COLUMNEA VERSICOLOR, A NEW SPECIES OF GESNERIACEAE FROM THE CORDILLERA OCCIDENTAL IN THE COLOMBIAN ANDES

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ABSTRACT

Exploratory field expeditions and herbarium research have led to the discovery of **Columnea versicolor** J.L. Clark & Clavijo, sp. nov. in the flowering plant family Gesneriaceae. The new species is distinguished from congeners by a distinctly bicolored corolla, with the tube uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes. The species is endemic to the western slopes of the Cordillera Occidental in the Colombian Andes.

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

RESUMEN

Las expediciones de campo exploratorias y la investigación en herbarios han llevado al descubrimiento de **Columnea versicolor** J.L. Clark & Clavijo, sp. nov., en la familia de plantas con flores Gesneriaceae. La nueva especie se distingue de sus congéneres por presentar una corola claramente bicolor, con tubo uniformemente magenta con lóbulos de la corola púrpura oscuro, o magenta con una sección púrpura y lóbulos de color púrpura oscuro. La especie es endémica de las laderas occidentales de la Cordillera Occidental de los Andes colombianos.

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

INTRODUCTION

The Gesneriaceae, a member of the Lamiales, encompasses more than 3,900 species in more than 150 genera (Weber 2004; Weber et al. 2013, 2020; GRC 2025). Phylogenetic studies support a classification of three subfamilies and seven tribes for the family, each representing a strongly supported monophyletic group (Möller & Clark 2013; Ogutcen et al. 2021). In the Neotropics, species richness is concentrated in the subfamily Gesnerioideae, which comprises over 1,200 species across 77 genera (Clark et al. 2020; GRC 2025). Within this subfamily, *Columnea* L. is classified in the tribe Gesnerieae and the subtribe Columneinae (Weber et al. 2013, 2020). One of the primary morphological characters distinguishing *Columnea* from closely related genera is the presence of indehiscent berries rather than the fleshy, two-valved capsules typical of the fruits of related lineages.

With more than 220 currently recognized species (Clark et al. 2020; GRC 2025), *Columnea* represents the most species-rich genus within the Neotropical Gesnerioideae (Weber et al. 2013, 2020). Its distribution extends from Mexico to Bolivia, with the highest species diversity occurring in the northern Andes of Colombia and Ecuador. In Colombia, diversity estimates have steadily increased—from approximately 80 species documented in the 1990s (Kvist et al. 1998) to 95 species by 2016 (Clavijo et al. 2016), and now 106 species, including the one described in this study.

Molecular phylogenetic analyses consistently confirm the monophyly of *Columnea* (Clark et al. 2006; Schulte et al. 2014; Smith et al. 2013). However, most traditionally recognized genera now included in *Columnea* or infrageneric classifications of the genus are incongruent with molecular evidence and have been shown to be artificially defined (Smith & Carroll 1997; Smith 2000; Clark & Zimmer 2003; Clark et al. 2006,

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2012; Smith et al. 2013; Schulte et al. 2014). For this reason, the new species described here is not assigned to any subgeneric rank.

TAXONOMIC TREATMENT

Columnea versicolor J.L. Clark & Clavijo, **sp. nov.** (**Fig. 1**). TYPE: COLOMBIA. ANTIOQUIA: municipio Jardín, Cordillera occidental, path from Río San Juan to ridge, 5°29′3″N, 75°53′2″W, 2200–2715 m, 18 May 2012 (fl, fr), *J.L. Clark, J. Anderson, L. Clavijo, & U. Rendón 12988* (HOLOTYPE: SEL [barcode-SEL076427]!; ISOTYPES: BM!, COL!, E!, NY!, US [barcode-US-04699862]!).

Diagnosis.—Differs from *Columnea suffruticosa* J.F. Sm. & L.E. Skog by having tubular corollas that are distinctly bicolored, usually uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes, tube less than 2 cm long (vs. tubular corollas uniformly yellow and longer than 2.5 cm).

Description.—Epiphytic climber with horizontal scandent shoots. Stems subwoody, elongate, and subquadrangular in cross-section, dark red to purple, with uniformly pilose indumentum, and with prominent enations between pairs of leaves; internodes 2–5 cm long. Leaves opposite, evenly spaced, equal in a pair; petiole 5–19 mm long, dark red to purple, with uniformly pilose indumentum, terete in cross-section; blade orbicular to ovate, 2.5–5.0 × 1.5–3.2 cm, coriaceous and stiff, surface slightly bullate, apex and base rounded, symmetrical, margin sparsely serrulate near the base, becoming more distinctly serrulate toward the apex, the teeth often gland-tipped, light green with dark red venation on abaxial surfaces, uniformly dark green on adaxial surfaces, mostly uniformly pilose abaxially becoming more so along venation, uniformly pilose adaxially, 2–5 pairs of secondary lateral veins, prominent abaxially, suppressed or rarely visible adaxially. Inflorescences reduced to an axillary cluster of 1–3 flowers. Pedicels 5–10 mm long, dark red. Calyx with 5 subequal lobes, uniformly dark red with pilose indumentum on outside and glabrous inside, broadly ovate, apex acute, margin deeply toothed, often with glandular serrations. Corolla tubular, 1.3–1.9 cm long, 0.4–0.5 cm at the widest (middle) point, corolla lobes subequal, lower lobe recurved, lateral and upper lobes erect, 3–5 × 1.5–2.5 mm, rounded, tube usually uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes, indumentum uniformly pilose on the outer surface, inner surface glabrous. Androecium of 4 didynamous stamens; filaments included, ca. 1.8 cm long, connate at base for 0.3 cm and adnate to corolla, anthers ca. 3 × 3 mm, included in the corolla throat, quadrangular. Gynoecium with a single bilobed to slightly truncate dorsal nectary gland, ovary ca. 4.0 mm long, conical, glabrescent; style 3.5–4 cm long, glabrescent, stigma rounded. Fruit a globose, indehiscent red berry 5 × 5 mm.

Distribution and habitat.—*Columnea versicolor* is endemic to cloud forests on the western slopes of the Cordillera Occidental in the Colombian department of Antioquia, occurring between 2200 and 2700 m elevation. These forests occur in the transitional zone between the Tropical Andes and the Chocó Biogeographic Region, an area characterized by high precipitation and exceptional epiphytic diversity (Gentry 1986; Pérez-Escobar et al. 2019). The type locality corresponds to Reserva Natural Mesenia-Paramillo, a private reserve established following biological expeditions conducted in 2006 to identify priority areas for conservation and ecological restoration. The reserve currently protects more than 3,500 hectares of forest, including the El Olingito and El Puma sectors, and encompasses the principal watershed of the San Juan Antioquia and San Juan Bravo (Chocó) rivers, as well as the Dojurgo River, a major tributary of the San Juan Antioquia.

Discussion.—*Columnea versicolor* is readily distinguished from other congeners by its corolla tube uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes (Fig. 1). In addition, most of the specimens observed have pairs of isophyllous leaves (Fig. 1C–D). Two morphologically similar, subwoody climbers are *C. suffruticosa* J.F. Sm. & L.E. Skog (Smith & Skog 1993) and the recently described *C. cumanday* Solano-C., Parra-Lizc. & Sierra-Ariza (Sierra-Ariza et al. 2025). All three species share a subwoody epiphytic habit but differ in shoot architecture and leaf symmetry. *Columnea cumanday* bears dorsiventral shoots with anisophyllous leaf pairs; *C. versicolor* has elongate horizontal shoots with isophyllous leaf pairs (Fig. 1 C&D); and *C. suffruticosa* has elongate, horizontal, scandent shoots with anisophyllous leaf pairs (Fig. 2 B&C).

Corolla morphology and pigmentation are diagnostic. In *Columnea cumanday*, the corolla tube is uniformly purple and all lobes are erect. In *C. versicolor*, the corolla tube is distinctly bicolored corolla, with the

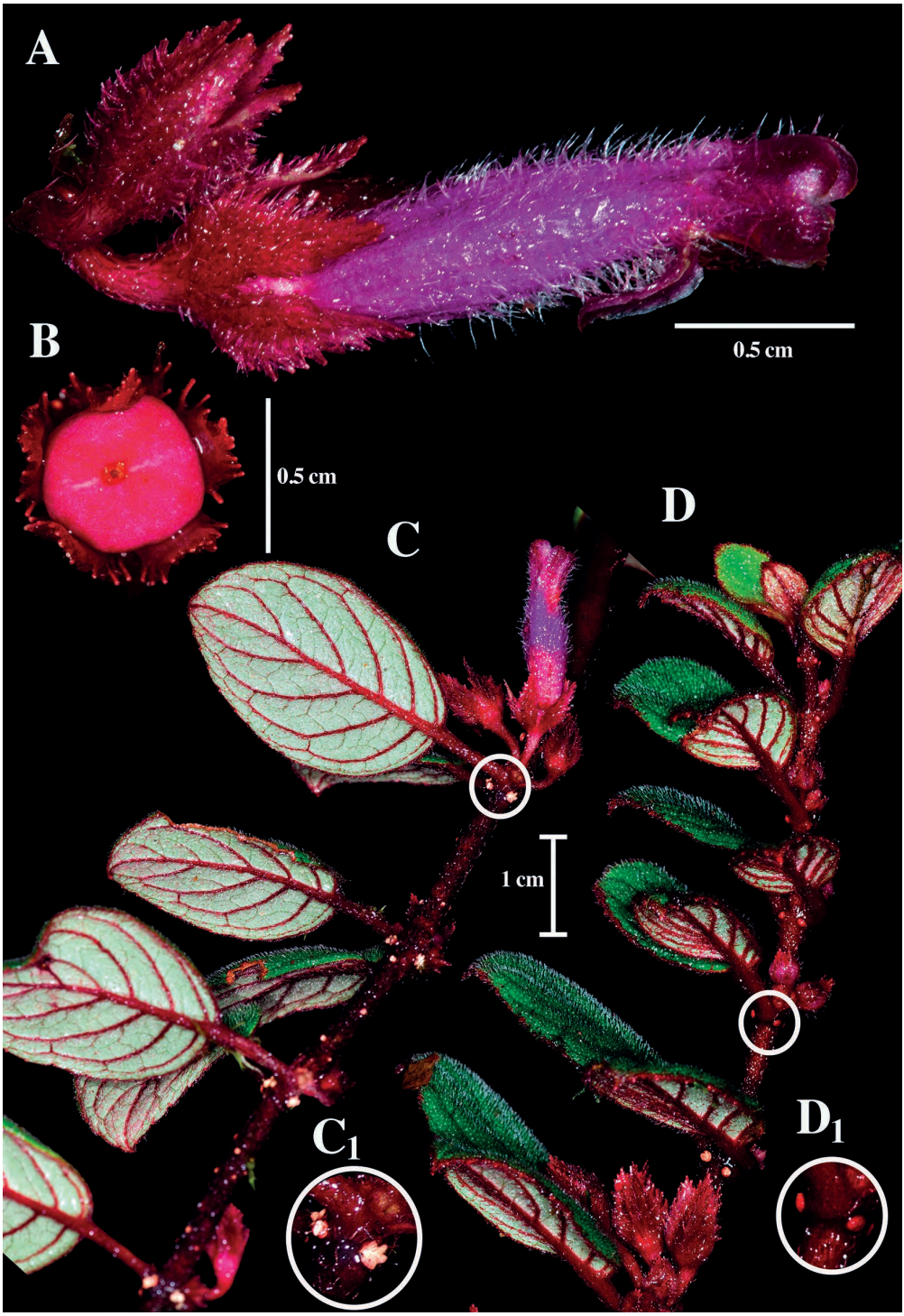

Fig. 1. *Columnea versicolor* J.L. Clark & Clavijo. **A.** Flower. **B.** Fruit. **C.** Habit featuring abaxial leaf surfaces. **D.** Habit featuring adaxial leaf surfaces. Circles in C & D indicate enations; C_1 & D_1 are magnifications of these enations (A–D from *J.L. Clark et al. 12988*. Photos by John L. Clark).

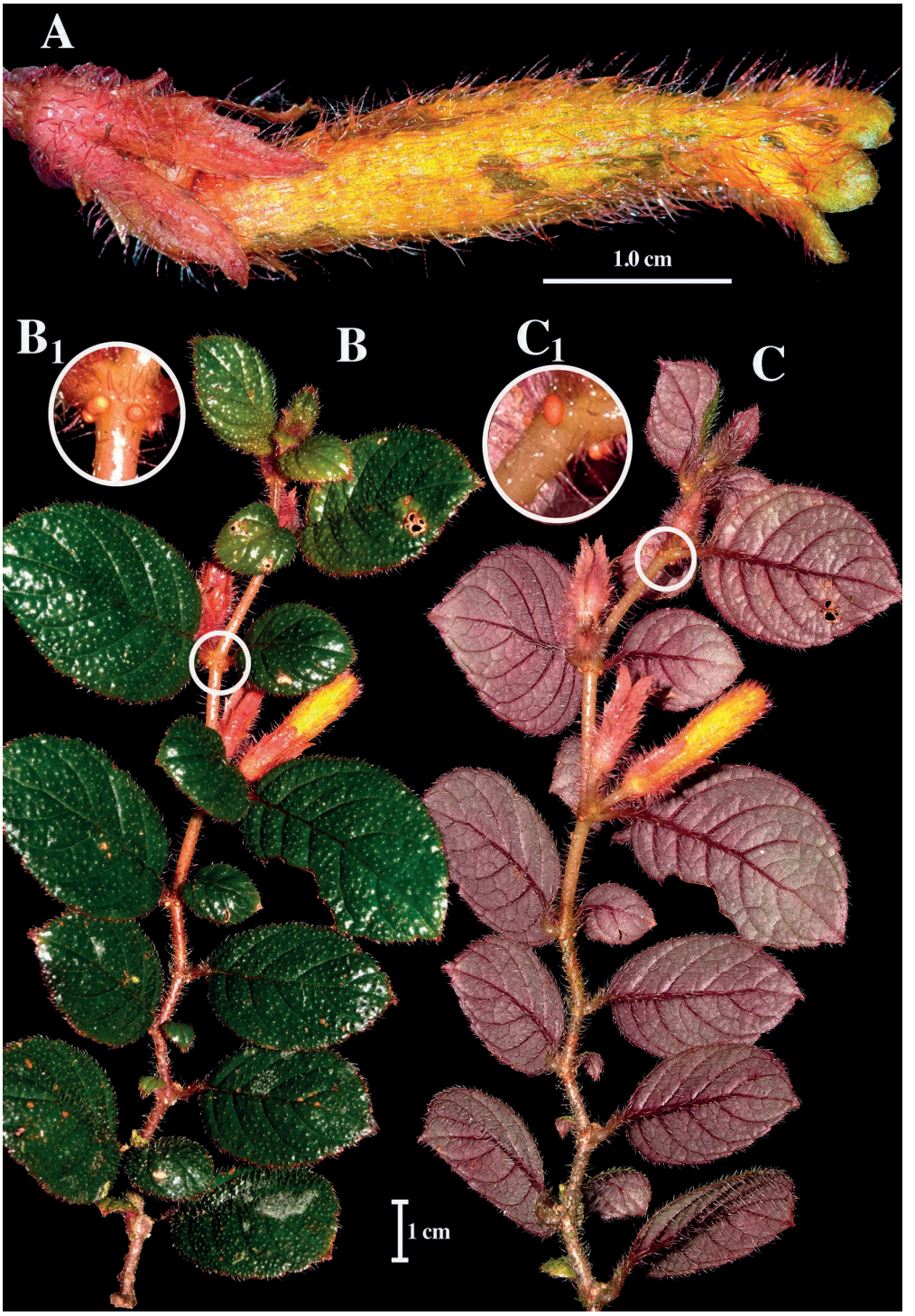

Fig. 2. *Columnea suffruticosa* J.F. Sm. & L.E. Skog. **A.** Flower. **B.** Habit featuring adaxial leaf surfaces. **C.** Habit featuring abaxial leaf surfaces. Circles in B & C indicate enations; C_1 & D_1 are magnifications of these enations (A–C from *J.L. Clark et al. 19448*. Photos by John L. Clark).

tube uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes (Fig. 1A). In earlier floral stages, the ventral lobe may appear erect or only weakly reflexed (Fig. 1C), indicating that lobe orientation varies with floral maturity rather than representing discrete morphological states. In *C. suffruticosa*, the corolla tube is uniformly yellow and densely covered with light red trichomes (Fig. 2A). Vegetatively, *Columnea versicolor* and *C. suffruticosa* share a distinctive character: prominent enations (nectary-like glands) on the stem, evident between leaf pairs (Figs. 1&2).

One of the most striking features of *Columnea versicolor* is its distinctly bicolored corolla, with the tube uniformly magenta with dark purple lobes, or magenta with a purple section and dark purple lobes, a pigmentation uncommon within *Columnea*, where corollas most frequently range from red to orange or yellow. Dark purple or magenta corollas appear to have arisen multiple times within the genus although these patterns have not yet been examined within a comprehensive phylogenetic framework. In the recent description of two new *Columnea* species by Clark & Smith (2024), several taxa from the traditionally recognized sections *Stygnanthe* (Hanst.) Benth. and *Pentadenia* (Planch.) Benth. were evaluated. Their molecular phylogeny resolved the dark-purple-flowered species *C. machupicchuensis* J.L. Clark & J.F. Sm., *C. lophophora* Mansf., and *C. moesta* Poepp. in distantly related clades, strongly suggesting that dark purple to magenta corolla pigmentation evolved convergently within taxa traditionally classified in these sections.

Additional species with dark purple to magenta corolla tubes include *Columnea filipes* Oliv. (Oliver 1896), *C. flammeostoma* J.L. Clark (Clark 2025), *C. katzensteiniae* (Wiehler) L.E. Skog & L.P. Kvist (Skog & Kvist 1998), *C. ovatifolia* L.P. Kvist & L.E. Skog (Kvist & Skog 1993), and *C. ultraviolacea* J.F. Sm. & L.E. Skog (Smith & Skog 1993). Other *Columnea* species with similar pigmentation likely exist, but the overall rarity of this corolla color within *Columnea* remains notable.

Etymology.—The specific epithet *versicolor* is derived from the Latin *versicolor*, meaning "variously colored," and refers to the distinctly bicolored corolla, with a magenta tube and dark purple lobes (Fig. 1), a diagnostic feature of this species.

Specimens examined: **COLOMBIA. Antioquia:** municipio Jardín, vereda La Mesenia, Reserva Natural Mesenia-Paramillo, Recorrido desde al Alto del Chami al Cerro El Paramillo, 05°28′58.4″N, 75°53′42.6″W, 2532 m, 10 Aug 2022 (fl, fr), *L. Clavijo et al. 2682* (COL) ; municipio Jardín, Reserva Natural Mesenia-Paramillo (Fundación Bioconservancy), trail from MPNR to El Alto and continuing toward Cerro Paramillo, 05°28′59.739″N, 75°53′42.836″W, 2500–2800 m, 23 Mar 2026 (fl), *J.L. Clark et al. 20568* (HUA, SEL)..

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