COLUMNEA FLAMMEOSTOMA, A NEW SPECIES OF GESNERIACEAE FROM THE CORDILLERA DEL CONDOR IN SOUTHERN ECUADOR

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ABSTRACT

Ongoing research on the systematics of *Columnea* (Gesneriaceae) has resulted in the discovery of a new species, **Columnea flammeostoma** J.L. Clark of the Gesneriaceae (tribe: Gesnerieae, subtribe: Columneinae). The new species is distinguished by the combination of isophyllous leaf pairs, fimbriate calyx lobe margins, and a deeply bilabiate corolla that is dark purple with yellow corolla lobe margins. The new species is endemic to the Cordillera del Cóndor in southern Ecuador where it was collected from the wild in 2005 and brought into cultivation by Ecuagenera and has since been distributed by horticulturists throughout several countries.

Key Words: *Columnea*, Ecuador, Gesneriaceae, taxonomy

RESUMEN

Recientes investigaciones sobre sistemática de *Columnea* (Gesneriaceae) han llevado al descubrimiento de una especie nueva para la familia Gesneriaceae, **Columnea flammeostoma** J.L. Clark (tribu: Gesnerieae, subtribu: Columneinae). Esta nueva especie se caracteriza por una combinación distintiva de hojas isófilas dispuestas en pares, márgenes fimbriados en los lóbulos del cáliz y una corola profundamente bilabiada de color púrpura oscuro, con bordes amarillos en sus lóbulos. *Columnea flammeostoma* es endémica de la Cordillera del Cóndor, en el sur de Ecuador, donde fue recolectada en estado silvestre en 2005. Posteriormente fue introducida al cultivo por Ecuagenera y, desde entonces, ha sido distribuida por horticultores en varios países.

Palabras Clave: *Columnea*, Ecuador, Gesneriaceae, taxonomía

INTRODUCTION

The plant family Gesneriaceae, a member of the order Lamiales, comprises more than 3,400 species and 150 genera (Weber 2004; Weber et al. 2013). Phylogenetic studies have resolved the family into three subfamilies and seven well-supported monophyletic tribes (Weber et al. 2013, 2020; Ogutcen et al. 2021). Of these, the subfamily Gesnerioideae is the most species-rich in the Neotropics, encompassing more than 1,200 species in 77 genera (Clark et al. 2020; GRC 2025). The genus *Columnea* L. belongs to the tribe Gesnerieae and subtribe Columneinae (Weber et al. 2013, 2020). A key morphological feature distinguishing *Columnea* from closely related genera is the presence of indehiscent berry fruits rather than the typical bivalved capsules. Notably, *Columnea dielsii* Mansf. is the only exception within the genus that bears a fleshy bivalved capsule.

The habit for most species of *Columnea* is epiphytic, with shoots that may be erect, horizontal, dorsiventral (a trait common among facultative epiphytes), or pendent. A pendent epiphytic habit is common in *Columnea* from Central America, where Panama and Costa Rica together support over 20 species with elongate, pendent shoots. In contrast, the majority of South American *Columnea* species are facultative epiphytes with dorsiventral shoots. Species with elongate pendent shoots are relatively uncommon in South America. Notable pendent exceptions in the northern Andes include *C. bilabiata* Seem., *C. conopurpurea* J.L. Clark, Y. Ramos-Arias, & J.L. Peña, *C. ceticeps* J.L. Clark & J.F. Sm., *C. fluidifolia* J.L. Clark & Tobar, *C. kienastiana* Regal., *C. minor* Hanst., and *C. pendens* Tobar & J.L. Clark. The new species described here, *Columnea flammeostoma* J.L. Clark, is a pendent epiphyte with elongate shoots and is endemic to the Cordillera del Cóndor in southern Ecuador.

The monophyly of *Columnea* is strongly supported by molecular phylogenetic studies (Clark et al. 2006; Smith et al. 2013; Schulte et al. 2014). Subgeneric classifications and traditionally recognized subgenera are

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mostly artificially defined and lack support from recent phylogenetic studies (Smith & Carroll 1997; Smith 2000; Clark & Zimmer 2003; Clark et al. 2012; Smith et al. 2013; Schulte et al. 2014). Thus, this study refrains from assigning *Columnea flammeostoma* to a subgeneric or traditionally classified group.

TAXONOMIC TREATMENT

Columnea flammeostoma J.L. Clark, **sp. nov.** (**Fig. 1**). TYPE: ECUADOR: Cordillera del Cóndor, cutting collected in the wild by the Ecuadorian-based company Ecuagenera Cia. Ltda. and grown in the Vanda Greenhouse in Gualaceo (Provincia Azuay) where it was later distributed under the name, *Columnea* "sp. Condor," 1 Dec 2005 (fl), *M.A. Riley s.n.* (HOLOTYPE: SEL [barcode-SEL09300]!; ISOTYPE: HA!).

Differs from all other congeners by a dark purple bilabiate corolla with lobes having yellow margins.

Epiphytic herb with elongate shoots. **Stems** scandent, branched, subquadrangular in cross-section, green, but appearing red from pilose indumentum; internodes 2–4 cm long. **Leaves** opposite, evenly spaced, equal to subequal in a pair; petiole 4.0–15 mm long, green and appearing red from pilose indumentum, terete in cross-section; blade elliptic to oblong, 4.1–7.3 × 1.1–2.2 cm, coriaceous, apex acute, base cuneate, symmetrical, margin entire, light green on lower and upper surfaces, uniformly pilose abaxially, glabrous adaxially, 2–4 pairs of primary lateral veins, slightly visible on both sides. **Inflorescence** reduced to a single flower in the upper axils of the leaves and without bracts. **Pedicels** 2.7–3.2 cm long, green, but appearing red from the densely pilose indumentum. **Calyx** with 5 subequal lobes, green or red with red pilose indumentum on outside and glabrous inside, oblong to broadly ovate, apex broadly attenuate, margin deeply toothed to fimbriate, 0.8–1.2 × 0.4–0.7 cm. **Corolla** 6.0–8.2 cm long, 0.9–1.2 cm at the widest (middle) point, deeply bilabiate, lower lobe recurved, 1.3-1.5 cm long, 2–3 mm wide, lateral and upper lobes fused into a hood, lateral lobes reflexed, rounded, 9 mm at base with acuminate apex, upper lobes fused, 0.9 cm wide, 1.5 cm long, apex bilobed, each lobe rounded, densely pubescent with multicellular red-pilose indumentum on outer surface, interior surface uniformly dark purple, covered with glandular trichomes, margins of corolla lobes yellow. Androecium of 4 didynamous stamens; filaments included, ca. 5.5 cm long, connate at base for 0.3 cm and adnate to corolla, anthers ca. 3.0 mm long, 3.0 mm wide, included in the corolla throat, quadrangular. **Gynoecium** with a single dorsal nectary gland, ovary ca. 4.0 mm long, conical, glabrescent; style 3.5–4.0 cm long, glabrescent, stigma rounded. **Fruit** a globose red berry.

Distribution and habitat.—*Columnea flammeostoma* is endemic to the Cordillera del Cóndor in southeastern Ecuador where it was initially collected by Ecuagenera and brought into cultivation in 2004. From Ecuagenera's Vanda Greenhouse, it was distributed through Miami, Florida (USA) to several other countries. It has been in cultivation for more than two decades and is readily available through retailers who specialize in tropical plants. The type specimen was gathered by Michael A. Riley in 2005 from the Ecuagenera commercial greenhouse, shortly after it was cultivated from wild populations originating in the Cordillera del Cóndor in southeastern Ecuador.

Columnea flammeostoma is distinguished from other congeners by its deeply bilabiate corolla tube and yellow margins along the corolla lobes (Fig. 1). Although several *Columnea* species exhibit contrasting purple and yellow coloration on the corolla, the dominant color is yellow or yellow with fine purple striations. Notable examples include *Columnea formosa* (C.V. Morton) C.V. Morton (Fig. 2A), *C. illepida* H.E. Moore (Fig. 2B), and *C. purpureovittata* (Wiehler) B.D. Morley (Fig. 2C), all of which have yellow corolla tubes that are shallowly bilabiate. In contrast, *C. flammeostoma* is characterized by a deeply bilabiate corolla tube (Fig. 1A–B). A similar species, the recently described *C. golondrinensis* J.L. Clark (Fig. 2D–F), is also defined by a deeply bilabiate corolla with some yellow along the corolla lobe margins. However, *C. golondrinensis* differs by having pairs of leaves that are anisophyllous and nearly entire calyx margins. In *C. flammeostoma,* the calyx lobes are distinctly deeply toothed to fimbriate and the leaves are isophyllous (Fig. 1).

Etymology.—The specific epithet refers to the deeply bilabiate corolla with a dark purple tube and bright yellow lobe margins, which resemble the vivid contrast and radiating intensity of a mouth engulfed in flames—hence *flammeostoma,* meaning "flaming mouth" or "flaming lips."

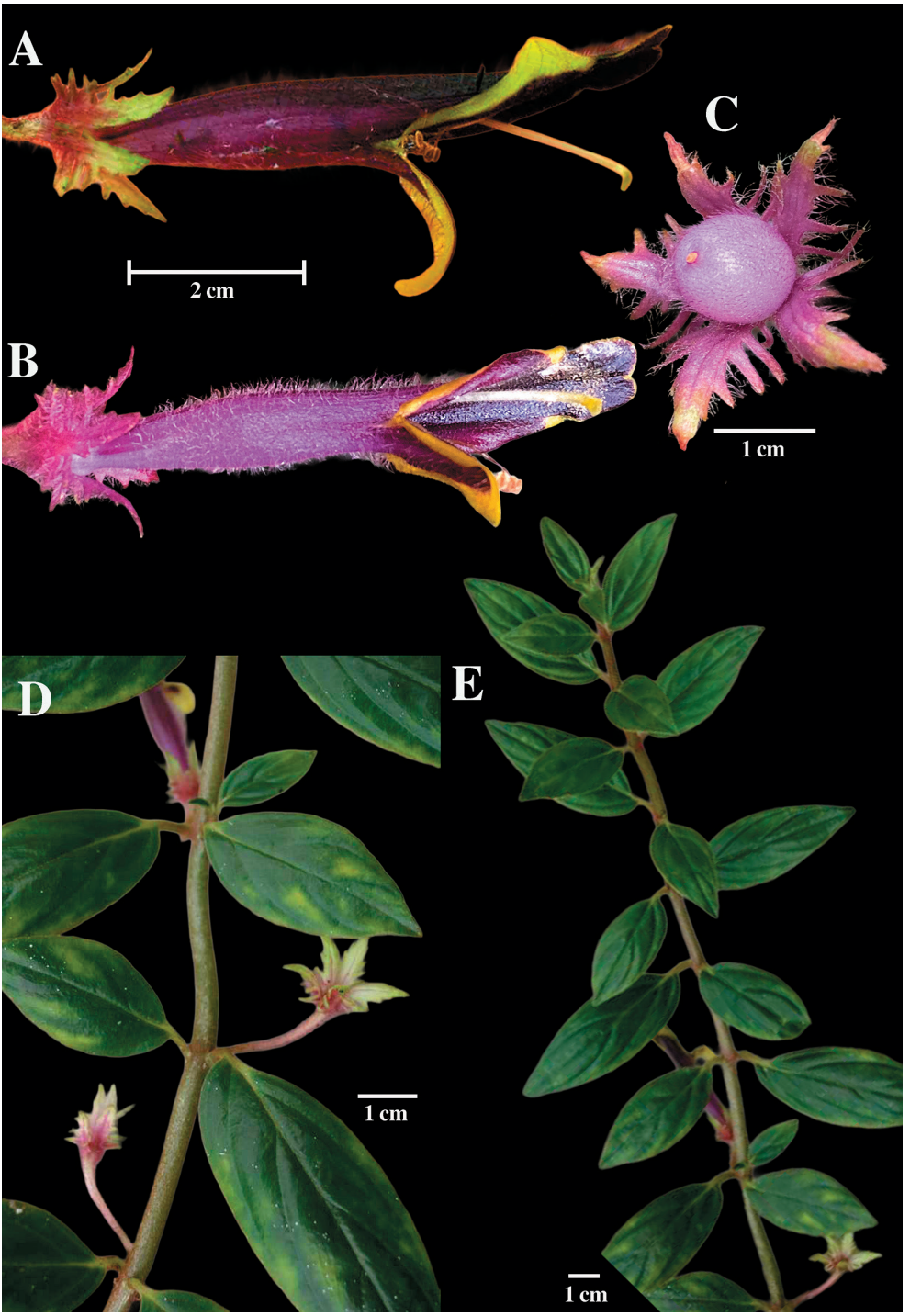

Fig. 1. *Columnea flammeostoma* J.L. Clark. **A. & B.** Lateral view of flower. **C.** Fruit. **D.** Habit featuring single axillary flowers. **E.** Habit featuring isophyllous leaves. (Digital images of cultivated material: A, D, E from the type, *Michael A. Riley s.n.*; B & C from Margaret Hellis, without collection number).

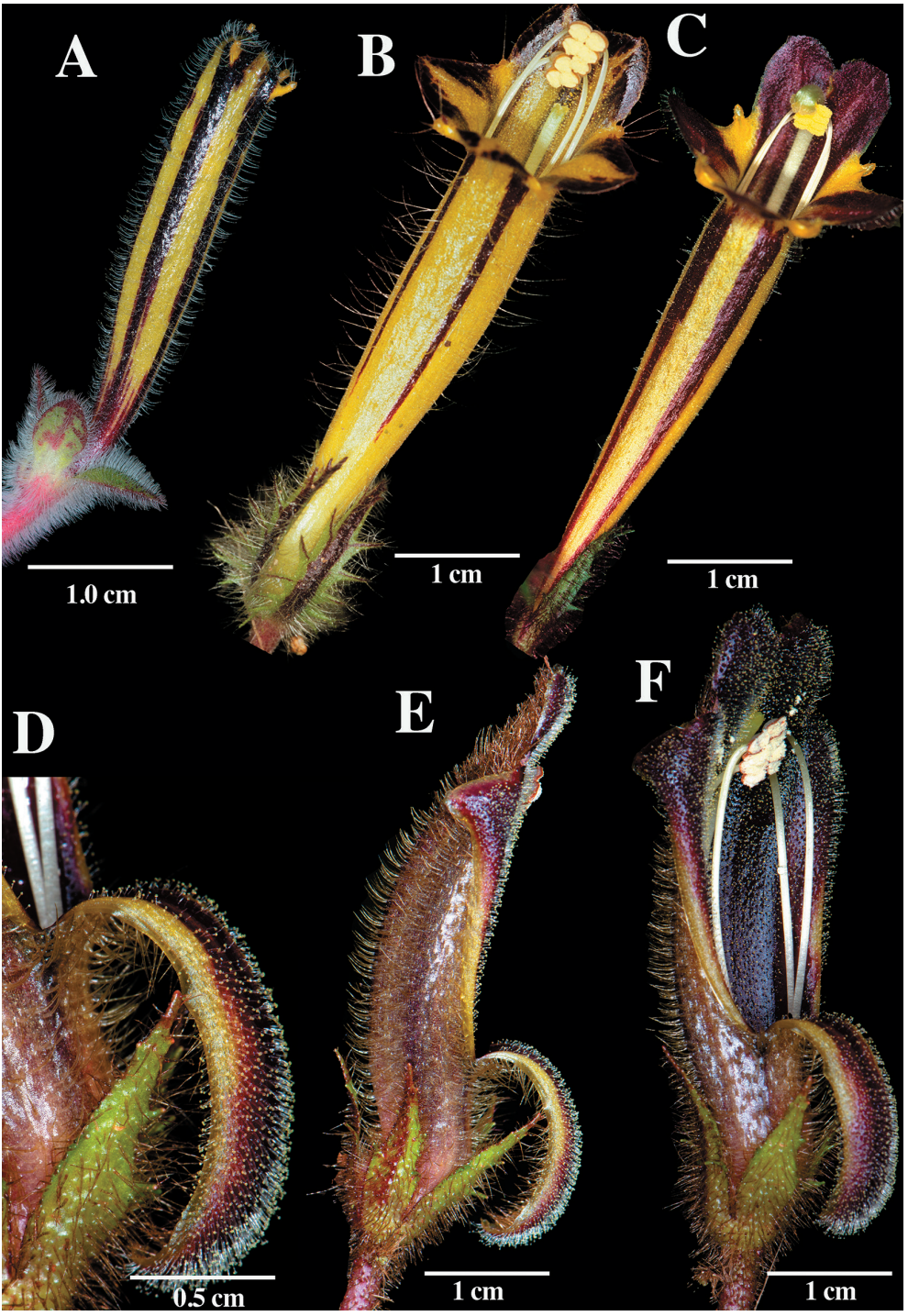

Fig. 2. *Columnea* species. **A.** *Columnea formosa* (C.V. Morton) C.V. Morton. **B.** *Columnea illepida* H.E. Moore. **C.** *Columnea purpureovittata* (Wiehler) B.D. Morley **D.** Recurved lip featuring glandular trichomes in *Columnea golondrinensis* J.L. Clark. **E. & F.** lateral views of flower of *C. golondrinensis*. (A from *J.L. Clark et al. 19154,* B from *J.L. Clark et al. 9500,* C from *L. Jost 3224*, D, E, F from *J.L. Clark et al. 18185*. Photos by John L. Clark).

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