
Columnnea congestiflora (Gesneriaceae), a New Species from the Western Andean Slopes of the Cordillera Occidental in Colombia

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ABSTRACT. *Columnnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc. (Gesneriaceae), a new species endemic to Buenaventura and discovered in the lowland forests of western Colombia, is described and illustrated. A preliminary conservation assessment based on IUCN Red List criteria supports the classification of the risk of extinction for the species as Endangered (EN).

RESUMEN. *Columnnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc. (Gesneriaceae), una nueva especie endémica de Buenaventura, descubierta en los bosques de tierras bajas del occidente de Colombia, es descrita e ilustrada. Una evaluación preliminar de conservación basada en los criterios de la Lista Roja de la UICN respalda la clasificación del riesgo de extinción de la especie como En Peligro (EN).

Key words: Chocó Biogeographic Region, Colombia, *Columnnea*, Gesnerioideae, taxonomy.

The flowering plant family Gesneriaceae, within the order Lamiales, comprise more than 3900 species distributed across 150+ genera (Weber, 2004; Weber et al., 2013; GRC, 2025). This family is classified into three subfamilies and seven tribes, all of which are strongly supported by molecular phylogenetic studies as monophyletic (Möller & Clark, 2013; Ogutcen et al., 2021). Among these, the subfamily Gesnerioideae are especially diverse in the Neotropics, containing more than 1200 species across 77 genera (Clark et al., 2020; GRC, 2025).

The genus *Columnnea* L. belongs to the tribe Gesnerieae and the subtribe Columneinae within Gesneri-

oideae (Weber et al., 2013, 2020). It is distinguished from closely related genera primarily by its fruit type—typically indehiscent berries. A rare exception is *C. dielsii* Mansf., which produces a fleshy bivalved capsule. *Columnnea* is the largest genus in the tribe, comprising more than 220 accepted species (Clark et al., 2020; GRC, 2025).

While molecular phylogenies consistently support the monophyly of *Columnnea* (Clark et al., 2006; Smith et al., 2013; Schulte et al., 2014), existing subgeneric classifications remain problematic. Most traditional subgenera lack congruence with molecular phylogenetic studies because groups are artificial and based on ambiguous characters (Smith & Carroll, 1997; Smith, 2000; Clark & Zimmer, 2003; Clark et al., 2012; Smith et al., 2013; Schulte et al., 2014). For this reason, the species newly described in this paper, *C. congestiflora*, is not assigned to a traditional infrageneric or subgeneric classification, nor to any of the five genera currently subsumed under *Columnnea* but previously recognized as distinct genera by Wiehler (1983).

This research documents a species whose recognition began nearly two decades ago through the study of herbarium material; it has since been studied through ongoing field expeditions. Recent observations confirm that this species is narrowly endemic to the Municipio Buenaventura, located on the western slopes of the Cordillera Occidental in Colombia (Fig. 1).

MATERIALS AND METHODS

The new *Columnnea* species was identified, described, and compared to specimens from the following her-

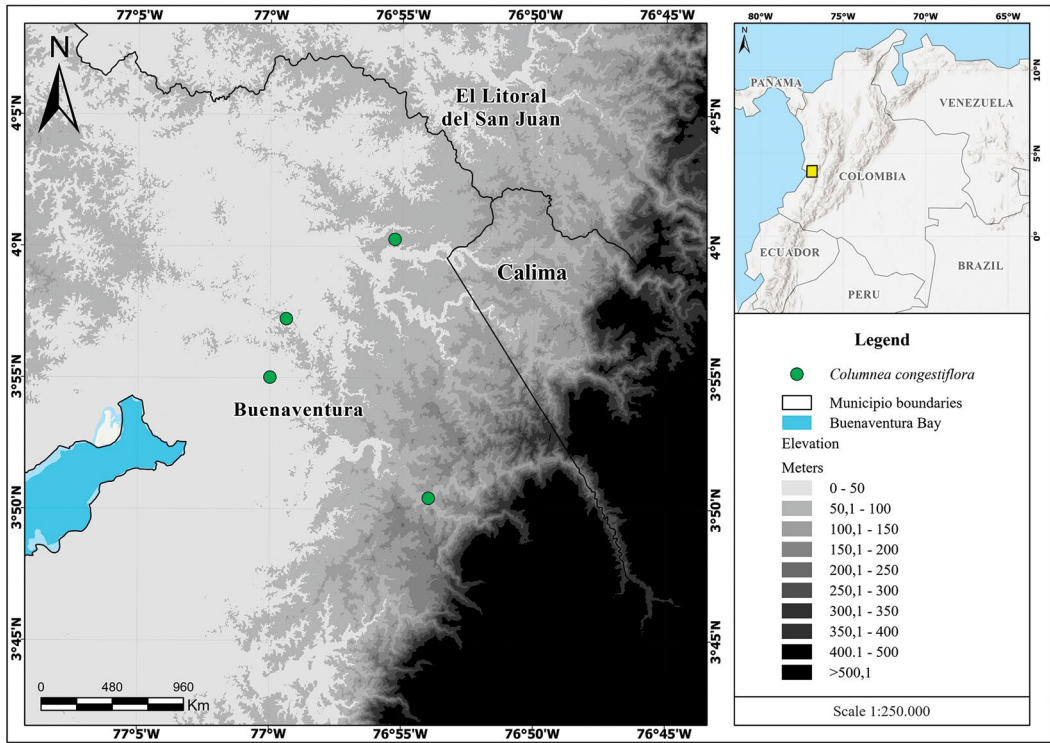


Figure 1. Distribution map for *Columnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc.

baria (acronyms according to Thiers, 2025): COL, JBB, MO, SEL, TOLI, and US. Herbarium specimens were studied using a stereoscope, and morphological observations and measurements were carried out on dried material, living specimens, and structures preserved in alcohol. A digital caliper in ImageJ software (Schneider et al., 2012) was used for measurements. Photographs of fresh specimens were taken during field expeditions to the Bajo Calima District in Buenaventura between 2018 and 2023. The distribution map was created using ArcGIS Pro 3.3.0 (ESRI, 2024), using coordinates from herbarium specimen labels.

Morphological character definitions follow the terminology in Ellis et al. (2009), Beentje (2016), and Hewson (2019). Extinction risk was assessed for *Columnea congestiflora* following the IUCN Red List Categories and Criteria (IUCN, 2012) and updated criteria from the IUCN Standards and Petitions Committee (IUCN, 2024). For the preliminary assessment, field observations and collection localities were taken into account. The area of occupancy (AOO) and extent of occurrence (EOO) were calculated using GeoCAT (Bachman et al., 2011) with the default setting of 2 km, which equates to a 4-km² grid cell.

TAXONOMIC TREATMENT

Columnea congestiflora J. L. Clark, Solano-C & Parra-Lizc., sp. nov. TYPE: Colombia. Valle del Cauca: Mpio. Buenaventura, Jardín Botánico Universidad del Tolima, Bajo Calima, Consejo Comunitario Bajo Calima, Comunidad las Brisas, Bosques Rosi y Don Sixto, 3°57'14.62"N, 76°59'23.21"W, 47 m, 13 Nov. 2018 (bud, fl.), *B. Villanueva, M. Sarmiento, H. Palacios & S. Solis* 4395 (holotype, JBB-442111; isotype, COL!). Figures 2, 3.

Diagnosis. *Columnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc. is distinguished from *C. rosea* (C. V. Morton) C. V. Morton by its often larger leaf blades (the larger of a pair 4.5–14 × 2.3–5.5 cm, vs. 7.3–8.5 × 2.8–3.4 cm in *C. rosea*), congested inflorescences of 3 to 6 flowers (vs. usually only 1 to 3 flowers), ovate calyx lobes with a blunt to rounded apex (vs. lanceolate with an attenuate apex), and the absence of corolla appendages (vs. presence of corolla appendages).

Epiphytic herb; stems to 5.5 mm diam., green, proximally sparsely pilose with multicellular transparent trichomes, distally densely pilose with multicellular red trichomes; internodes 0.5–4 cm; leaf scars raised. Leaves opposite, anisophyllous, larger blade 4.5–14 ×

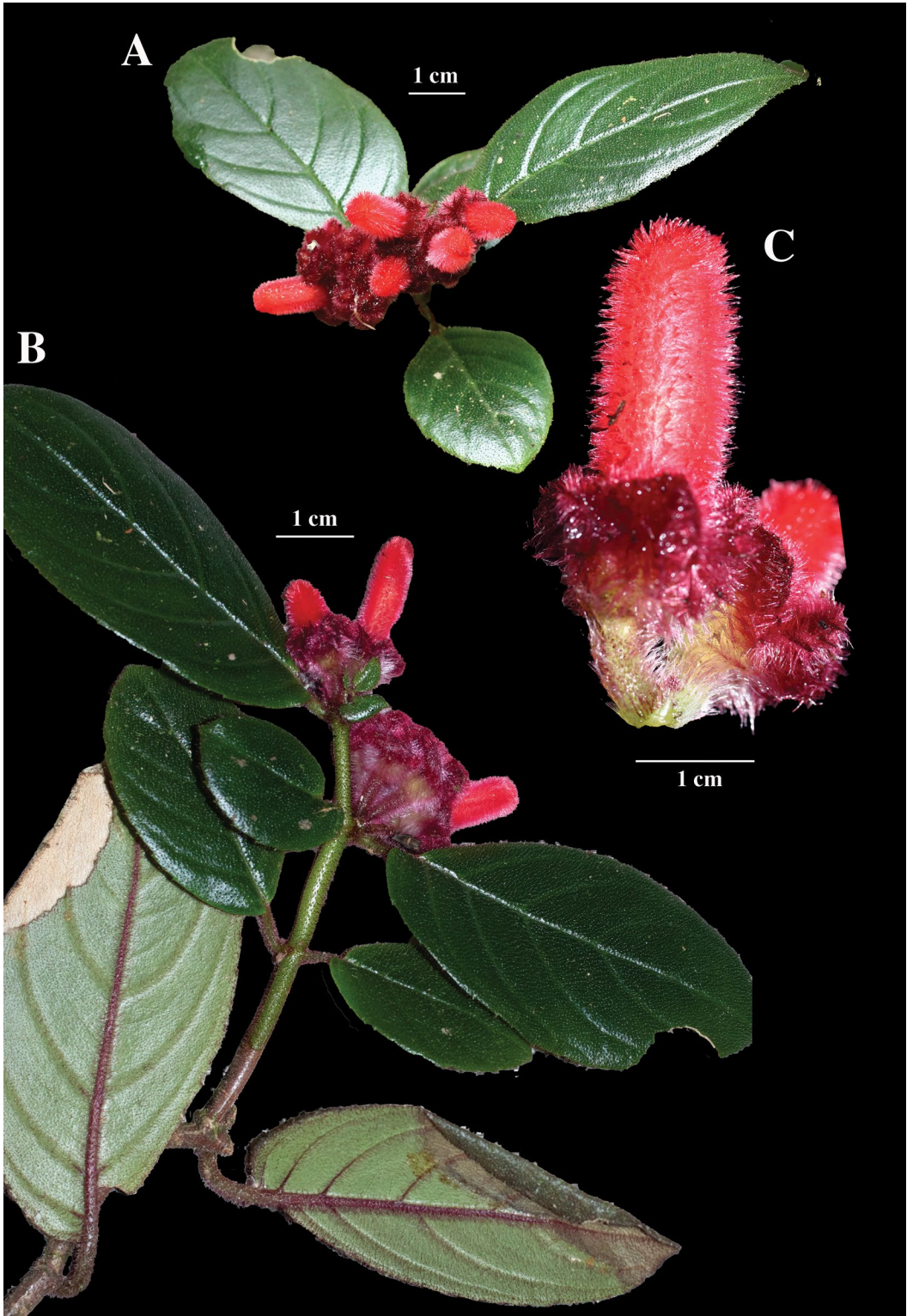


Figure 2. Field images of *Columnnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc. —A, B. Habit. —C. Lateral view of corolla. Photos by Nicolas Parra-Lizcano.

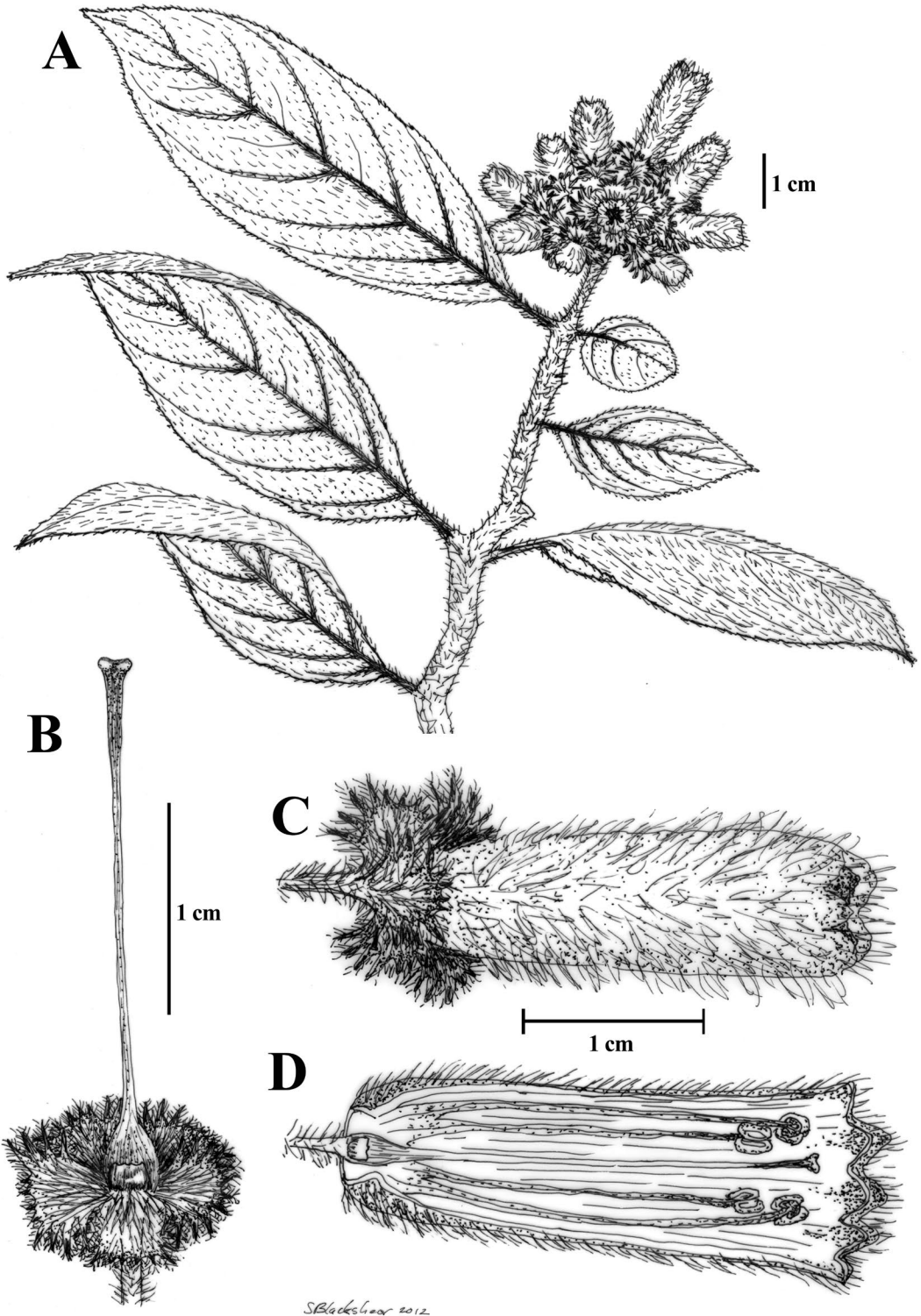


Figure 3. Illustration of *Columnea congestiflora* J. L. Clark, Solano-C & Parra-Lizc. —A. Habit. —B. Gynoecium featuring bilobed dorsal nectary gland. —C. Lateral view of flower. —D. Lateral view of open flower featuring immature androecium. Illustration by Sue Blackshear.

2.3–5.5 cm, elliptic to oblong, apex acute, base oblique, margin minutely serrulate to subentire at base, serrations irregularly spaced; lateral veins 4 to 5 pairs; both surfaces green, adaxial surface pilose with multicellular red trichomes, becoming more dense along veins, abaxial surface with transparent trichomes; petiole 5–12 mm, pilose with multicellular red trichomes; smaller blade 7–14 × 3–7 mm, similar in shape and indument to larger leaf. Inflorescence of 3 to 6 flowers per leaf axil; bracts oblong, 5 × 1.5 mm, red, uniformly pilose with multicellular red trichomes. Pedicels 8–14.2 mm, red, pilose to tomentose with multicellular transparent trichomes 2.4–3.5 mm. Calyx clasping ovary, 5-lobed with lobes dark red, ovate, 9–10 × 5–6 mm, apex blunt to rounded, margin lacinate, exterior densely pilose with multicellular transparent trichomes. Corolla red, tubular; tube gibbous at base, slightly ventricose, 2.9–3.6 cm, 5 mm diam. at base, 4.5–7 mm diam. near middle, 5–6 mm diam. near apex, exterior densely tomentose with multicellular red trichomes, interior mostly glabrous with glandular trichomes near apex; limb 5.5–6.5 mm diam., lobes 5, pinkish red, semiorbicular to ovate, equal to subequal, 2 × 2.5 mm. Androecium with filaments connate at base and forming a filament curtain 2.9–3.4 mm and adnate to corolla for 1.5 mm, free portion of filaments 7.9–12 mm, glabrous, anthers 2–2.4 × 2.3–2.9 mm, quadrangular with basifixed insertion, dehiscent by longitudinal slits, included in corolla tube. Gynoecium with bilobed to trilobed dorsal nectary gland, 1.4–1.7 × 0.9–1 mm; ovary 3.5 mm, conical, glabrous; style yellow, 18.2–23.1 mm, glabrous; stigma bilobed, papillate, included in corolla tube. Fruit and seeds not observed.

Phenology. *Columnnea congestiflora* has been documented with flowers during January, March, May, August, September, November, and December. Fruits have not been observed but have been noted on an herbarium specimen (*C. Barbosa 5137*) in December.

Distribution and habitat. *Columnnea congestiflora* is endemic to the Bajo Calima and San Cipriano districts in the Municipio Buenaventura in the department of Valle del Cauca, along the western slopes of the Cordillera Occidental in Colombia (Fig. 1). These forests are located within a transitional zone between tropical wet forest and tropical rainforest, characterized by high annual precipitation exceeding 7000 mm and an average temperature of 27.3°C. The terrain comprises low hills ranging from 50 to 150 m in elevation, with moderate to steep slopes (10°–50°). Soils in this region are classified as Entisols and are characterized as acidic (pH 4.3–5.0), low in phosphorus and boron, and high in aluminum. These conditions limit the region's suitability for agriculture; however, the for-

ests remain threatened because of the high value of their timber resources (Faber-Langendoen, 1992).

Provisional IUCN Red List category. *Columnnea congestiflora* is locally abundant in a limited area near Buenaventura, in the department of Valle del Cauca (Fig. 1). Its extent of occurrence (EOO) is estimated at 104 km², and its area of occupancy (AOO) is 16 km², both of which fall below the thresholds for Endangered under the B criterion (EOO < 5000 km²; AOO < 500 km²). The species is endemic to the lowland forests surrounding the coastal city of Buenaventura.

The forests where *Columnnea congestiflora* occurs are under significant pressure. According to the Centro Nacional de Memoria Histórica (2015; CNMH), threats include the selective extraction of commercially valuable timber species; expansion of port infrastructure, such as the Buenaventura Container Terminal (TCBUEN); illegal mining that reportedly involves over 220 dredges and 276 excavators operating in Zaragoza; and the continued spread of illicit coca cultivation for cocaine production.

None of the known collection sites are currently protected. There are at most four locations with respect to the threat of land clearing for infrastructure, mining, or cultivation. Given the species' limited range (Fig. 1) and ongoing habitat degradation in known localities, *Columnnea congestiflora* is provisionally assessed as Endangered [EN B1ab(iii)+B2ab(iii)].

Etymology. The specific epithet *congestiflora* is derived from the Latin *congestus*, meaning “crowded” or “clustered,” in reference to the dense or compact clusters of flowers.

Notes. *Columnnea congestiflora* is readily distinguished from most other species of *Columnnea* by the combination of its congested inflorescences bearing three to six flowers, a densely tomentose indumentum covering both the calyx and corolla, and a uniformly bright red corolla tube.

Columnnea congestiflora and *C. rosea* are frequently confused in herbaria because both species share lacinate calyx margins and densely hirsute-tomentose tubular red corollas (Figs. 2, 4). However, they can be distinguished by several morphological traits. Inflorescences in *C. congestiflora* typically bear three to six clustered flowers per leaf axil (Figs. 2A, 3A), whereas *C. rosea* usually has only one to three flowers per axil (Fig. 4C). The calyx lobes are ovate with a blunt to rounded apex in *C. congestiflora* (Figs. 2, 3), versus lanceolate with an attenuate apex in *C. rosea* (Fig. 4C). The presence or absence of corolla appendages is taxonomically informative when mature flowers are present. Flowers of *C. congestiflora* lack corolla appendages,

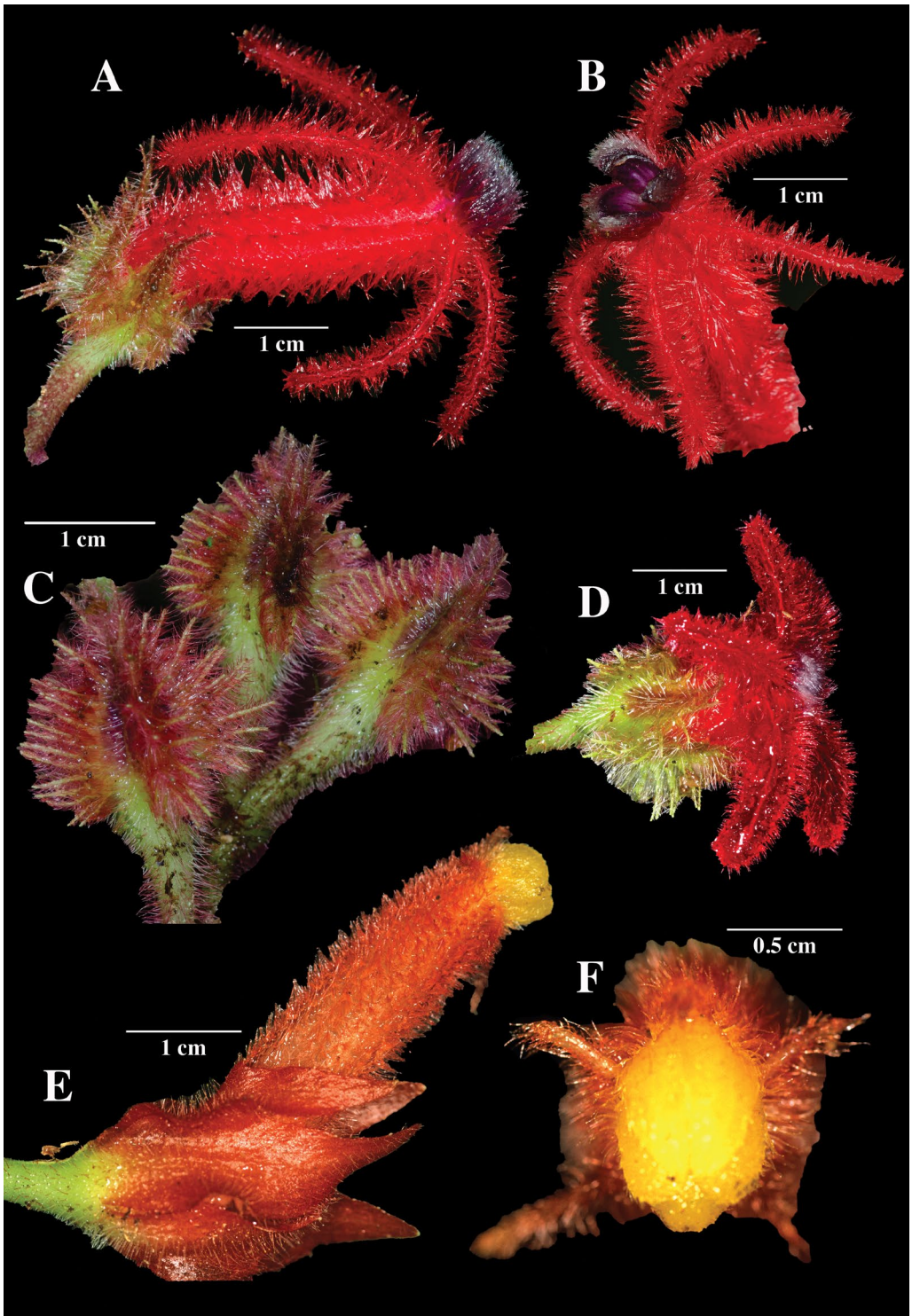


Figure 4. Field images of *Columnnea rosea* (C. V. Morton) C. V. Morton (A–D) and *C. dissimilis* C. V. Morton (E, F). —A. Lateral view of flower. —B. Front view of flower featuring corolla appendages (derived) and corolla lobes (reduced). —C. Lacinate calyx margins. —D. Lateral view of flower. —E. Lateral view of flower. —F. Front view of corolla featuring corolla appendages and corolla lobes. A–D, *J. L. Clark et al. 13245* (SEL); E, F, *J. L. Clark et al. 8629* (SEL). Photos by John L. Clark.

while those of *C. rosea* have conspicuous derived appendages and highly reduced corolla lobes—often leading to confusion about which whorl represents lobes versus appendages (Fig. 4A, B). The distinction between corolla lobes versus appendages in *Columnnea* is discussed in detail in Clark and Clavijo (2012). In the absence of flowers, the larger leaf blades in *C. congestiflora* have a greater maximum size, measuring 4.5–14 × 2.3–5.5 cm, compared to 4.2–8.5 × 2.5–3.4 cm in *C. rosea*.

The elongate, tubular corolla of *Columnnea congestiflora* is also superficially similar to that of *C. dissimilis* C. V. Morton (Fig. 4E, F). However, *C. dissimilis* differs by its orangish-pink (rarely yellow) corolla tube and the presence of appendages (Fig. 4F), in contrast to the uniformly bright red and unappendaged corolla of *C. congestiflora* (Fig. 2).

Paratypes. COLOMBIA. **Valle del Cauca:** along trail from Cordoba to Quebrada La Brea, 7 Nov. 1944 (bud, fl.), *E. L. Core 1542* (US); Mpio. Buenaventura, 14 Aug. 1959 (bud, fl.), *B. Maguire & C. K. Maguire 44008* (NY); Mpio. Buenaventura, forest exploitation in the concession of Cartón de Colombia, 230 m, 15 Nov.–6 Dec. 1979 (bud, fl.), *J. van Rooden et al. 305* (US); same locality, 15 Nov.–6 Dec. 1979 (bud, fl.), *J. van Rooden et al. 406* (MO); Mpio. Buenaventura, Bajo Calima ca. 10 km due N of Buenaventura, Carton de Colombia concession, 3°57'N, 77°08'W, 50 m, 4 Dec. 1981 (bud, fl.), *A. Gentry 35271* (COL); Mpio. Buenaventura, Corregimiento Bajo Calima, Concesión Pulpapel/Buenaventura, 3°55'N, 77°W, 100 m, 31 Aug. 1984 (fl.), *M. Monsalve 312* (MO); same locality, 19 Sep. 1984 (fl.), *M. Monsalve 414* (MO); same locality, 27 Sep. 1984 (fl.), *M. Monsalve 466* (MO, US); same locality, 23 Nov. 1984 (bud, fl.), *M. Monsalve 546* (MO); Mpio. Buenaventura, Corregimiento Bajo Calima, concession of Cartón de Colombia, Dindo 4 area, 11 km E of Buenaventura–Río Calima rd., 3°55'N, 77°W, 50 m, 14 Dec. 1985 (fl.), *A. Gentry, M. Monsalve B. & C. Restrepo 53303* (MO); Mpio. Buenaventura, Corregimiento Bajo Calima, Concesión Pulpapel/Buenaventura, 3°55'N, 77°W, 100 m, 2 Dec. 1986 (bud, fl.), *M. Monsalve 1389* (MO); Mpio. Buenaventura, Corregimiento de San Cipriano, Reserva Natural Escalerete, sendero a Saragoza, 140 m, 1 Jan. 1993 (bud), *W. Devia & D. Cardenas 3492* (COL [image!]); Mpio. Buenaventura, Bajo Calima, Estación Silvicultural San Isidro, 4°00'00"N, 76°58'24"W, 50 m, 21 Dec. 1987 (bud, fl., fr.), *C. Barbosa 5137* (FMB); Mpio. Buenaventura, Bajo Calima, vía Málaga alrededores de caserío Las Brisas, 4°00'16.51"N, 76°55'16.91"W, 67 m, 3 Mar. 2013 (fl.), *B. Villanueva 1313* (TOLI); Mpio. Buenaventura, Consejo comunitario Bajo Calima, Comunidad las Brisas, Km. 15 vía Bahía Málaga, Bosque Doña Rosi, 3°58'7.1"N, 77°00'15.7"W, 67 m, 26 May 2015 (bud), *B. Villanueva, G. Peyre, M. Rincón-Gonzales & O. Melo 2248* (TOLI); Mpio. Buenaventura, Bajo Calima, Comunidad La Brea, quebrada La Brea, 3°57'13.08"N, 76°58'52.48"W, 38 m, 3 Nov. 2016 (fl.), *L. Corrales 385* (TOLI); Mpio. Buenaventura, Consejo comunitario Bajo Calima, Comunidad las Brisas, sendero que conduce a Bosque Doña Rosi, 3°57'36"N, 76°59'42"W, 44 m, 21 Nov. 2023 (bud, fl.), *N. Parra & B. Villanueva 172* (JBB).

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