



Lysionotus cangyuanensis, a new species of *Lysionotus* (Gesneriaceae) from Yunnan, China

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ABSTRACT: *Lysionotus cangyuanensis*, a new species from Yunnan, China, is described and illustrated. This new species morphologically resembles *L. sulphureoides* and *L. coccinus*, but can be distinguished by its leaf blade size, bracts shape, corolla size and throat markings, and anthers shape. Detailed description is provided.

KEY WORDS: Cangyuan County, China, *Lysionotus coccinus*, *Lysionotus sulphureoides*, new taxon, taxonomy, Yunnan.

INTRODUCTION

Lysionotus D. Don (1822) (Gesneriaceae) encompasses more than 30 species distributed from Himalaya to southern China, Indo-China and southern Japan, with the highest diversity in karst areas of Guangxi-Yunnan-Guizhou of China and western Yunnan, southeastern Xizang of China to northeastern India (Wang, 1983; Wang *et al.*, 1998; Li and Wang, 2005, Möller *et al.*, 2017, Möller, 2019; Bui *et al.*, 2022). About half of these species (18 species) are known from Yunnan, China (Wang, 1983; Wang *et al.*, 1998; Lu and Li, 2002; Tian *et al.*, 2020). Main morphological characteristics of *Lysionotus* are: subshrubs or climbing lianas; leaves opposite or whorled; cymes axillary; calyx 5-sect from base or 5-lobed; segments equal; corolla tube funnelliform to tubular, limb 2-lipped; fertile stamens 2, included, anthers coherent in pairs; stigma 1; capsule linear, dehiscing loculicidally to base; seeds with 1 appendage at each end (Wang *et al.*, 1998).

During a botanical field survey of southwestern Yunnan in August 2019, an unknown *Lysionotus* species with unusual flowers was discovered on trees in secondary forest in Cangyuan County. In the following year, another population of the species was found nearby in the same county. After comparison with other species of the genus, relevant literature study and herbarium specimen examination especially type specimen of species of *Lysionotus* (deposited in BM, E, G, IBK, IBSC, KUN, NY, P, PE, US), it was confirmed as a new taxon. It is described and illustrated below.

TAXONOMIC TREATMENT

Lysionotus cangyuanensis C. Liu, W.G. Wang & H.C. Xi, *sp. nov.* 沧源吊石苣苔 **Figs. 1–2**

Type: China, Yunnan Province, Cangyuan County, Mengjiao Town, on trees in secondary forest, elev. 1802

m, 31 August 2019, C. Liu, X. Li, J.C. Zhao & H.Q. Yang, 19CS18157 (holotype: KUN!; isotype: HITBC!).

Diagnosis: The new species differs from the most similar species *Lysionotus sulphureoides* in leaf blade up to 13 cm long, lateral veins 4–7 pairs, bracts elliptical to oblong, corolla 3.5–4 cm long, with 15 purple longitudinal lines in throat and 1 purple patch at each junction of the upper and lower lips, and anthers cordate.

Description: Subshrub, epiphytic, 30–80 cm tall. Leaves opposite or 3-whorled; petiole 0.8–2.5 cm long, glabrous; leaf blade herbaceous, oblong, 6–13 × 2–6 cm, base cuneate, sometimes oblique, apex acuminate, margin entire or denticulate, adaxially dark green, usually white along veins, glabrous, abaxially light green, glabrous, lateral veins 4–7 pairs. Cymes axillary, 3–14-flowered; peduncle 7–9 cm long, glabrous; bracts elliptical to oblong, 5–12 mm long; pedicel 6–12 mm long. Calyx 5-sect from base; lobes subequal, lanceolate, 6–9 mm long, glabrous. Corolla 3.5–4 cm long, nonuniformly yellow, with 15 purple longitudinal lines in throat and 1 purple patch at each junction of the upper and lower lips, glabrous; tube 2.2–2.6 cm long, light yellow to creamy white; upper lip 2-lobed, lobes round, ca. 5 mm long, light yellow to creamy white; lower lip 3-lobed, lobes round, 6–7 mm long, yellow. Stamens 2, adnate to 1.7–1.8 cm above the base of corolla tube; filaments linear, ca. 5 mm long, yellow, apex with glands; anthers cordate. Staminodes 3, filiform. Disc cupular, 1.5–2 mm high, yellow. Pistil 1.8–2.2 cm long; ovary linear to narrowly cylindrical, 1.1–1.3 cm long, ca. 1.5 mm in diameter, glabrous; style 7–8 mm long, ca. 1 mm in diameter, glabrous; stigma slightly 2-lobulated. Immature capsule linear, up to 6 cm long, glabrous. Ripe seeds not seen.

Etymology: The specific epithet “cangyuan” refers to the type locality in Cangyuan County, Yunnan Province, China. Chinese name is proposed here as “沧源吊石苣苔” (沧源-refer to Cangyuan, 吊石苣苔-refer to *Lysionotus*).

Phenology: Flowering August to September.

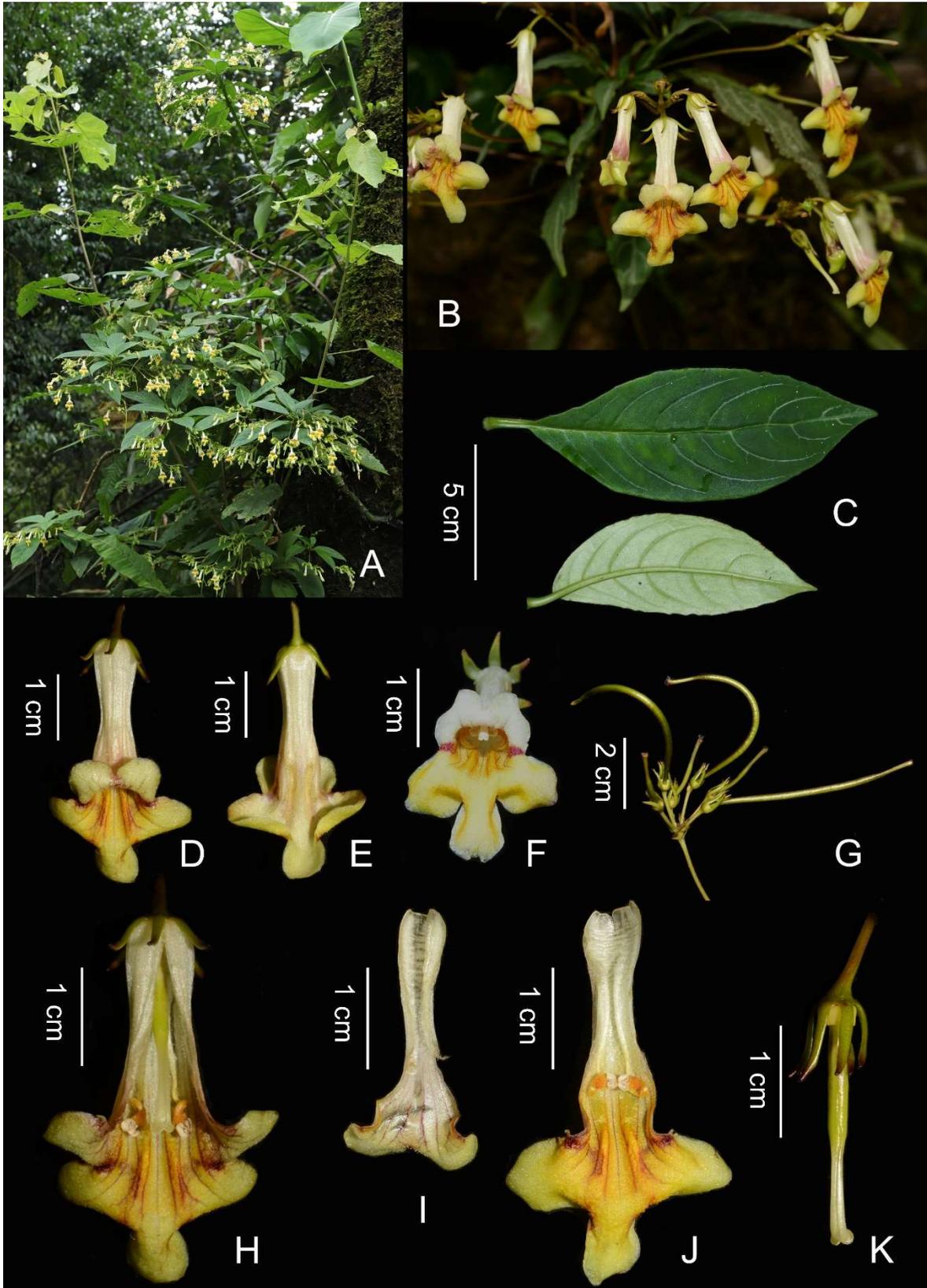


Fig. 1. Habitat and morphology of *Lysionotus cangyuanensis*. **A.** Habitat; **B.** Flowering plant; **C.** Leaf surface, adaxial and abaxial; **D–F.** Different views of flower; **G.** Infructescence, showing immature capsules; **H–J.** Dissected corolla, showing stamens and throat characters; **K.** Pistil, disc and calyx. (Photos. A, C, F, by W.G. Wang; B, D–E, G–K, by C. Liu)

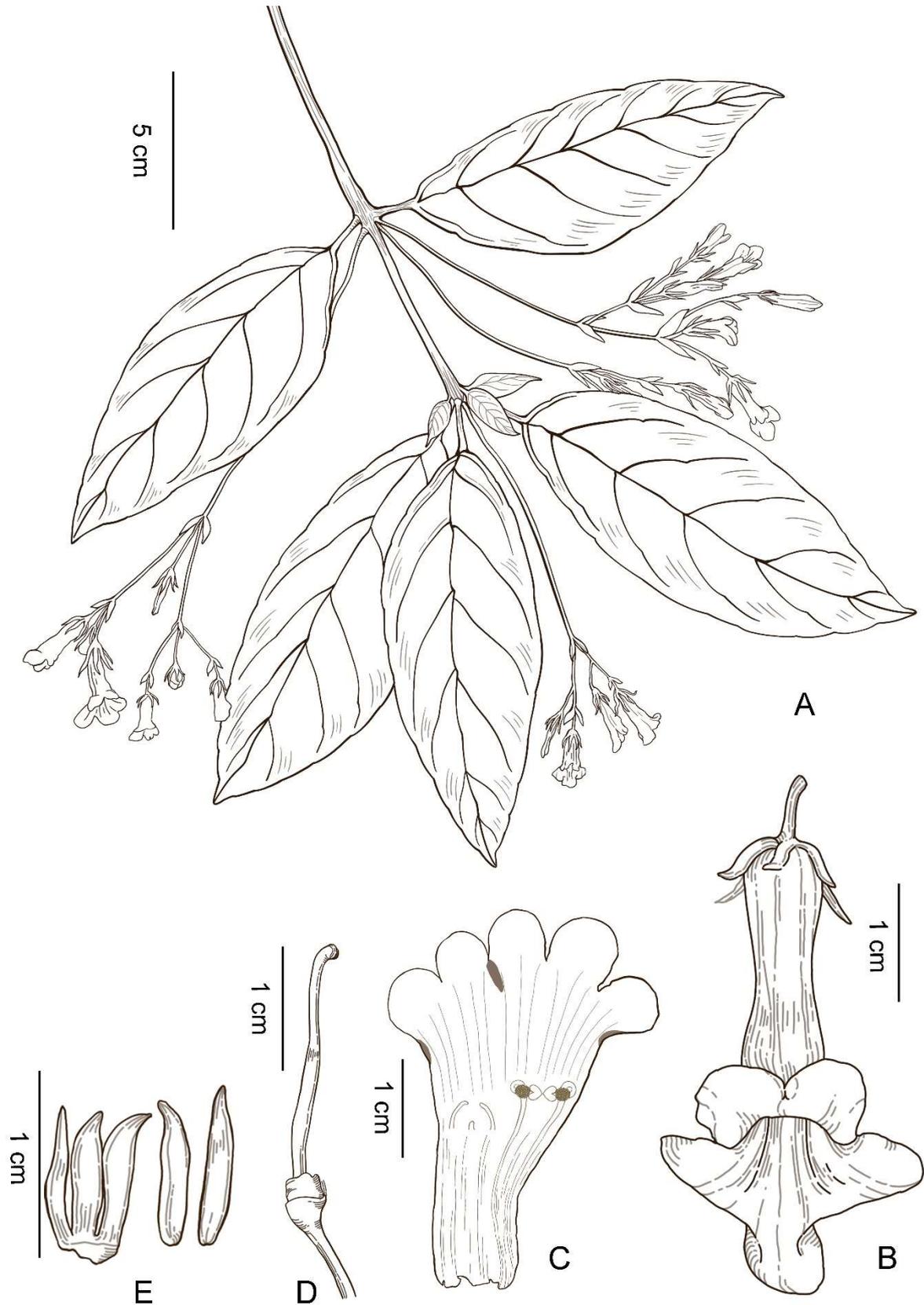


Fig. 2. Line drawing of *Lysionotus cangyuanensis*. **A.** branch with leaves and inflorescences; **B.** Flower; **C.** Dissected corolla, showing stamens and staminodes; **D.** Pistil and disc; **E.** Calyx. (Drawn by Ya-Nan Chen)

**Table 1.** Morphological comparison of *Lysionotus cangyuanensis*, *L. sulphureoides* and *L. coccinus*.

Characters	<i>Lysionotus cangyuanensis</i>	<i>Lysionotus sulphureoides</i>	<i>Lysionotus coccinus</i>
Leaf blade	6–13 × 2–6 cm, lateral veins 4–7 pairs	up to 20 cm long, 6 cm wide, lateral veins 8–10 pairs	3–18 × 4–6 cm, lateral veins 7–10 pairs
Bracts	elliptical to oblong	narrowly ovate to narrowly elliptical	ovate, broadly ovate to cordate
Corolla size	3.5–4 cm long, tube 2.2–2.6 cm long	2.5–2.8 cm long, tube ca. 1 cm long	2.5–3 cm long, tube ca. 1.5 cm long
Corolla color and throat markings	nonuniformly yellow, with 15 purple longitudinal lines in throat and 1 purple patch at each junction of the upper and lower lips	yellow or light yellow, with 2 purplish red longitudinal stripes in throat	scarlet, with 5 yellow stripes in throat
Corolla indumentum	inside glabrous	inside glabrous	inside with dense glandular hairs at the throat
Filaments	ca. 5 mm long	ca. 4 mm long	ca. 2 mm long
Anthers	cordate	ovate	broadly ovate
Stigma	slightly 2-lobulated	slightly 2-lobulated	discoid, retuse at tip

Distribution and Habitat: Currently known only 2 populations distributed in secondary forest in Cangyuan County, Yunnan Province, China. One population was found less than 5 individuals growing on a tree of *Alnus nepalensis* at an elevation of 1802 m above sea level, and the other was found less than 10 individuals growing on two big trees about 50 m apart from each other at an elevation of ca. 2000 m above sea level.

Conservation assessment: Field survey of this new species is still limited and only 2 populations and less than 15 individuals were found. According to the IUCN Red List Categories and Criteria (IUCN, 2022), the new species should be assessed as ‘Data Deficient’ (DD).

Additional specimens examined (paratypes): China, Yunnan Province, Cangyuan County, Danjia Town, on trees in secondary forest, elev. 2009 m, 21 August 2020, J.Y. Shen, X.D. Ma & W.G. Wang, 2083 (HITBC!).

Notes: The new species resembles *Lysionotus sulphureoides* and *L. coccinus* morphologically and ecologically. It is most similar to *L. sulphureoides* in corolla color and indumentum, filaments length and stigma shape, but can be distinguished in leaf blade up to 13 cm long, lateral veins 4–7 pairs (vs. up to 20 cm long, lateral veins 8–10 pairs); bracts elliptical to oblong (vs. narrowly ovate to narrowly elliptical); corolla 3.5–4 cm long, with 15 purple longitudinal lines in throat and 1 purple patch at each junction of the upper and lower lips (vs. 2.5–2.8 cm long, with 2 purplish red longitudinal stripes in throat); and anthers cordate (vs. ovate). *L. cangyuanensis* is easily distinguished from *L. coccinus* in corolla yellow or light yellow (vs. scarlet), inside glabrous (vs. inside with dense glandular hairs at the throat); filaments ca. 5 mm long (vs. ca. 2 mm long); and stigma slightly 2-lobulated (vs. discoid, retuse at tip). A detailed morphological comparison of these 3 species is presented in Table 1.

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