



Columnea longipedicellata, a new species of Gesneriaceae from Colombia

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Abstract

Columnea longipedicellata, a new species from Antioquia and Chocó Departments in Colombia (Cordillera Occidental) is described and illustrated. The new species is distinguished by the presence of elongate pedicels and leaves uniformly green abaxially.

Resumen

Se describe e ilustra *Columnea longipedicellata*, una nueva especie de los departamentos de Antioquia y Chocó en Colombia (Cordillera Occidental). Esta especie se distingue por tener pedicelos elongados y el envés de las hojas uniformemente verde.

Introduction

Columnea Linnaeus (1753: 638) is the most species rich genus of the Neotropical Gesneriaceae, with more than 205 species (Möller & Clark 2013), a number that is rapidly growing with the recent discovery of several new species (e.g., Amaya-Márquez 2010a, 2014, Amaya-Márquez & Smith 2013, Clark & Clavijo 2012, Amaya-Márquez *et al.* 2013, Smith *et al.* 2013a). Monophyly of the genus *Columnea* has been supported in several studies (e.g. Smith & Carroll 1997, Smith 2000, Zimmer *et al.* 2002, Clark *et al.* 2012, Smith *et al.* 2013b), however the subgeneric classification has been more challenging to resolve (Schulte *et al.* 2014). Nevertheless, recent phylogenetic analyses have resulted in a new subgeneric classification, and the description of a new section (Smith *et al.* 2013b, Schulte *et al.* 2014).

Colombia harbors the highest diversity of Gesneriaceae in the Neotropics with 32 genera, and approximately 400 species (Kvist *et al.* 1998). *Columnea* is the most diverse genus in Colombia (80+ species), distributed from sea level to 4000 m in elevation, with most of the species inhabiting the Andean cloud forests, particularly on the western facing slopes of the Cordillera Occidental and the Chocó biogeographical region. Rangel-Churrio & Rivera-Díaz (2004) listed *Columnea*, with 35 species, as the 13th most diverse genus in the Chocó biogeographical region, and in the past few years this number has increased with descriptions of several new species (e.g. Amaya-Márquez *et al.* 2004, Amaya-Márquez 2010b, Amaya-Márquez & Smith 2012, Amaya-Márquez & Marín-Gómez 2012, Smith *et al.* 2013a). In this paper, we describe a new species of *Columnea* from the western slopes of the Cordillera Occidental, and discuss morphological similarities with its congeners and its position within the genus.

Taxonomy

Columnea longipedicellata M.Amaya, Clavijo & O.H.Marín, *sp. nov.* (Figs. 1 & 2)

Columnea longipedicellata differs from *C. segregata* by having longer (15–19+ cm) pedicels and leaves homogenously green on the abaxial side.

Type:—COLOMBIA. Antioquia: Municipio Urrao, corregimiento La Encarnación, vereda Calles, National Natural Park Las Orquídeas, road Calles–Encarnación, after the confluence of the rivers Polo and Calle, place La Quebra, 6°30'31"N, 76°14' W, 1600–1850 m, 31 January to 2 February 2011, *P. Pedraza-Peñaloza, J. Betancur, M.F. González, G. Giraldo, F. Gómez, A. Duque & J. Serna 2139* (holotype COL!, isotypes JAUM! NY!).

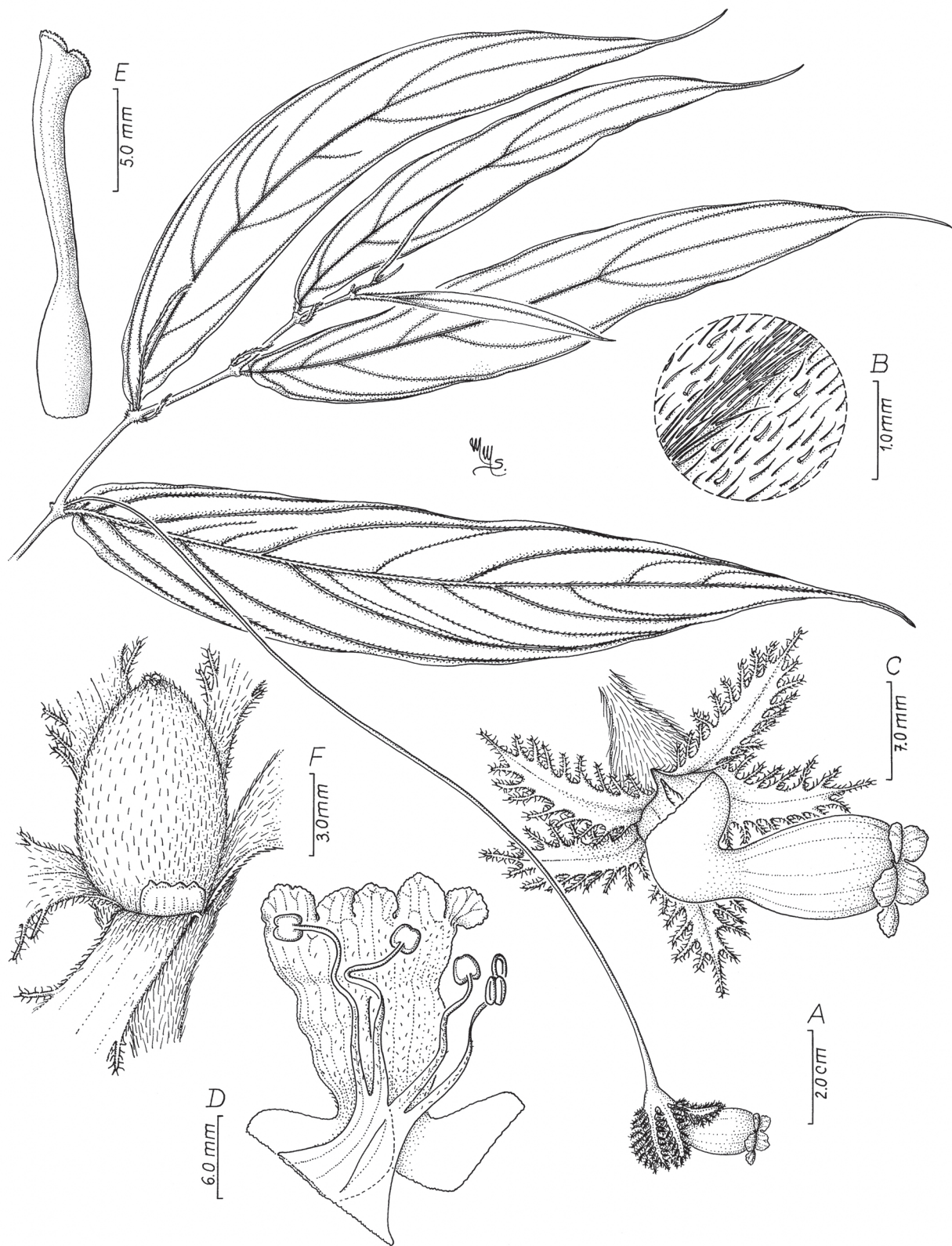


FIGURE 1. *Columnea longipedicellata*. A. Habit. B. Detail of the indumentum on the abaxial side of the larger leaf. C. Flower. D. Corolla dissected to show the androecium. E. Pistil. F. Fruit with persistent nectary glands and calyx. (A–F from holotype, *P. Pedraza-Peñaloza et al. 2139* (COL!)); Illustration by Marcela Morales).

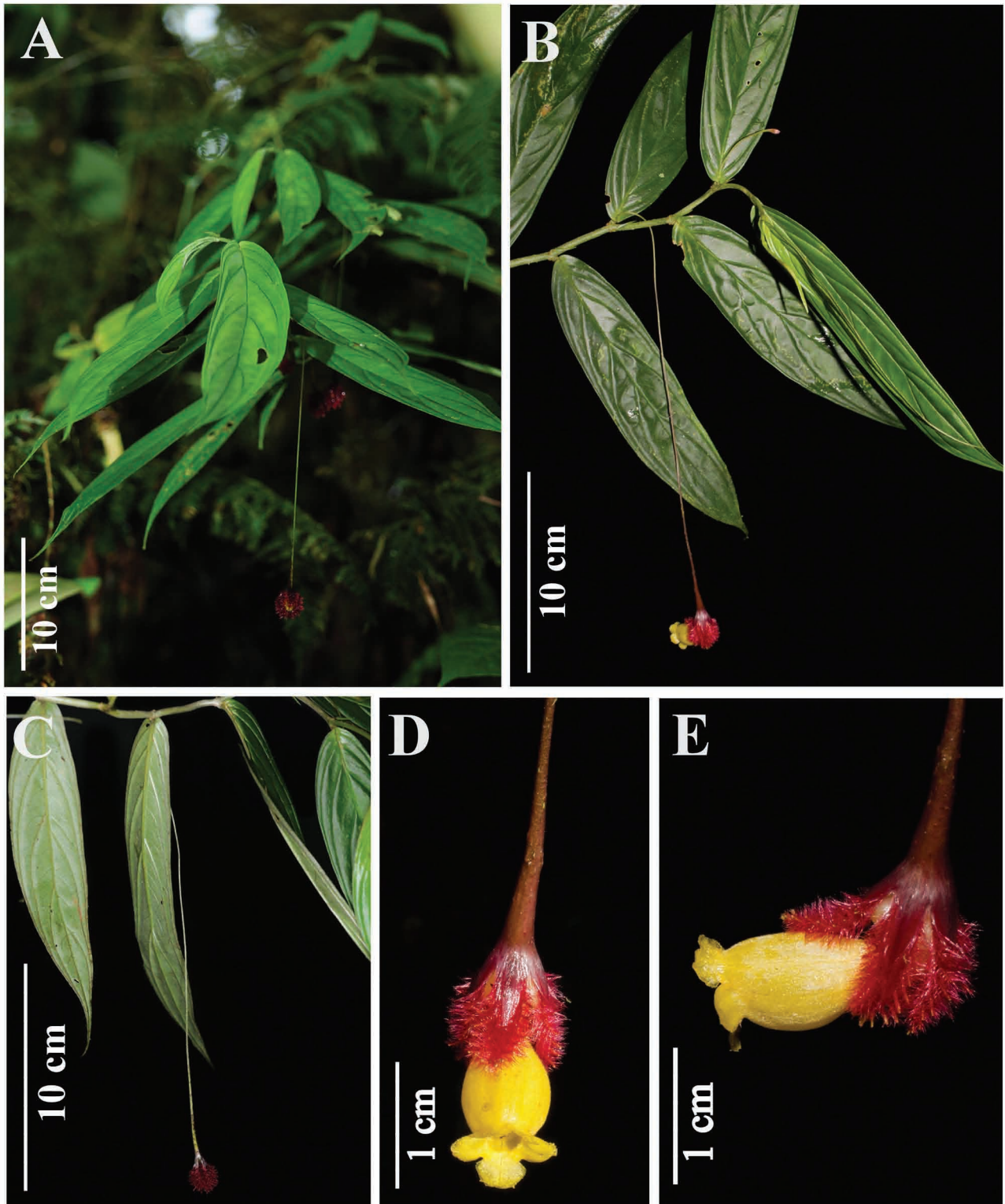


FIGURE 2. *Columnea longipedicellata*. A. Plant in its natural habitat. B. Flower hanging from the elongate pedicel. C. Ventral view of the vegetative shoot showing the pronounced anisophylly at each node and the solitary axillary flower. D. Front view of the corolla limb. E. Lateral view of the flower (Photos AC: Oscar Humberto Marín Gómez, BDE: María Fernanda González Giraldo).

Suffrutescent climber, 0.6–3 m tall. Stems terete, 2–4 mm diam., epidermis green, apically pubescent, basally glabrous; internodes 2–5 cm long, nodes with a pair of deep purple glands at the base of each petiole. Leaves opposite, strongly anisophyllous in a pair, papyraceous; larger leaf of pair with short petiole, 1–3 mm long, sericeous (5–7-celled-trichomes), blade asymmetrical, narrow oblong to falcate, 14.5–19 × 1.8–3.5 cm, base oblique, apex long acuminate, margin entire, upper surface green and glabrous, lower surface pale green and pubescent, pubescence more dense

on the veins, 6 veins on the larger side of the blade; smaller leaf stipule-like, sessile, lanceolate, 9–12 × 0.8–1 mm. Inflorescence reduced to a single axillary flower; 2 inconspicuous bracts, 2 × 0.5 mm, deciduous. Flower pedicellate, pedicel 15.5–22 cm long, epidermis green to red-purple, indument red and sericeous (5–7-celled-trichomes). Calyx deep purple and reddish, sepals nearly free, unequal, lanceolate, 1.4–1.8 × 0.2–0.6 cm, adaxially pubescent, abaxially sericeous with 10-celled-trichomes that are translucent at base and center, and reddish at apex and periphery; margin pectinate with 9 segments per side. Corolla yellow, oblique to almost perpendicular relative to the calyx, outside pubescent, 3–4-celled-trichomes, inside pubescent; tube sigmoid, 21 mm long, 8 mm wide near apex (widest) to 4 mm wide near based (most constricted), base dorsally gibbous, gibbosity 4 × 7 mm; limb subactinomorphic, 9 mm wide; lobes patent, obtuse, margin erose, subequal, 2–3 × 2–4 mm. Androecium of 4 stamens, didynamous; filaments 1.3 cm long, laminar, basally pubescent; connate at base for 7 mm of their length forming a folded dorsally open blade; anther subquadrate 2 × 1.5 mm. Gynoecium with ovary oblong, 6 × 3 mm, pubescent; style 1.2 cm long, pubescent; stigma bilobed. Nectary of two connate bidentate glands, 1.4 × 0.9 mm. Fruit green, ovoid berry, 0.9 × 0.5 cm. Seeds amber, obliquely striated, 1.2 × 0.4 mm.

Distribution:—*Columnnea longipedicellata* is endemic to Colombia, only known from the western slopes of the Cordillera Occidental, in the departments of Antioquia and Chocó. This species has been collected in the Premontane Rain forests (bp-PM) (Holdridge 1978) at elevations from 1600–1850 m. It is a rare species that grows in the interior of well-conserved forests.

Phenology:—Flowers recorded in January, February, and April. Specimens with immature fruits have been recorded in May.

Etymology:—Named for the elongate pedicel.

Discussion:—*Columnnea longipedicellata* is morphologically similar to *C. grata* Morton (1938: 1164), *C. sanguinolenta* (Klotzsch ex Oersted 1858: 49) Hanstein (1865: 389), and *C. segregata* Morley (1973: 459). These species share the following characteristics: pronounced anisophylly with the larger leaf of each pair adaxially glabrous, 6 (5–7) veins per side, inflorescence reduced to a single axillary flower, bracts reduced in size (2–9 mm long) sometimes deciduous, flower pedicellate, calyx lobes or sepals fimbriate or laciniate, corolla red or yellow. *Columnnea longipedicellata* is distinguished from the above mentioned species by a longer pedicel (15.5–22 cm vs. 2–13 cm long), and the abaxial side of the larger leaf in each pair uniformly green without red or purple spots.

Additionally, *Columnnea longipedicellata* can be differentiated from: a) *C. grata* by the small yellow corollas 2–2.1 cm long (vs. red corollas 2.9–4 cm long), and the larger leaf of each node narrow oblong to falcate, 14.5–19 × 1.8–3.5 cm (vs. elliptic to oblanceolate 4.6–11 × 1.4–3.9 cm); b) *C. sanguinolenta* by the small yellow corollas 2.1 cm long (vs. red corollas of 3–5 cm long); and c) *C. segregata* by the larger leaf in each node with the margin entire (vs. serrulate), the corolla uniformly yellow (vs. yellow with maroon or deep purple spots on the corolla lobes), and the corolla oblique to almost perpendicular, relative to the calyx (Fig. 2) (vs. corolla erect in the calyx).

Recent phylogenetic analyses of the genus *Columnnea* have revealed seven monophyletic clades named A–G (Smith *et al.* 2013b), and currently provides the foundation for a revised sectional classification of the genus that includes the description of a new section (Schulte *et al.* 2014). *Columnnea longipedicellata* was not included in those analyses; therefore its position in the phylogeny is unknown. *Columnnea segregata* (one of the morphologically similar species to *C. longipedicellata*) was included in the phylogeny but it was not recovered within any of the resolved clades. The inclusion of the species *C. longipedicellata*, *C. grata*, *C. sanguinolenta*, and *C. segregata* will be important in resolving their position and phylogenetic relationships within the genus *Columnnea* and in understanding their biogeographic history. Particularly, given that *C. longipedicellata* is the only South American species in this group, while the other species are distributed in Central America. Additionally, ecological and phylogenetic studies on the evolution of the elongate pedicel observed in *C. longipedicellata* will provide an understanding of its evolutionary role in animal-plant interactions.

Additional specimens examined (paratypes):—COLOMBIA. Antioquia. Municipio de Urrao: Parque Nacional Natural Las Orquídeas, sector Calles, camino hacia la Virgen, 1800–2200 m, 15 April 2011, *J. Betancur, P. Pedraza-Peñaloza, J.M. Vélez-Puerta, A. Orejuela & A. Duque 15236* (COL!). Chocó. Municipio de San José del Palmar: vereda San Antonio, Escuela San Antonio, 4°52'N, 76°13'W, 1750 m, 15 May 2011, *O.H. Marín-Gómez & D.A. Gómez-Hoyos 121* (COL!); road between Alto Galápagos and San José del Palmar, 4°51'35.8"N, 76°13'25.7"W, 22 May 2013, *J.F. Smith, O.H. Marín-Gómez & J. Arango Bermúdez 10869* (COL!).

Acknowledgments

We thank the National University of Colombia for supporting this research, Marcela Morales for the drawings, and María Fernanda González Giraldo for providing images (Fig. 2BDE). Field collections were made possible thanks to the project “Flora of Las Orquídeas National Park” funded by the National Science Foundation (DEB 1020623) to P. Pedraza-Peñalosa. Jesús Guadalupe González Gallegos, John L. Clark and one anonymous reviewer made valuable observations to the manuscript, which helped to improve the final version. We also want to thank the Organización Ambiental Comunitaria SERRANIAGUA, WCS Colombia, César Franco Laverde, Johnier Arango Bermúdez, Milton Pineda Duque, and Diego Gómez Hoyos for the logistic support provided to OHMG.

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