



## *Ceropegia eshanensis*, a new species of Apocynaceae from Yunnan, China

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**ABSTRACT:** *Ceropegia eshanensis*, a new species from Yimen, Yunnan, China, is described and illustrated. The species is presently placed in sect. *Chionopegia*, morphologically, it is similar to *C. driophila* and *C. exigua*, but clearly differs in its densely verrucose lenticellate old stems, leaf blades ovate to elliptic, 4–7 × 3–4.5 cm, glabrous, base broadly cuneate, slightly decurrent, longer peduncles. A comparison table of related species is provided.

**KEY WORDS:** *Ceropegia*, *Ceropegia driophila*, *Ceropegia exigua*, *Chionopegia*, herbs, morphological, distribution, Eshan.

### INTRODUCTION

Traditionally, the genus *Ceropegia* comprises about 200 species and was divided into 21 sections by Huber (1957), mostly distributed in Africa, extending through tropical Asia and Oceania (Li *et al.*, 1995; Albers and Meve, 2002). Meve and Liede (2002, 2004, 2007) studying the *Ceropegia* and its related genera by methods of molecular phylogenetic investigation, showed that the stapeliads were nested in *Ceropegia*. According to recent phylogenetic study, *Ceropegia* comprises more than 700 species in 63 sections, with the inclusion of the traditional *Brachystelma* species and the succulent stapeliads (Bruyns *et al.*, 2017; Murugesan and Mao, 2021). In China, 22 *Ceropegia* species have been recorded, including 17 traditional *Ceropegia* species, 2 *Brachystelma* species and three newly published species that are attributable to traditional *Ceropegia* (Li *et al.*, 1995; Wu *et al.*, 2019; Ma *et al.*, 2022a, 2022b).

*Ceropegia* sect. *Chionopegia* established by Huber (1957), is mainly distributed in the Himalaya region, Pakistan and India eastwards to China, the key characters are roots fleshy (without tubers), stems usually dying off as far as the subterranean roots in dry season, leaves well developed, papery, not succulent (Bruyns *et al.*, 2017; Kambale and Yadav, 2019). About 18 *Ceropegia* species belong to sect. *Chionopegia* in China (Li *et al.*, 1995; Ma *et al.*, 2022a, 2022b).

During botanical exploration in the Luzhi River valley, Eshan County, Yunnan Province, southwest China, an unknown species of *Ceropegia* was collected. This species belongs to sect. *Chionopegia*, and is morphologically similar to *C. driophila* C. K. Schneid. and *C. exigua* (H. Huber) M. G. Gilbert & P. T. Li (Fig. 1). After literature review as well as morphological examination, we confirm that it represents a new species and report it herein.

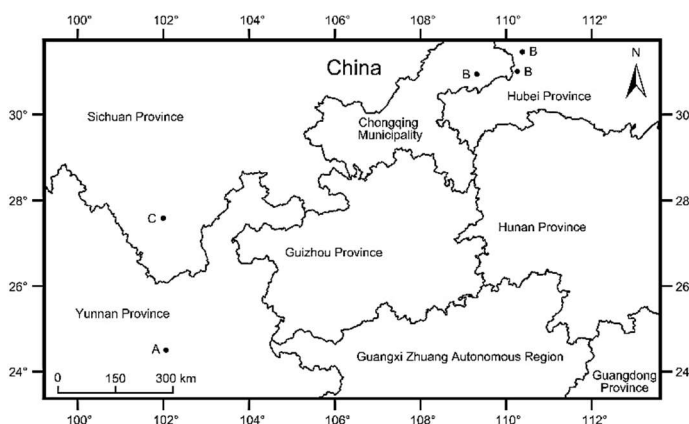


Fig. 3. Map showing the distribution of *Ceropegia eshanensis* (A), *C. driophila* (B) and *C. exigua* (C).

### TAXONOMIC TREATMENT

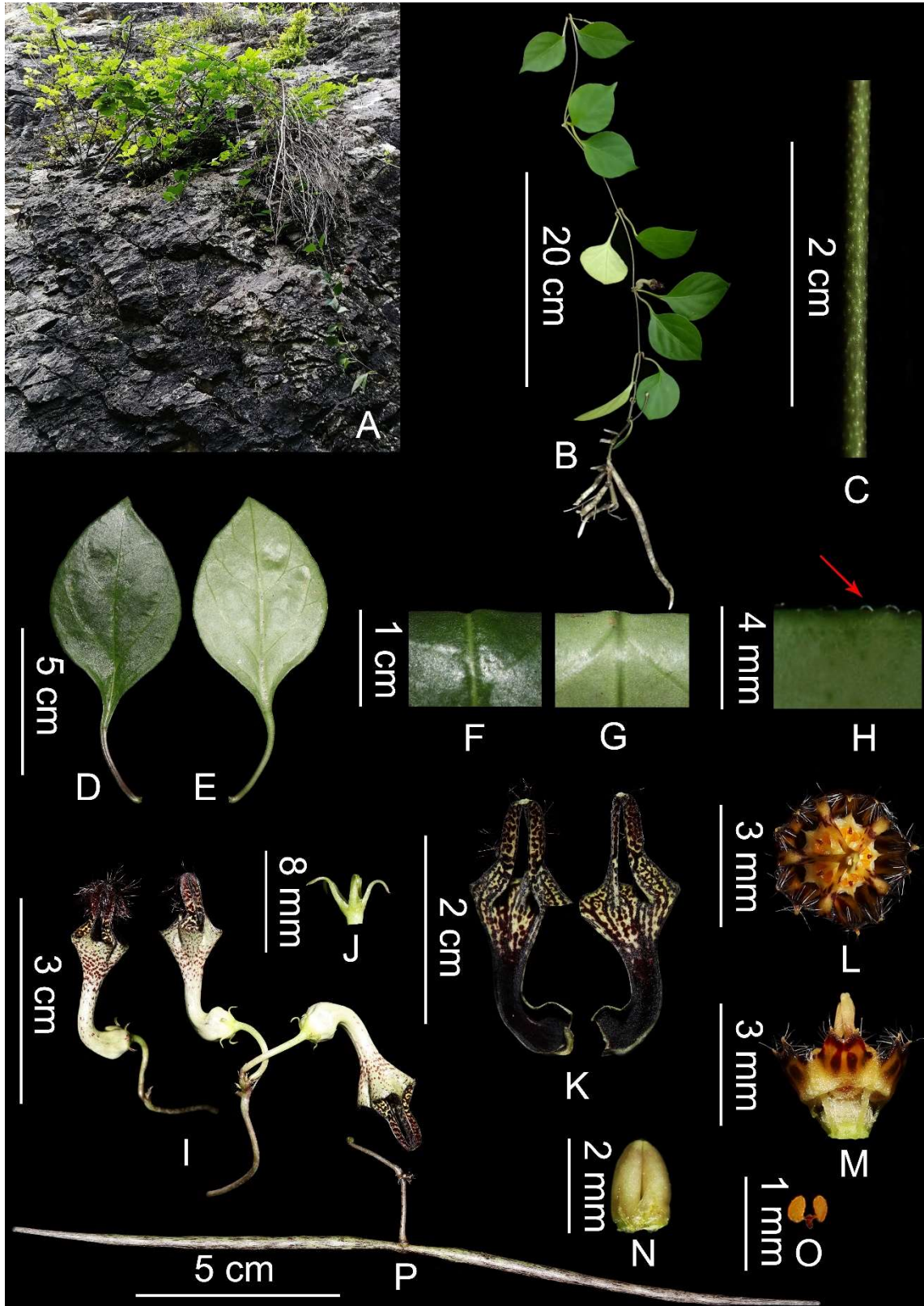
*Ceropegia eshanensis* X.D. Ma & J.Y. Shen, *sp. nov.*

峨山吊燈花 Figs. 1, 2A

**Type:** CHINA, Yunnan Province, Eshan County, Dalongtan Township, Fawu Village, twining around branches in the thickets, 24°30'N, 102°03'E, alt. 1462 m, 11 September 2021, Xing-da Ma, Jian-yong Shen & Kai-hong He 2554 (**Holotype:** HITBC0075912; **Isotype:** HITBC0075913).

**Diagnosis:** This species clearly differs from *C. driophila* and *C. exigua* by having densely verrucose lenticellate old stems, leaf blades ovate to elliptic, glabrous, base broadly cuneate, slightly decurrent, longer peduncles. Moreover, it also easily distinguished from *C. exigua* by having longer petioles and interstaminal lobes divided into pairs of triangular teeth at apex.

Perennial creeping to twining herbs. Roots 6–13, fleshy, fusiform, 4–10 cm long, 4–5 mm in diameter. Stem slender, terete, greenish, usually branched, up to 2.5 m long, 1–2 mm in diameter, internodes 4–8 cm long, old stem densely verrucose lenticellate. Leaves opposite; petioles terete,



**Fig. 1.** *Ceropegia eshanensis*. **A:** Habitat. **B:** Plant. **C:** Stem showing the verrucose lenticels. **D:** Adaxial leaf surface. **E:** Abaxial leaf surface. **F:** Adaxial leaf surface enlarged. **G:** Abaxial leaf surface enlarged. **H:** Leaf margin enlarged showing the cilia. **I:** Inflorescence. **J:** Side view of sepal. **K:** Opened corolla, showing the color of the interior. **L:** Front view of gynostegium. **M:** Side view of gynostegium. **N:** Ovary. **O:** Pollinarium. **P:** Follicles.



**Fig. 2.** Specimens of related species. **A:** Holotype of *Ceropegia eshanensis* (X. D. Ma, J. Y. Shen & K. H. He 2554). **B:** Holotype of *C. driophila* (E. H. Wilson 2316). **C:** Isotype of *C. exigua* (E. H. Wilson 4112).

1.5–3 cm long, ca. 2 mm in diameter, glabrous, adaxially decurrently grooved; leaf blades ovate to elliptic, 4–7 × 3–4.5 cm, papery, adaxially green, glabrous, abaxially pale green, glabrous, base broadly cuneate and slightly decurrent, apex acuminate or short-caudate, margin slightly recurved, ciliate; midvein adaxially flat or slightly depressed, abaxially prominent, lateral veins 3–5 pairs, obliquely ascending, reticulate near margin, adaxially flat, abaxially slightly convex. Inflorescence one per node, extra-axillary, 1–5-flowered cyme; peduncle 1–2.5 cm long, ca. 1 mm in diameter, sparsely verrucose-lenticellate; bracts 6–11, subulate, 1–3 mm long, greenish to brownish, apex acuminate, glabrous; pedicel 1–1.5 cm long, ca. 1 mm in diameter, yellowish-green, glabrous. Sepals 5, narrowly triangular, ca. 4 × 1 mm, slightly reflexed, apex acuminate, glabrous. Corolla tubular, 2.5–3 cm long, strongly curved; tube 1–1.6 cm long, slightly dilated at base, 5–6 mm long, 5–6 mm in diameter, then narrowing into a tube of ca. 3 mm in diameter and gradually widening upwards, mouth 8–10 mm in diameter, exterior yellowish-green with gradually increasingly dense reddish brown bands or dots upward, glabrous, interior maroon or reddish brown except throat, throat yellowish-green with reddish brown stripes or speckles, glabrous; lobes narrowly triangular, 7–10 × 4–6 mm, narrowing in the middle, strongly revolute along the midrib, yellowish-green with reddish brown bands or dots, margin densely reddish brown trichomes, apically connate. Corona biseriate; interstaminal lobes 5, 1–1.2 × 1–1.2 mm, joined to form a shallow cup at base, ca. 2.8 mm in diameter, yellow, divided into pairs of triangular teeth at apex, yellowish with reddish brown dots and reddish brown margins, covered with white trichomes; staminal lobes 5, linear-lanceolate, 2.5–3 mm long, 0.3–

0.4 mm in diameter, translucent, yellowish, proximal part incumbent upon dorsal surface of stamens, distal part connivent-erect, apex rounded, glabrous. Pollinia light orange, ovoid, ca. 0.3 × 0.2 mm, attached to brownish corpusculum by short translator arms. Ovary conical, ca. 1.8 mm long, 0.6 mm wide in the middle, glabrous. Follicles in pairs, cylindrical, 8–10 cm long, 3–4 mm wide in the middle, yellowish-green with reddish brown bands or dots, glabrous.

**Phenology:** Flowers and follicles were observed in September.

**Etymology:** This new species is named after the type locality, Eshan County.

**Distribution and habitat:** This new species is currently known only from Fawu Village, Dalongtan Township, Eshan County, Yunnan Province, China, twining around branches in the thickets.

**Conservation assessment:** The Luzhi River valley (Eshan County, Yunnan Province, China) was surveyed comprehensively for two weeks, during the study, we only found one population of *Ceropegia eshanensis* that was sporadically distributed in semi-humid evergreen broad-leaved forest and twining around branches in the thickets near Fawu Village. The local villagers often graze their animals and cut firewood on the hillside, inevitably damaging to the habitat of this new species. According to the IUCN Red List Categories and Criteria version 14 (IUCN 2019), the new species should be assessed as as ‘Critically Endangered’ (CR).

**Note:** *Ceropegia eshanensis* is presently placed in sect. *Chionopegia* for having fleshy roots (without tubers), stems withering in dry season. The general corolla shape and size of *C. eshanensis* is similar to *C. driophila* (Fig. 2B) and *C. exigua* (Fig. 2C), but clearly differs from *C.*

**Table 1.** Comparison of *Ceropegia eshanensis*, *C. driophila* and *C. exigua*.

Characters	<i>C. eshanensis</i>	<i>C. driophila</i>	<i>C. exigua</i>
Stem surface	densely verrucose lenticellate	not lenticellate	not lenticellate, sparsely puberulent
Petiole length	15–30 mm	10–25 mm	ca. 3.5 mm
Leaf shape	ovate to elliptic, base broadly cuneate, slightly decurrent	oblong or ovate-oblong, base subcordate	linear-lanceolate, base cuneate
Leaf size	4–7 × 3–4.5 cm	4.5–6.5 × 1–2.5 cm	ca. 4.5 × 0.6 cm
Leaf surface	glabrous	adaxially sparsely short-pilose, abaxially glabrous	adaxially puberulent, abaxially with a few hairs on veins
Peduncle length	10–25 mm	0–8 mm	ca. 3 mm
Interstaminal lobes	divided into pairs of triangular teeth in the middle	triangular, apex 2-toothed	divided into pairs of linear teeth

*driophila* by its densely verrucose lenticellate old stems (vs. not lenticellate); leaf blades ovate to elliptic, 4–7 × 3–4.5 cm, glabrous, base broadly cuneate, slightly decurrent (vs. oblong or ovate-oblong, 4.5–6.5 × 1–2.5 cm, adaxially sparsely short-pilose, abaxially glabrous, base subcordate); longer peduncles (10–25 mm vs. 0–8 mm). The new species differs from *C. exigua* by its densely verrucose lenticellate old stems (vs. not lenticellate, sparsely puberulent); longer petioles (15–30 mm vs. ca. 3.5 mm); leaf blades ovate to elliptic, 4–7 × 3–4.5 cm, glabrous (vs. linear-lanceolate, ca. 4.5 × 0.6 cm, adaxially puberulent, abaxially with a few trichomes on veins); longer peduncles (10–25 mm vs. ca. 3 mm); interstaminal lobes divided into pairs of triangular teeth at apex (vs. divided into pairs of linear teeth). The new species differs from other species of *Ceropegia* sect. *Chionopegia* in China by its glabrous leaves, special shapes of corollas and interstaminal corona lobes. A comparison with two related species is also provided (Table 1).

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