate-lanceolate lateral sepals, an ovate and fleshy lip mid-lobe, and a lip disk bearing three yellow lamellae, with the median lamella inconspicuous. *Pinalia brevistyla* differs from *P. leucantha* in its lateral shorter sepals and petals; an orange-brown to dark purplish-red lip mid-lobe with irregular verrucate protuberances adaxially, a disk bearing a pair of tooth-like calli, and an extremely short, inconspicuous column foot.

KEY WORDS: Biodiversity, *Pinalia brevistyla*, *Pinalia fuscinervia, Pinalia japonica*, *Pinalia leucantha*, Xizang, Yunnan.

INTRODUCTION

The genus *Pinalia* Lindl. was first formally recognized as a separate genus in 1826. For many years thereafter, it was treated as a section within the broadly defined genus *Eria* Lindl. This traditional classification remained widely accepted until molecular phylogenetic methods were applied to orchid research (Chen, 1999; Pridgeon *et al*., 2005). Recent molecular taxonomic studies have greatly revised the classification of *Eria* and its related genera and confirmed that the former sectional divisions within *Eria* do not form monophyletic groups (Pridgeon *et al*., 2005; Ng *et al*., 2018). Based on updated phylogenetic evidence, most species formerly placed in *Eria* subgenus *Pinalia* (Buch.-Ham. ex Lindl.) Lindl., as well as species from *Eria* sections *Hymeneria* Lindl., *Polyura* Schltr., *Secundae* Leav. (*p.p.*) and *Urostachya* Lindl., have been transferred to the reinstated independent genus *Pinalia* (Ng *et al*., 2018). This study follows the latest classification framework of *Pinalia*.

Morphologically, this genus can be distinguished by a combination of typical features: ovoid to slender stems bearing several linear-lanceolate leaves clustered at or near the apex; axillary or nearly terminal, many-flowered inflorescences with obvious floral bracts. Additional diagnostic characteristics include sepals pubescent on their outer surfaces, lateral sepals that extend broadly at the base to form a mentum connected to the column foot, a labellum ornamented with diverse keels and calli of variable shapes and sizes, and a column bearing 8 pollinia (Chen *et al*., 2009; Teoh, 2021).

Pinalia is one of the most species-rich groups in the subtribe Eriinae. It currently includes about 176 accepted species, naturally distributed across tropical and subtropical Asia to the southwestern Pacific islands (POWO, 2026). China lies at the northern edge of its distribution range, with roughly 19 previously recorded native species (Chen *et al*., 2009; Jin *et al*., 2025).

Between 2015 and 2026, we conducted field surveys in Yunnan and Xizang and documented three *Pinalia* taxa requiring taxonomic study. These specimens are characterized by contiguous stems, subterminal leaves, externally pubescent sepals, and lateral sepals with broadly dilated bases forming a mentum attached to the column foot. By examining herbarium specimens either directly or through digital images from online databases (B, E, HITBC, IBSC, K, KUN, P, PE), together with detailed consultation of relevant literature (Long and Averyanov, 2002; Chen *et al*., 2009; Agrawala and Chowdhery, 2013; Averyanov *et al.,* 2015; Lin, 2019; Aung *et al*., 2020; Ormerod and Kurzweil, 2020; Teoh, 2021; Pedersen *et al*., 2022; Yu *et al*., 2023; Jin *et al*., 2025; Bajracharya, 2026), we confirmed that two of these collections represent previously undescribed species belonging to the genus *Pinalia* (Epidendroideae: Podochileae). Additionally, one *Pinalia* taxon found in Xizang is reported herein as a new distribution record for China. In this paper, we present detailed morphological descriptions and photographs of the two new species and the newly recorded species.

MATERIALS AND METHODS

We collected living plants and prepared herbarium specimens during fieldwork in the Hengduan Mountains of northwestern Yunnan and the Himalayas of southeastern Xizang. Morphological observations and quantitative measurements were mainly carried out on fresh material collected in the field. All voucher specimens studied are preserved permanently at two

herbaria: the Herbarium of Kunming Institute of Botany, Chinese Academy of Sciences (KUN) and the Herbarium of Yunnan Academy of Forestry and Grassland (YAF).

TAXONOMIC TREATMENT

Pinalia fuscinervia J.D.Ya, Z.D. Han & H.Jiang, ***sp. nov.*** **褐脉苹兰 (He Mai Ping Lan) Fig. 1**

Type: CHINA. Yunnan Province, Dali Prefecture, Yangbi County, Cangshanxi Township, Xueshanhe, 2405 m, epiphytic on tree trunks in mid-montane humid evergreen broad-leaved forest, 23 May 2020, *J.D. Ya et al. 20CS19038* (holotype KUN!; isotypes KUN!)

Diagnosis: *Pinalia fuscinervia* resembles *P. japonica* (Maxim.) Ormerod in flower morphology and dimensions, but differs in leaf sheaths with brown nerves (vs. nerves not brown); lateral sepals falcate-lanceolate (vs. ovate); mid-lobe ovate and fleshy-thickened (vs. quadrate, not thickened); disk furnished with three lamellae running from the mid-disk down to the base of the mid-lobe and median lamella inconspicuous (vs. three lamellae originating at the disk base, the median lamella extending to the mid-lobe apex and the paired lateral ones only to the mid-lobe base).

Description: Epiphytic herbs. Roots terete, slender, branched, pubescent, *ca.* 0.2–0.4 mm in diameter. Stems contiguous, regularly arranged in a row on the rhizome, ovoid to narrowly ovoid, 1.5–2.5 cm × 0.5–1.5 cm, apex 2–3-leaved. Leaves not completely spreading at anthesis, enclosed by membranous sheaths with conspicuously brown reticulate veins; mature leaves lanceolate, 5.0–7.5 × 1.0–1.5 cm, acuminate. Inflorescences subterminal, pubescent, 3.5–5.5 cm long, 3–5-flowered; peduncle ca. 1.3 cm long; floral bracts yellowish green, ovate-oblong, mucronate, concave, glabrous, ca. 5.0 × 2.5 mm. Flowers white, with a yellow lip mid-lobe; pedicel and ovary ca. 6.0 mm long, densely white tomentose. Dorsal sepal oblong-elliptic, ca. 8.0 × 3.0 mm, acute; lateral sepals falcate-lanceolate, abruptly contracted above middle, ca. 8.0 × 3.5 mm, acute, base oblique; petals oblong-lanceolate, slightly oblique, ca. 6.5 × 2.0 mm, obtuse-truncate; labellum obovate in outline, curved, ca. 5.5 × 3.5 mm, 3-lobed; lateral lobes suberect, deltoid, ca. 1.5 × 1.5 mm, acute; mid-lobe ovate, fleshy-thickened, ca. 2.5 × 3.5 mm, obtuse; disk with 3 lamellae extending from mid-disk down to base of mid-lobe, the median lamella being very inconspicuous. Column semiterete, ca. 3.0 mm long; foot ca. 2.5 mm long. Anther cap hemispherical, ca. 1.1 × 0.7 mm; pollinia 8, yellowish-white, compressed obovate.

Phenology: Flowering from May to June.

Distribution and habitat: *Pinalia fuscinervia* is so far documented exclusively from Yangbi County and Yunlong County, northwestern Yunnan Province. This epiphytic taxon grows on tree trunks in humid mid-montane evergreen broad-leaved forests at elevations from 2200 m to 2400 m.

Etymology: The epithet is derived from the brown-viened leaf sheaths characteristic of this new species.

Additional specimens examined (paratypes): CHINA. Yunnan Province, Dali Prefecture, Yunlong County, Caojian Township, Lushan Cun, Amiandiji, 2235 m, epiphytic on trees in semi-humid evergreen broad-leaved forest, 1 May 2015, *H. Jiang & Z.D. Han 06785* (YAF!). Yunnan Province, Dali Prefecture, Yunlong County, Gongguoqiao Township, Hetaoping, 2240 m, epiphytic on trees in semi-humid evergreen broad-leaved forest, 2 May 2015, *H. Jiang & Z.D. Han 06800* (YAF!).

Pinalia brevistyla J.D.Ya, Z.D. Han & H.Jiang, ***sp. nov.*** **短柱苹兰 (Duan Zhu Ping Lan) Fig. 2**

Type: CHINA. Yunnan Province, Baoshan Prefecture, Tengchong County, Huoqiao Township, 1780 m, epiphytic on trees in semi-humid evergreen broad-leaved forest, 25 April 2026, *H. Jiang 13056* (holotype KUN!; isotypes YAF!)

Diagnosis: *Pinalia brevistyla* is morphologically similar to *P. leucantha* Kuntze, but differs from it in having shorter lateral sepals and petals, ca. 6 mm long (vs. ca. 9 mm long); lip mid-lobe orange-brown to dark purplish-red (vs. yellowish-white); mid-lobe adaxially with irregular verrucate protuberances (vs. lacking such protuberances); disk with a pair of tooth-like calli (vs. with two lamellae extending from the base to near the base of the mid-lobe); and column foot extremely short and inconspicuous (vs. foot ca. 1.5 mm long).

Description: Epiphytic herbs. Roots terete, slender, branched, pubescent, ca. 0.2–0.6 mm thick. Stems contiguous, regularly arranged in a row on rhizome, narrowly ovoid, 1.3–2.3 cm × 0.6–0.8 cm, apex 3–4-leaved. Leaves not completely spreading at anthesis, sheathing at base, mature leaves lanceolate, 6.0–7.5 × 0.5–0.8 cm, acuminate. Inflorescences subterminal, densely brown tomentose, 3.0–4.0 cm long, 3–7-flowered; peduncle ca. 1.5 cm long; floral bracts yellowish green, ovate-oblong, concave, ca. 5.0 × 2.0 mm, acuminate. Flowers white, lip orange-brown to dark purplish-red; pedicel and ovary ca. 5.0 mm long, densely brown-tomentose. Sepals sparsely brown tomentose abaxially; dorsal sepal oblong-elliptic, ca. 8.0 × 3.5 mm, apex acute; lateral sepals falcate-ovate, ca. 6.0 × 3.0 mm, base oblique, apex acute; petals oblong-lanceolate, ca. 6.0 × 2.0 mm, apex acute; labellum subobovate-elliptic in outline, curved, ca. 5.0 × 3.0 mm, 3-lobed; lateral lobes suberect, deltoid, ca. 2.0 × 1.0 mm, acute; mid-lobe reniform, ca. 2.0 × 3.0 mm, fleshy-thickened, adaxially with irregular verrucate protuberances, and centrally thickened into a longitudinal ridge, apex emarginate; disk with a pair of distinct, fleshy, raised and tooth-like calli at the base of the mid-lobe. Column semiterete, ca. 1.5 mm long; foot extremely short and inconspicuous. Anther cap hemispherical, ca. 1.4 × 1.1 mm; pollinia 8, pale yellowish-white, obovate, ca. 0.8 mm long.

Phenology: Flowering from April to May.

Fig. 1. ***Pinalia fuscinervia*** J.D.Ya, Z.D. Han & H.Jiang, ***sp. nov.*** **A.** Habitat. **B & Q.** Plant. **C–E.** Flowers. **F.** Adaxial sepals, petals and labellum. **G–J.** Labellum, showing fleshy-thickened mid-lobe and 3 lamellae on the disk. **K & L.** Column. **M–O** Anther cap. **P.** Pollinarium. **R.** The brown nerved leaf sheaths.

Fig. 2. ***Pinalia brevistyla*** J.D.Ya, Z.D. Han & H.Jiang, ***sp. nov.*** **A.** Habitat. **B & C.** Inflorescence. **D & E.** Flowers. **F.** Adaxial sepals, petals and labellum. **G.** Column and labellum. **H–K.** Labellum, showing the irregular verrucate protuberances on the mid-lobe and two tooth-like calli on the disk. **L.** Plant. **M.** Bract. **N & O.** Column. **P & Q.** Anther cap. **R.** Pollinarium.

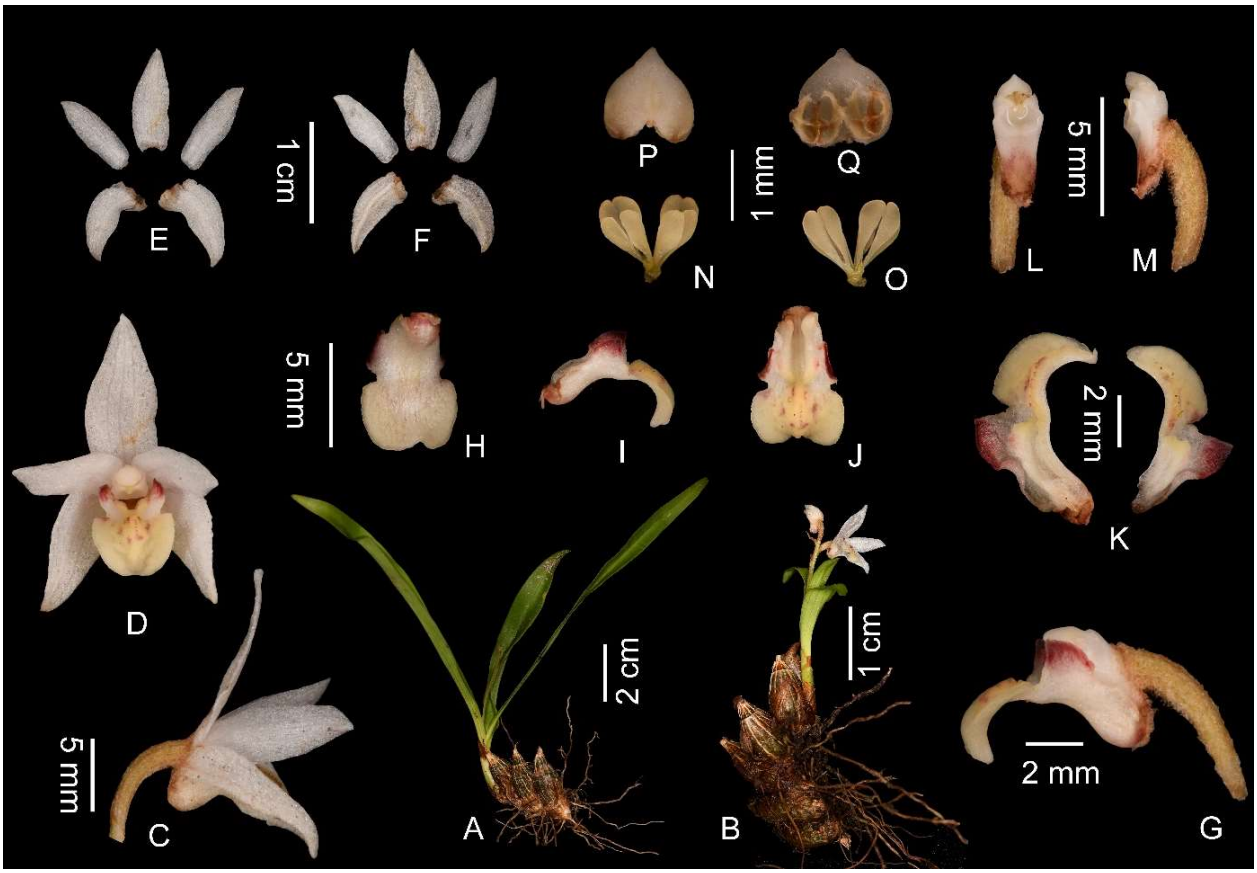

Fig. 3. ***Pinalia leucantha*** Kuntze **A.** Plant. **B.** Flowering plant. **C & D.** Flower. **E.** Adaxial sepals and petals. **F.** Abaxial sepals and petals. **G.** Column and labellum. **H–J.** Labellum. **K.** Dissected labellum. **L & M.** Column. **N & O.** Pollinarium. **P & Q.** Anther cap.

Distribution and habitat: Three populations of *P. brevistyla* have been discovered at three localities in Yunnan: Tengchong, Lushui and Yunlong, all situated within the Hengduan Mountain ranges. It is chiefly epiphytic and occasionally lithophytic, growing on tree trunks or rocks in semi-humid mid-montane evergreen broad-leaved forest at elevations from 1700 m to 2400 m.

Etymology: The specific epithet *brevistyla* refers to the short column of this new species.

Additional specimens examined (paratypes): CHINA. Yunnan Province, Dali Prefecture, Yunlong County, Gongguoqiao Township, 2201 m, on rocks under semi-humid evergreen broad-leaved forest, 28 April 2020, *J.-D. Ya et al. 20CS19000* (KUN!). CHINA. Yunnan Province, Nujiang Prefecture, Lushui County, Shangjiang Township, 2355 m, epiphytic on trees in semi-humid evergreen broad-leaved forest, 29 April 2016, *H. Jiang & W.P. Zhang 07200* (YAF!)

Pinalia leucantha Kuntze, Revis. Gen. Pl. 2: 679 (1891). ≡ *Eria alba* Lindl., Gen. Sp. Orchid. Pl.: 67 (1830); *Octomeria alba* (Lindl.) Wall. ex Hook.f., Fl. Brit. India 5: 795 (1890). Holotype: Nepal, Sheopore, *Wallich s.n.*, *K000260001*! (K).

吉隆苹兰 (Ji Long Ping Lan) Fig. 3

***Description*:** Epiphytic herbs. Roots terete, slender, branched, pubescent, ca. 0.5–0.8 mm thick. Stems contiguous, regularly arranged in a row on rhizome, narrowly ovoid, 1.3–5.5 cm × 0.6–0.8 cm, apex 2–5-leaved. Leaves not completely spreading at anthesis, sheathing at base, mature leaf lanceolate, 5.0–15.0 × 0.7–2.5 cm, acuminate. Inflorescences subterminal, sparsely brown tomentose, 3.0–8.0 cm long, 2–8-flowered; peduncle ca. 2.0–4.0 cm long; floral bracts yellowish green, ovate-oblong, concave, ca. 3.5 mm long, acuminate. Flowers white, lip yellowish-white and lateral lobes reddish-brown; pedicel and ovary ca. 6.0 mm long, sparsely brown tomentum. Sepals sparsely brown tomentose abaxially; dorsal sepal oblong-lanceolate, ca. 9.0 × 3.5 mm, apex acute; lateral sepals falcate-ovate, ca. 9.0 × 4.0 mm, base oblique, apex acute; petals oblong-lanceolate, ca. 9.0 × 3.0 mm, apex acute; labellum obovate-oblong in outline, ca. 7.0 × 4.5 mm, shortly clawed at base, 3-lobed; lateral lobes suberect, deltoid, ca. 2.0 × 1.4 mm, acute; mid-lobe reniform, ca. 3.5 × 4.5 mm, thickened centrally into a longitudinal ridge, apex emarginate; disk with 2 lamellae from base to near base of mid-lobe. Column semiterete, ca. 2.5 mm long; foot ca. 1.5 mm long. Anther cap hemispherical, ca. 1.5 × 1.5 mm; pollinia 8, pale yellowish-white, obovate, ca. 0.8 mm long.

***Phenology*:** Flowering in June.

***Distribution and habitat*:** *Pinalia leucantha* is distributed from the western and eastern Himalayas,

including Nepal, eastward to China. This represents the first national record of the species for China, found in Gyirong County, Xizang. It grows as a lithophyte on rocks in river valleys at an elevation of 1896 m.

Additional specimens examined: CHINA. Xizang Autonomous Region, Shigatse Prefecture, Gyirong County, Resuo Township, 1896 m, grows on cliffs in river valleys, 28 June 2024, *J.-D. Ya & Wei Zhang 24CS25933* (KUN!)

ACKNOWLEDGMENTS

We are grateful to Mr. Zhang-Fu Yu from Tengchong Bureau of Forestry and Grassland for his generous assistance with fieldwork. This research was supported financially by National Key Research & Development Program of China (2024YFD1200704), Science and Technology Basic Resources Investigation Program of China (2021FY100200), Key Science and Technology Program of Yunnan Province (202402AE090039), National Forestry and Grassland Administration (2019073017, 2019073019) and the National Wild Plant Germplasm Resource Center.

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