# *Columnea glaucobracteata* (Gesneriaceae), a New Species from the Northwestern Andean Slopes of Ecuador

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Abstract. *Columnea glaucobracteata* J. L. Clark (Gesneriaceae), a new species endemic to the northwestern Andean slopes of Ecuador, is described. The species shares the dorsiventral habit typical of many species of *Columnea* L. but is distinguished by its large greenish-white bracts that partially to nearly completely cover the corolla. A conservation assessment following IUCN Red List criteria supports a preliminary status of Data Deficient (DD).

Resumen. Se describe una nueva especie endémica de las laderas andinas del noroeste de Ecuador, *Columnea glaucobracteata* J. L. Clark (Gesneriaceae). Presenta el hábito dorsiventral típico de muchas *Columnea* L., distinguiéndose por sus grandes brácteas verde-blanquecinas que cubren casi completamente la corola. Siguiendo los criterios de la Lista Roja de la UICN, la especie se asigna provisionalmente a la categoría Datos Insuficientes (DD).

*Key words:* Carchi, Chocó Biogeographic Region, Gesnerioideae, taxonomy.

The flowering plant family Gesneriaceae, a member of the order Lamiales, comprises over 3900 species in more than 150 genera (Weber, 2004; Weber et al., 2013; GRC, 2025). Molecular phylogenetic analyses support its classification into three subfamilies and seven tribes, each forming a well-supported monophyletic lineage (Möller & Clark, 2013; Ogutcen et al., 2021). Within the family, the Gesnerioideae constitute a diverse Neotropical radiation, encompassing roughly 1200 species in 77 genera (Clark et al., 2020; GRC, 2025).

The genus *Columnea* L. is placed within tribe Gesnerieae, subtribe Columneinae (Weber et al., 2013, 2020). It can be distinguished from closely related genera primarily by its fruit type, typically an indehiscent berry; the only exception is *C. dielsii* Mansf., which bears a fleshy bivalved capsule. *Columnea* is the largest genus in the tribe, with more than 220 currently accepted species (Clark et al., 2020; GRC, 2025).

Although molecular data confirm the monophyly of *Columnea* (Clark et al., 2006; Smith et al., 2013; Schulte et al., 2014), infrageneric classifications are not supported. Traditional subgeneric circumscriptions often conflict with phylogenetic evidence, largely because historical classifications relied on ambiguous or convergent morphological characters (Smith & Carroll, 1997; Smith, 2000; Clark & Zimmer, 2003; Clark et al., 2012; Smith et al., 2013; Schulte et al., 2014). Because previous classifications are not supported, the new species described here, *C. glaucobracteata* J. L. Clark, is not assigned to any previously recognized infrageneric or subgeneric group, nor to any of the five genera once segregated from *Columnea* by Wiehler (1983), all of which are now treated as *Columnea*. This new species, notable for its large glaucous bracts, was discovered in Ecuador's Carchi Province.

## Materials and Methods

Plants were photographed in the field and subsequently pressed and dried. Specimens are currently deposited in the following herbaria: Herbario Amazónico de la Universidad Estatal Amazónica (ECUAMZ), Missouri Botanical Garden (MO), New York Botanical Garden (NY), the United States National Herbarium (US), Herbario Nacional del Ecuador (QCNE), Pontificia Universidad Católica del Ecuador (QCA), and Marie Selby Botanical Gardens (SEL). Photographs of live specimens were taken in the field using a Nikon D7500 DSLR (Nikon, Tokyo, Japan), a Nikon 105-mm macro lens, and a Nikon SB-29S ring flash. Morphological observations and measurements were made from live collections, alcohol-preserved material, and digital images using the ImageJ software (Schneider et al., 2012) for measurements. Specimens were documented during field expeditions to northern Ecuador in 2003, 2016, and 2024.

The extinction risk was assessed following the IUCN Red List Categories and Criteria (2012) and the updated guidance of the IUCN Standards and Petitions Committee (2024). Field observations and verified collection sites were used to evaluate the appropriate category. The extent of occurrence (EOO) and area of occupancy (AOO) were not calculated because several of the known collections are not georeferenced and have vague locality information.

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Taxonomic Treatment

**Columnea glaucobracteata** J. L. Clark, sp. nov. TYPE: Ecuador. Carchi: Cantón Espejo, Parroquia Guatal, Mirador de las Golondrinas (Fundación Golondrinas), trail from El Corazón toward La Cortadera (2 km NE of refugio), 0°49′46″N, 78°7′3″W, 2000–2500 m, 6 July 2003, fl., fr., *J. L. Clark & E. Folleco 8472* (holotype, SEL [barcode] SEL065344!; isotypes, MO!, NY!, QCNE!, US [bc] US00961914!). Figure 1.

*Diagnosis*. *Columnea glaucobracteata* J. L. Clark is distinguished from *C. medicinalis* (Wiehler) L. E. Skog & L. P. Kvist by leaf blades with prominent reticulate secondary venation on abaxial and adaxial leaf surfaces (vs. smooth adaxial leaf surfaces in *C. medicinalis*), greenish-white bracts that nearly cover the entire corolla (vs. green or red bracts and a corolla that exceeds the length of the bracts), and a mostly white, shallowly bilabiate corolla (vs. a mostly yellow bilabiate corolla).

Terrestrial or epiphytic subshrub with dorsiventral shoots 1–1.5 m, stems green or green with red splotches, with indument of densely pilose rust-colored multicellular trichomes; internodes 1–5 cm. Leaves opposite, pairs strongly anisophyllous; larger leaf broadly oblong to obovate, 7–14 × 2–4 cm, apex acuminate, base rounded and slightly oblique, margin serrulate, lateral veins 9 to 12 per side, adaxially shiny green, with uniformly pilose indument, secondary venation raised and reticulate, abaxially uniformly light green with red apex, with pilose indument, more densely pubescent on veins; petiole of larger leaf 0.6–1.1 cm, red, with indumentum of densely pilose rust-colored multicellular trichomes; smaller leaf nearly sessile, the blade ovate, 1–1.5 × 0.6–0.8 cm, lateral veins 2 to 3 per side, otherwise similar to larger leaf. Inflorescence reduced to 1 to 3 axillary flowers; bracts broadly ovate, 2.2–3.4 × 1.4–1.8 cm, greenish-white, sometimes with red splotches, apex broadly acuminate. Pedicels 0.5–1 cm, white, pilose, and with prominent white nectary glands at apex. Calyx lobes uniformly greenish-white, sometimes with red splotches, ovate, 2–2.6 × 1.1–1.6 cm at base, apex acuminate, exterior pilose, interior glabrous, margin mostly entire or with 1 to 2 serrations. Corolla 4.5–5.3 cm, base of corolla appearing laterally compressed, otherwise appearing uniformly tubular, ca. 1 cm wide, shallowly bilabiate; lower lobe recurved, 6–8.5 × 3–4 mm; lateral lobes 6–8 × 3–5 mm; upper lobes fused into a bilobed hood, 5–8.5 × 5–7 mm; all lobes rounded, densely pilose on the outside, interior uniformly white with glandular trichomes near throat, exterior pilose, mostly white with red markings near base of lower lobe. Filaments ca. 2.4 cm, connate at base for 0.5 cm and free from corolla, anthers ca. 3 × 3 mm, included in the corolla throat, quadrangular. Ovary ca. 4 mm high, conical, pilose; style 3 cm, covered with glandular trichomes, stigma shallowly bilobed. Nectary comprised of single bilobed dorsal glands. Fruit a globose green berry, ca. 1.5 × 1.5 cm. Seeds not observed.

*Phenology*. *Columnea glaucobracteata* has been documented with flowers during January, March, and July. Fruits have been documented in July.

*Distribution and habitat*. *Columnea glaucobracteata* is endemic to the northwestern Andean slopes of Ecuador in the province of Carchi. The forest corresponds to the Chocó Biogeographic Region for the relatively high levels of precipitation and epiphytic diversity. Several collections are from the shaded understory of primary forest along recently built roads.

*Provisional IUCN Red List category*. *Columnea glaucobracteata* is locally abundant at several sites in Carchi Province, northern Ecuador. Only three of the six known collections are georeferenced; the remaining specimens lack precise locality information. For example, two collections simply cite "road between Maldonado and Tulcán," a stretch of more than 80 km, with no indication of whether the material was collected closer to Maldonado or Tulcán.

The forests where *Columnea glaucobracteata* occurs are under considerable pressure from agricultural expansion facilitated by recent road construction. Several collections were made along newly built roads that have since been paved, further accelerating colonization of the region. Observed threats include selective logging of commercially valuable timber, agricultural encroachment, and illegal mining—all observed by the author during fieldwork in the region from 1996 to 2024.

Two collections are from privately managed reserves: Reserva Drácula in Cerro Golondrinas (Fundación EcoMinga) in Cantón Tulcán, and the Mirador de las Golondrinas (Fundación Golondrinas) in Cantón Espejo. Although both reserve names reference "Golondrinas," one is located within Cerro Golondrinas (Reserva Drácula), whereas the other overlooks Cerro Golondrinas (Mirador de las Golondrinas). All remaining collections come from unprotected areas affected by land clearing for infrastructure, logging, and agriculture. There are at most two locations with respect to the principal threats (agricultural expansion, mining, and cultivation). However, because most available collections have vague or imprecise locality information, *Columnea glaucobracteata* is provisionally assessed as Data Deficient (DD).

*Etymology*. The specific epithet *glaucobracteata* is derived from the Latin *glaucus*, meaning "whitish-

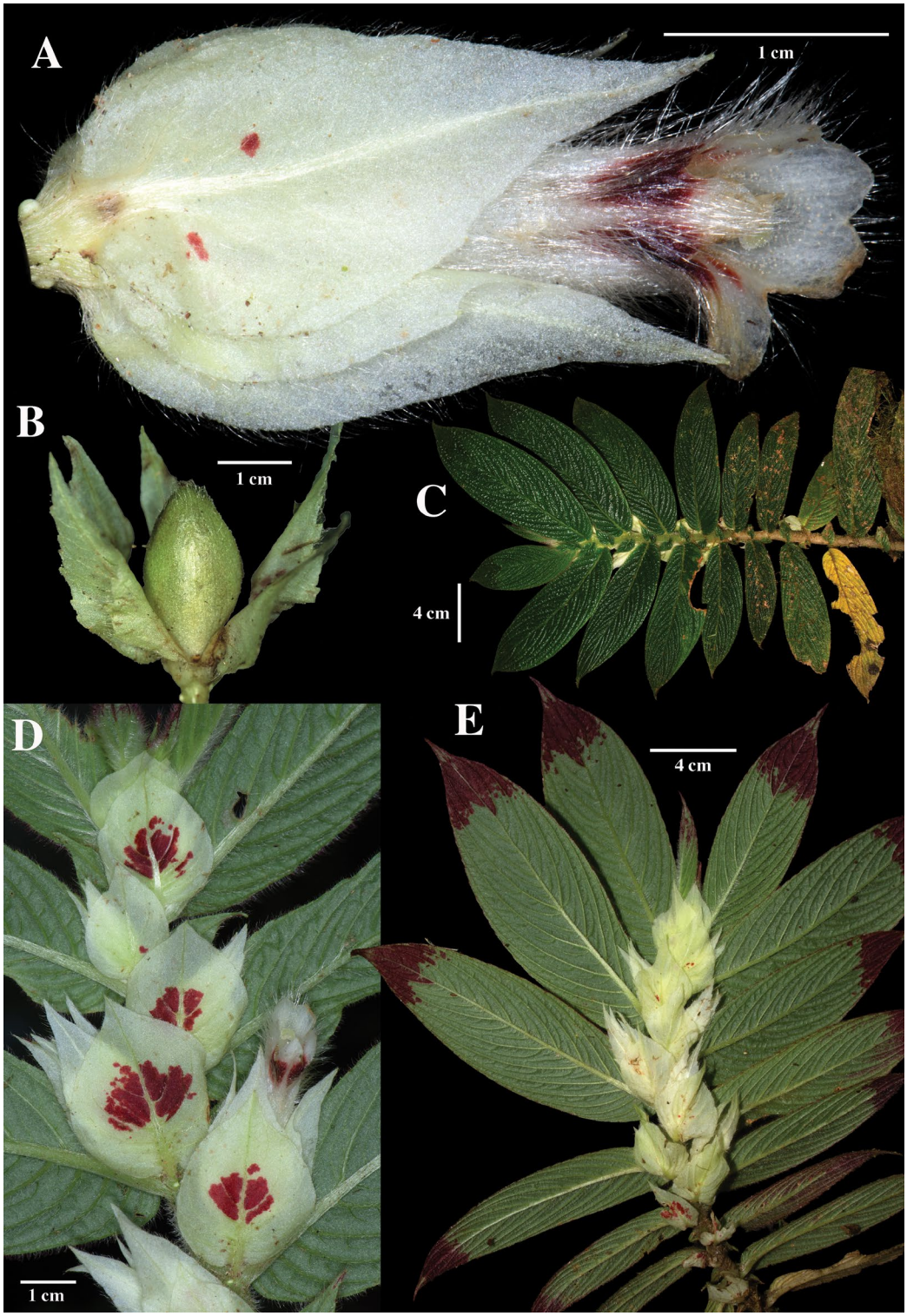


Figure 1. Field images of *Columnea glaucobracteata* J. L. Clark —A. Flower. —B. Fruit. —C. Upper surface of dorsiventral shoot. —D. Floral bracts. —E. Lower surface of dorsiventral shoot. A, *J. L. Clark et al. 18150*; B, *J. L. Clark & E. Folleco 8472*; C–E, *J. L. Clark et al. 18150*. Photos by John L. Clark.

green" coloration and *bracteatus*, meaning "having bracts." It refers to the distinctive greenish-white (glaucous) bracts that partially to completely cover the corolla (Fig. 1).

*Notes*. *Columnea glaucobracteata* exhibits a dorsiventral habit, in which shoots extend horizontally and often arch or dip apically, a growth form characteristic of many Neotropical *Columnea* species. This growth form is considered facultatively epiphytic, as individuals may occur both terrestrially and epiphytically but always exhibit dorsiventral shoots. *Columnea glaucobracteata* is readily distinguished from other dorsiventral species by its combination of greenish-white bracts that nearly cover the corolla (Fig. 1D), shallowly bilabiate corollas (Fig. 1A), and conspicuous reticulate secondary venation (Fig. 1C, E). Figure 2 shows several other *Columnea* species with dorsiventral shoots. The secondary venation of *C. tessmannii* Mansf. is also reticulate, but that species differs from *C. glaucobracteata* by its bright red bracts and deeply bilabiate corollas (Fig. 2A). *Columnea eubracteata* Mansf. has shallowly bilabiate corollas similar to *C. glaucobracteata* but differs by its predominantly red leaves with green apices (Fig. 2B), in contrast to most *Columnea* species, which are typically green with red apices. *Columnea medicinalis* (Wiehler) L. E. Skog & L. P. Kvist has green, yellow, or red bracts, larger leaves that are often three or four times the size of those of *C. glaucobracteata*, and slightly suppressed secondary venation, with distinctly bilabiate corollas (Fig. 2D). Many dorsiventral species, such as *C. caudata* M. Amaya & L. P. Kvist (Fig. 2E), have caducous or inconspicuous bracts, whereas others—including *C. dimidiata* (Benth.) Kuntze (Fig. 2F) and *C. rubriacuta* (Wiehler) L. P. Kvist & L. E. Skog (Fig. 2C)—have colorful bracts and flowers that exceed the length of the floral bracts.

*Paratypes*. ECUADOR. **Carchi:** Cantón Espejo, Parroquia Guatal, Mirador de las Golondrinas (Fundación Golondrinas), trail from El Corazon towards La Cortadera (2 km NE of refugio), 0°49′46″N, 78°7′3″W, 2000–2500 m, 6 July 2003, fl., *J. L. Clark & E. Folleco 8357* (MO, QCNE, SEL, US); Cantón Túlcan, Parroquia Jijón y Caamaño, Reserva Drácula (Fundación EcoMinga), near Km. 20 along hwy. Chical–El Carmen, 2190 m, 16 Mar. 2016, fl., *J. L. Clark, S. L. Ginzbarg & H. Yela 14969* (ECUAMZ, MO, SEL, US); Cantón Túlcan, Parroquia Chical, Cerro Golondrinas, ridgeline from campsite #1 towards campsite #2 (La Laguna), 0°51′56″N, 78°11′34.3″W, 1800–2236 m, 25 Jan. 2024, *J. L. Clark, M. Cantincuz, M. Monteros, M. Johnson & N. Exe 18150* (QCA, SEL); from Túlcan to Maldonado, 17 Apr. 1993, sterile, *H. Wiehler & Gesneriad Research Foundation Study Group 93108* (SEL); Km. 25, Maldonado–Túlcan, 2600 m, 25 Nov. 1985, sterile, *L. Besse, A. Besse, J. Halton & H. Luther 2245* (SEL).

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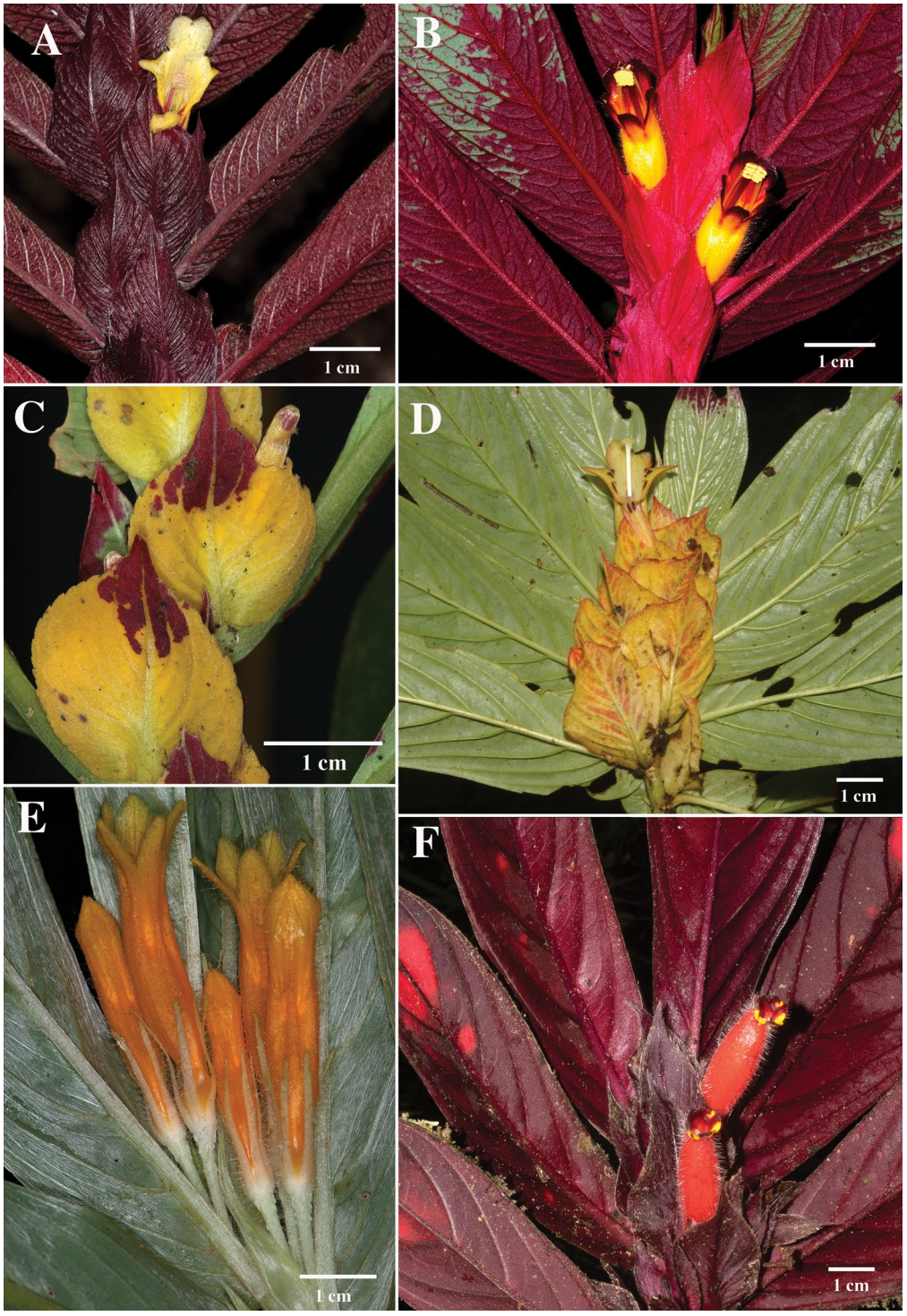


Figure 2. Field images of other *Columnea* L. with dorsiventral shoots. —A. *Columnea tessmannii* Mansf. —B. *Columnea eubracteata* Mansf. —C. *Columnea rubriacuta* (Wiehler) L. P. Kvist & L. E. Skog. —D. *Columnea medicinalis* (Wiehler) L. E. Skog & L. P. Kvist. —E. *Columnea caudata* M. Amaya & L. P. Kvist —F. *Columnea dimidiata* (Benth.) Kuntze. A, *J. L. Clark et al. 10764*; B, *J. L. Clark & P. Taber 13718*; C, *J. L. Clark et al. 10445*; D, *J. L. Clark et al. 16630*; E, *J. L. Clark et al. 19372*; F, *J. L. Clark et al. 19454*. Photos by John L. Clark.

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