Columnea flavohirsuta (Gesneriaceae), a New Species from the Chocó Biogeographic Region, and an Update on Some *Columnea* Circumscriptions

John L. Clark,[1]* *Laura Clavijo,*[2] *and Laurence E. Skog*[3]

[1] Marie Selby Botanical Gardens, 1534 Mound Street, Sarasota, Florida 34236, U.S.A.

[2] Universidad Nacional de Colombia–Sede Bogotá, Facultad de Ciencias, Instituto de Ciencias Naturales, Bogotá, D.C., 111321, Colombia.

[3] Department of Botany, MRC-166, Smithsonian Institution, P.O. Box 37012, National Museum of Natural History, Washington, D.C. 20013, U.S.A.

* Author for correspondence: jlclark@selby.org

Abstract. Recent field expeditions in the Chocó Biogeographic Region on the western Andean slopes of northwestern South America, as well as ongoing herbarium research, have led to the discovery of a new species of *Columnea* L. (Gesneriaceae) and prompted circumscriptions to be updated for some *Columnea* species. A new species, *C. flavohirsuta* J. L. Clark, is described and differentiated from a complex of morphologically similar species including *C. minutiflora* L. P. Kvist & L. E. Skog and *C. herthae* Mansf. The name *C. parviflora* C. V. Morton is recognized as a heterotypic synonym of *C. herthae*. The name *C. tenensis* (Wiehler) B. D. Morley is recognized as a heterotypic synonym of *C. illepida* H. E. Moore. The name *C. reticulata* Amaya-Márquez, L. E. Skog & G. E. González is recognized as a heterotypic synonym of *C. purpureovittata* (Wiehler) B. D. Morley. The taxonomic history of these species is discussed, and field images are provided to serve as aids for identification and a guide for future systematic studies of *Columnea*.

Resumen. Las expediciones de campo recientes en la región del Chocó Biogeográfico, en la vertiente occidental de los Andes en el noroeste de América del Sur, así como las investigaciones de herbario en curso, han llevado al descubrimiento de una esepcie nueva de *Columnea* L. (Gesneriaceae) y a la actualización en la circunscripción de algunas especies de *Columnea*. Se describe una nueva especie, *C. flavohirsuta* J. L. Clark, diferenciándola de un complejo de especies morfológicamente similares, que incluye *C. minutiflora* L. P. Kvist & L. E. Skog y *C. herthae* Mansf. El nombre *C. parviflora* C. V. Morton se reconoce como un sinónimo heterotípico de *C. herthae*. El nombre *C. tenensis* (Wiehler) B. D. Morley se reconoce como un sinónimo heterotípico de *C. illepida* H. E. Moore. El nombre *C. reticulata* Amaya-Márquez, L. E. Skog & G. E. González se reconoce como un sinónimo heterotípico de *C. purpureovittata* (Wiehler) B. D. Morley. Se discute la historia taxonómica de estas especies y se proporcionan imágenes de campo para facilitar su identificación y servir como guía para futuros estudios sistemáticos de *Columnea*.

Key words: Chocó Biogeographic Region, Colombia, *Columnea*, Ecuador, taxonomy.

The Gesneriaceae family, part of the order Lamiales, includes over 3900 species across more than 150 genera (Weber, 2004; Weber et al., 2013; GRC, 2025). It is divided into three subfamilies and seven tribes (Weber et al., 2013, 2020), all of which represent well-supported monophyletic groups (Ogutcen et al., 2021). The subfamily Gesnerioideae, with over 1200 species and 77 genera in the Neotropics, exhibits the greatest diversity in the Neotropics (Clark et al., 2020; GRC, 2025). *Columnea* L., belonging to the tribe Gesnerieae and the subtribe Columneinae (Weber et al., 2013, 2020), is characterized by the presence of indehiscent berries, distinguishing it from closely related genera that typically have fleshy bivalved capsules. The only exception within the genus is *C. dielsii* Mansf., which produces a bivalved fleshy capsule. *Columnea* is the largest genus in the tribe, with more than 220 recognized species (Clark et al., 2020; GRC, 2025). Most *Columnea* species have corolla tubes longer than 2 cm, but the species discussed in this research are distinguished by their unusually small corollas (< 1.5 cm) compared to other members of *Columnea*.

Molecular phylogenetic studies strongly support the monophyly of *Columnea* (Smith et al., 2013; Schulte et al., 2014). However, subgeneric classifications and traditionally recognized subgenera are mostly artificial and

Version of record first published online on 26 June 2025.
doi: 10.3417/2025989

do not reflect the results from recent phylogenetic studies (Smith & Carroll, 1997; Smith, 2000; Clark & Zimmer, 2003; Clark et al., 2012; Smith et al., 2013; Schulte et al., 2014). As a result, this study does not assign *C. flavohirsuta* J. L. Clark or any of the other circumscriptions within *Columnea* to a specific subgeneric or traditionally defined group.

Materials and Methods

Plants were photographed in the field and subsequently pressed and dried. Specimens were deposited and studied primarily at the Museo Ecuatoriano de Ciencias Naturales del Instituto Nacional de Biodiversidad, Quito, Ecuador (QCNE), Marie Selby Botanical Gardens, Sarasota, Florida, U.S.A. (SEL), and the Smithsonian Institution's United States National Herbarium, Washington, D.C., U.S.A. (US). Digital images of live specimens were taken in the field using a Nikon D100 DSLR with a Nikon 105 mm lens and a Nikon SB-29s ring flash (Nikon, Tokyo, Japan). Morphological observations and measurements were made from live collections, herbarium specimens, alcohol-preserved material, and digital images using the software program ImageJ (Schneider et al., 2012). An extinction risk was assessed for *Columnea flavohirsuta* following the IUCN Red List Categories and Criteria (2012) and updated criteria by the IUCN Standards and Petitions Committee (2024). Field observations and collection sites from fieldwork were used to evaluate the IUCN categories. The extent of occurrence (EOO) and area of occupancy (AOO) were calculated using the software program GeoCAT (Bachman & Moat, 2012) with the default setting of 2 km, which is a 4 km^2 grid cell.

Taxonomic Treatment

Columnea flavohirsuta J. L. Clark, sp. nov. TYPE: Ecuador. Esmeraldas: Canton San Lorenzo, parroquia Alto Tambo, border region of Awá Indigenous Territory, entrance to the Río Bogotá community (future biological research station), near Quebrada Pambilar, 0°59′41″N, 78°35′21″W, 500–600 m, 11 Feb. 2003 (fl.), *J. L. Clark, G. Zapata & G. Toasa 7092* (holotype, SEL [barcode] SEL064281!; isotypes, MO!, QCA not seen, QCNE not seen, US [bc] US00818146!). Figures 1, 2.

Diagnosis. *Columnea flavohirsuta* J. L. Clark differs from *C. minutiflora* L. P. Kvist & L. E. Skog and *C. herthae* Mansf. by its relatively shorter calyx lobes (vs. relatively longer calyx lobes that nearly cover the corolla tube in *C. minutiflora* and *C. herthae*); nearly equal-sized calyx lobes (vs. 4 equal-sized calyx lobes and 1 highly reduced dorsal lobe in *C. herthae*); oblong leaf blades with 6 or more pairs of lateral secondary veins (vs. ovate leaves with 5 or fewer pairs of lateral secondary veins in *C. minutiflora* and *C. herthae*); and pedicels less than 2 mm (vs. pedicels > 1 cm in *C. herthae*).

Epiphytic herb (occasionally terrestrial) with elongate horizontal or erect shoots to 90 cm, stems green with dense hispid red indumentum, leaves evenly spaced, internodes 2–4 cm. Leaves opposite, pairs anisophyllous, the larger leaf in a pair broadly ovate to oblong, 6–13 × 2–5 cm, apex acute, base rounded, margin entire to serrulate, adaxially dark green, with evenly spaced multicellular hispid trichomes, abaxially light green, with multicellular white hispid trichomes, more densely pubescent on veins, lateral veins 6 to 8 per side; petiole 1–1.5 cm, pilose with multicellular trichomes; smaller leaf reduced and almost scalelike, 0.6–1 × 0.3–0.7 cm, lateral veins 2 to 3 per side, petiole 1–2 mm. Flowers congested in axils of leaves; bracts ovate, 4.5 × 4.5 mm; pedicels 1–2 mm. Calyx fused at base, yellow or green, but appearing orange or red from dense hispid indumentum, calyx lobes 2.5–4.5 × 2.3–3.8 mm, ovate, apex acuminate, margin deeply serrate to fimbriate; exterior green or yellow, covered in densely hispid red indumentum; interior white and glabrous. Corolla 1–1.5 × 0.4–0.6 cm, mostly tubular, apically constricted, yellow, but appearing orange or red from dense hispid indumentum, occasionally yellow with white lobes; corolla lobes subequal, 1–2 × 1–1.5 mm. Androecium of 4 stamens; filaments straight or curved, 1.2 cm, connate at base for 2 mm and adnate to corolla base; anthers ca. 1.5 × 1.5 mm, included in corolla throat, quadrangular. Gynoecium of superior ovary, 4 mm, 2 mm diam.; style 1 cm, white; stigma capitate. Fruit an indehiscent succulent berry, dorsally flattened, 0.8 cm diam., white, with white pilose indumentum.

Phenology. *Columnea flavohirsuta* has been documented with flowers during February, March, April, May, June, July, and September. Mature fruits have been observed in February, May, and June.

Distribution and habitat. *Columnea flavohirsuta* is endemic to the Chocó Biogeographic Region along the western Andean slopes in northern Ecuador and southern Colombia and grows in lowland and premontane wet forests ranging in elevation from 100 to 1500 m.

Provisional IUCN Red List category. *Columnea flavohirsuta* is locally abundant on the western slopes of the northern Andes in Ecuador and the Cordillera Occidental in southern Colombia. The EOO is calculated as 1256.92 km^2, exceeding the upper threshold for Vulnerable status under subcriterion B1 of the IUCN Red List; the AOO is calculated as 48 km^2, which is less than the upper threshold for Endangered status under subcriterion B2. The species is known from 20 georeferenced occurrences, corresponding to at least three fragmented subpopulations. The two northern occurrences are within protected areas (Reserva Natural

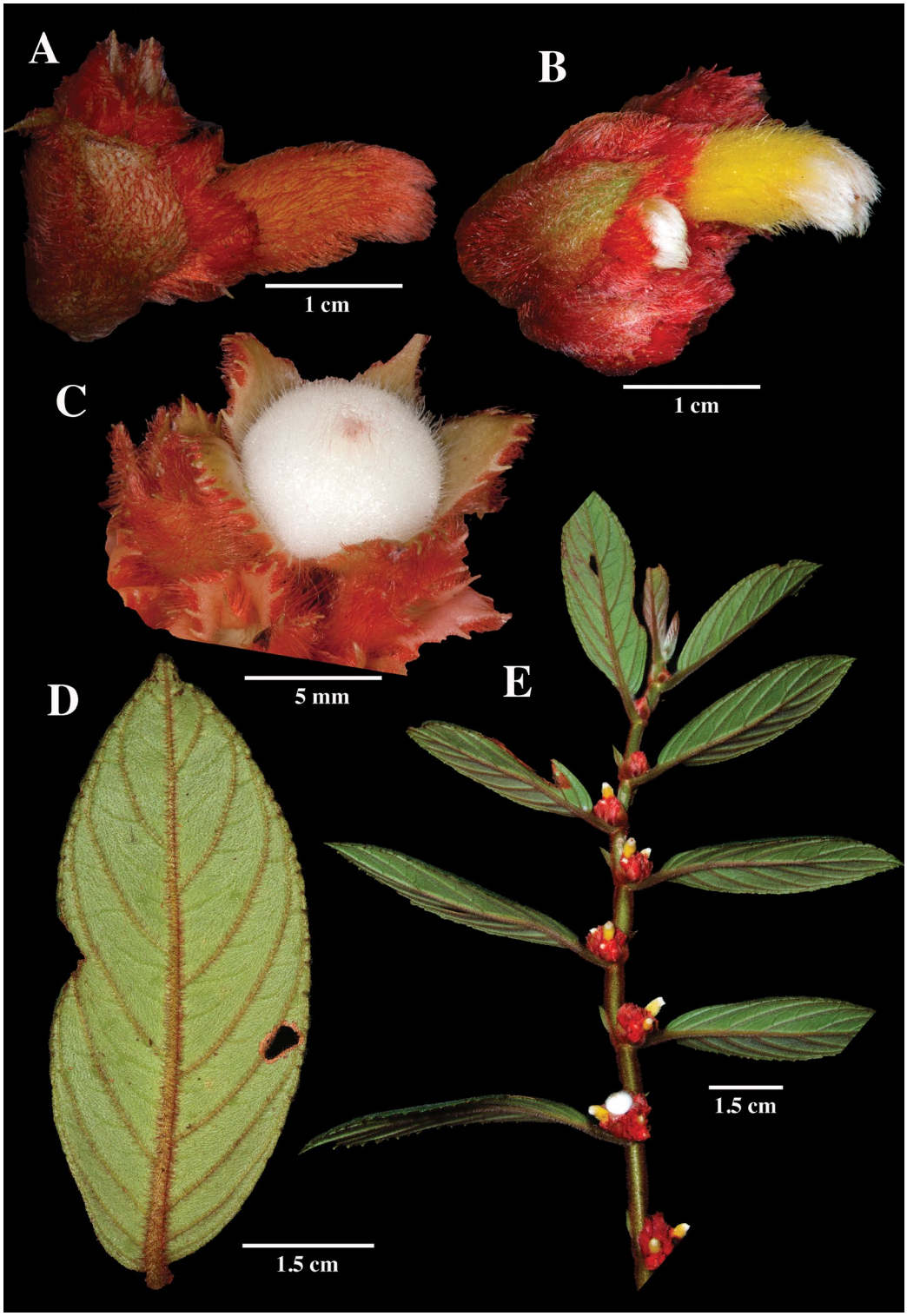

Figure 1. Field images of *Columnea flavohirsuta* J. L. Clark. —A, B. Lateral views of flowers. —C. Mature fruit. —D. Abaxial view of leaf blade. —E. Habit. A, *J. L. Clark et al. 17206*; B, *J. L. Clark et al. 13429*; C, *J. L. Clark et al. 10432*; D, *J. L. Clark et al. 17206*; E, *J. L. Clark et al. 13429*. Photos by John L. Clark.

Figure 2. Holotype (SEL) of *Columnea flavohirsuta* J. L. Clark.

Río Ñambí in Colombia and the Awá Indigenous Territory in Ecuador). The southern occurrences, where the species has been most frequently collected, are in unprotected sites along a recently built highway between Lita and San Lorenzo (Esmeraldas Province), where forest clearing for agriculture, logging, and mining presents significant threats.

During fieldwork, the authors directly observed ongoing deforestation, with surveys from the 1990s through 2022 documenting habitat loss across the range of the species. Several historical collection sites in the southern range have already been deforested, likely leading to its extirpation from most areas along the highway. Given the continued expansion of agriculture, logging, and mining, a future decline in EOO, AOO, habitat quality, number of locations, and number of mature individuals is projected.

The most plausible threat is forest clearing, which affects the species differently across its range. The two northern protected populations are relatively secure, while the southern populations are highly vulnerable to widespread and ongoing deforestation. Based on the distribution of threats, *Columnea flavohirsuta* is estimated to occur in three locations.

Given these factors, *Columnea flavohirsuta* qualifies as Endangered [EN B1ab(i,ii,iii,iv,v) + B2ab(i,ii,iii,iv,v)] under the IUCN Red List Categories and Criteria (IUCN, 2012).

Etymology. The specific epithet reflects the yellow corolla tube covered with a dense hispid indumentum.

Notes. *Columnea flavohirsuta* is similar to *C. minutiflora* and *C. herthae* in having dorsally flattened white berries, congested flowers in the leaf axils, and an obligate habit with evenly spaced pairs of anisophyllous leaves. All three species are morphologically similar and unusual for their small corollas (< 1.5 cm) compared to most *Columnea* species, which typically have corolla tubes longer than 2 cm.

The same herbarium specimens are often annotated with multiple determination labels that include *Columnea herthae*, *C. parviflora*, and *C. minutiflora*. These three names were recently confused in a taxonomic study describing *C. pygmaea* J. L. Clark & J. F. Sm. (Clark & Smith, 2011), where a full-page plate (fig. 4 in Clark & Smith, 2011) was incorrectly attributed to *C. minutiflora* (shown here in Fig. 3) and is here recognized as *C. flavohirsuta*. The corolla tube in *C. minutiflora* rarely exceeds 1 cm in length and is therefore one of the smallest known flowers in *Columnea* (Fig. 3B). In contrast, the corollas of *C. flavohirsuta* are longer than 1 cm and sometimes reach 1.5 cm (Fig. 1B). The dorsal calyx lobe in *C. herthae* is highly reduced relative to the other four calyx lobes (Fig. 4C), whereas the five calyx lobes in *C. flavohirsuta* and *C. minutiflora* are similar in size and shape (Figs. 1C, 3C). The pedicels in *C. herthae* usually exceed 1 cm (Fig. 4B). In contrast, the flowers are congested in axillary clusters and appear nearly sessile in *C. flavohirsuta* and *C. minutiflora* (Figs. 1–3). Populations of *C. flavohirsuta* in Ecuador have corollas that are yellow but appear reddish orange from the dense hispid indumentum (Fig. 1A). In Colombia, some populations have corollas that appear yellow with white lobes (Fig. 1B).

Vegetatively, *Columnea minutiflora* and *C. herthae* are differentiated from *C. flavohirsuta* by smaller ovate leaves with fewer pairs of secondary veins. The number of secondary veins in *C. minutiflora* (Fig. 3D) and *C. herthae* (Fig. 4D) is consistently five or fewer pairs. In contrast, the leaf blades in *C. flavohirsuta* (Fig. 1D) are more oblong and usually have six or more pairs of lateral veins (Fig. 1D).

Paratypes. COLOMBIA. **Nariño:** Mpio. Barbacoas, Corregimiento Altaquer, Vereda El Barro, Reserva Natural Río Ñambí, western slopes of the Cordillera Occidental, primary trail from hwy. to station, 1°17′10″N, 78°4′29″W, 1381 m, 12 May 2013, *J. L. Clark, L. Clavijo, O. Marín & M. Flores 13396* (COL, SEL); Mpio. Barbacoas, Corregimiento El Diviso, Vereda El Verde, western slopes of the Cordillera Occidental, remnant forest along hwy. betw. Altaquer & El Diviso, 1°21′46″N, 78°10′32″W, 795 m, 13 May 2013, *J. L. Clark, L. Clavijo, O. Marín & M. Flores 13408* (COL, CUVC, G, NY, SEL, US); Mpio. Barbacoas, Corregimiento El Diviso, western slopes of the Cordillera Occidental, trail from El Diviso towards Río Güiza, 1°21′21″N, 78°11′45″W, 404 m, 13 May 2013, *J. L. Clark, L. Clavijo, O. Marín & M. Flores 13429* (COL, CUVC, PSO, SEL, US); Mpio. Barbacoas, Corregimiento Junín, Vereda Gualte, small patch of forest along Hwy. Junín–Barbacoas (3–5 km N of Junín), western slopes of the Cordillera Occidental, 1°23′2″N, 4°34′5″W, 910 m, 17 May 2013, *J. L. Clark, L. Clavijo, O. Marín & H. Garcia 13604* (COL, HUA, SEL, US).

ECUADOR. **Carchi:** Cantón Tulcan, Reserva Indigena Awá, Comunidad San Marcos, 25 km al NW de El Chical, parroquia Maldonado, 1°6′N, 78°14′W, 1500 m, 16–30 Nov. 1990, *D. Rubio, C. Auelal & J. Pai 934* (MO, QCNE, US); Cantón Tulcan, Reserva Indigena Awá, Parroquia El Chical, Centro San Marcos, 1°6′N, 78°14′W, 750 m, 20–30 Apr. 1993, *P. Méndez, M. Aulestia & J. Pai 181* (MO, QCNE, SEL, US). **Esmeraldas:** Cantón San Lorenzo, Parroquia Alto Tambo, Awá Indigenous Territory, Río Bogotá community (future biological research station), 2 km S of Lita–San Lorenzo rd., near Quebrada Pambilar, 0°58′57″N, 78°35′50″W, 350–600 m, 12 Feb. 2003, *J. L. Clark, G. Zapata & G. Toasa 7153* (QCNE, SEL, US); Cantón San Lorenzo, Parroquia Alto Tambo, border region of Awá Indigenous Territory, entrance to the Río Bogotá community (future biological research station), near Quebrada Pambilar, 0°58′57″N, 78°35′50″W, 350–600 m, 14 Feb. 2003, *J. L. Clark 7200* (QCNE, SEL, US); Cantón San Lorenzo, Parroquia Alto Tambo, small patch of forest betw. Lita & Alto Tambo, 0°53′24″N, 78°30′44″W, 700 m, 22 Mar. 2003, *J. L. Clark, R. Hall & F. Nicolalde 7475* (E, MO, QCA, QCNE, SEL, US); Cantón San Lorenzo, Parroquia Alto Tambo, comunidad El Cristal, 8–10 km S of San Lorenzo–Ibarra hwy., 0°49′51″N, 78°28′54″W, 1100 m, 25 Mar. 2003, *J. L. Clark, R. Hall & F. Nicolalde 7536* (QCNE, US); Cantón San Lorenzo,

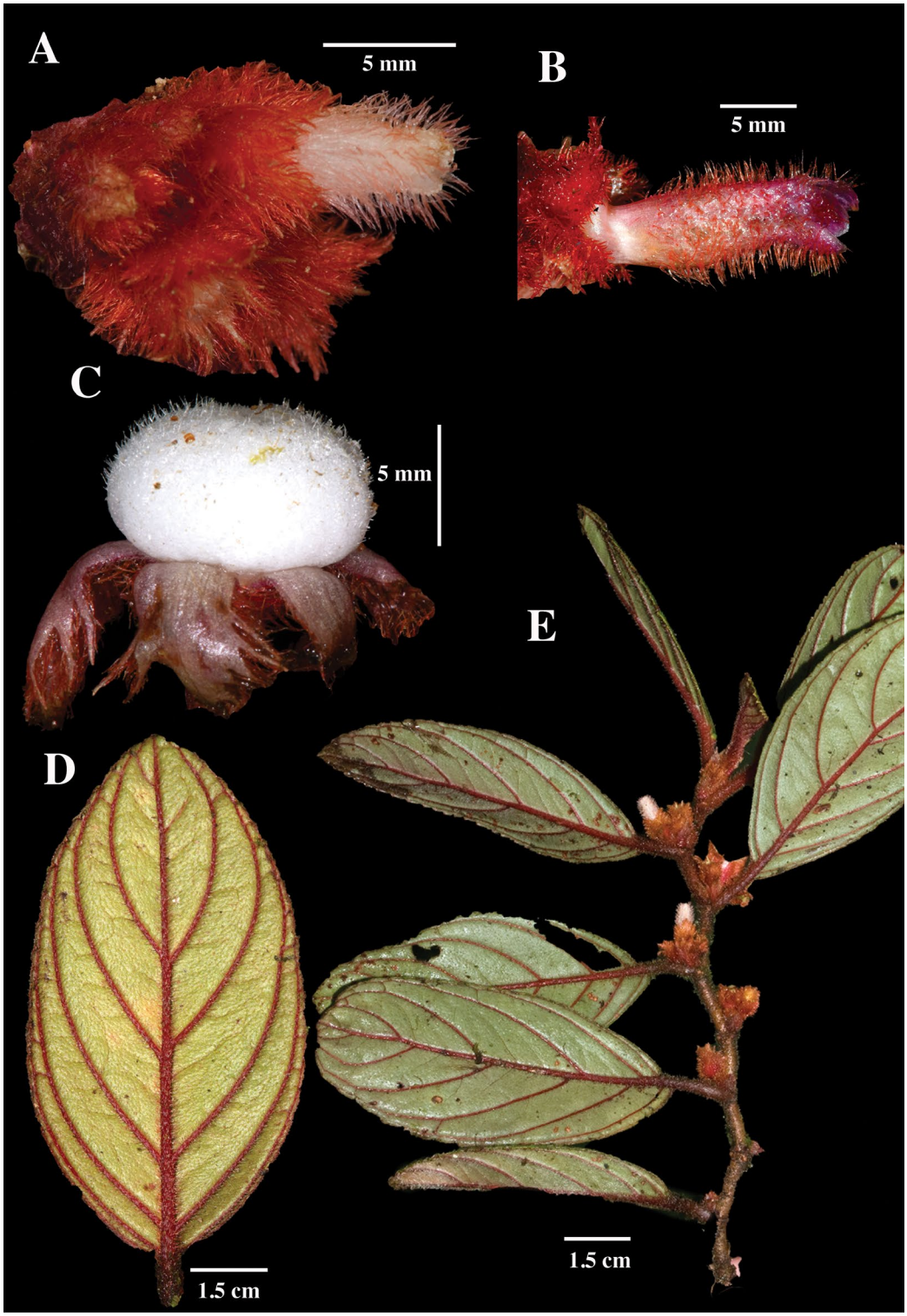

Figure 3. Field images of *Columnea minutiflora* L. P. Kvist & L. E. Skog. —A, B. Lateral views of flowers. —C. Mature fruit. —D. Abaxial view of leaf blade. —E. Habit. A, *J. L. Clark et al. 10382*; B, *J. L. Clark et al. 13598*; C, *J. L. Clark et al. 16820*; D, *J. L. Clark et al. 17664*; E, *J. L. Clark et al. 12171*. Photos by John L. Clark.

Parroquia Alto Tambo, small patch of forest along San Lorenzo–Ibarra hwy. (26 road-km NW of Lita), 0°57′27″N, 78°33′37″W, 450 m, 26 Mar. 2003, *J. L. Clark, R. Hall & F. Nicolalde 7551* (QCNE, SEL, US); Cantón San Lorenzo, Parroquia Alto Tambo, remnant patch of primary forest on N side of rd. betw. Durango & Alto Tambo on hwy. San Lorenzo–Ibarra, 0°57′34″N, 78°33′36″W, 688 m, 29 May 2008, *J. L. Clark, B. Bisvicuth, S. Ginzbarg & J. T. Melton III 10432* (ECUAMZ, SEL, US); Cantón San Lorenzo, remnant patch of forest along hwy. Ibarra–San Lorenzo, W of Lita, 0°56′37″N, 78°33′35″W, 710 m, 2 June 2009, *J. L. Clark & Gesneriad Research Expedition Participants 11091* (ECUAMZ, SEL, US); Cantón San Lorenzo, remnant patch of forest along hwy. Ibarra–San Lorenzo, betw. Durango & Alto Tambo, 1°0′33″N, 78°35′58″W, 516 m, 3 June 2009, *J. L. Clark & Gesneriad Research Expedition Participants 11132* (ECUAMZ, SEL, US); Cantón Eloy Alfaro, Parroquia Alto Tambo, Km. #54 on the Lita–San Lorenzo rd., near eastern outskirts of Alto Tambo, 0°53′50.87″N, 78°32′34.31″W, 844 m, 26 July 2022, *J. L. Clark, Á. J. Pérez, F. Tobar, R. Clark & W. S. Hoover 17206* (QCA, SEL, US); San Lorenzo, Reserva Indigena Awá, Centro de la Unión, Cañon del Río Mira, 0°52′N, 78°26′W, 250 m, 22 Mar. 1993, *C. Aulestia & M. Aulestia 1389* (MO, QCNE, US); Km. 25, Lita–Altotambo, 740 m, 19 July 1988, *C. Dodson & A. Gentry 17490* (MO, US); ca. 10 km W of Lita on rd. to San Lorenzo, 0°55′N, 78°30′W, 800 m, 12 May 1991, *A. Gentry, C. H. Dodson, B. Boyle & D. Rubio 69981* (MO, US); Alto Tambo, 800 m, 20 Jan. 1990, *A. Hirtz & J. Kent 4555* (SEL, US); Cantón San Lorenzo, Alto Tambo, a 15 km al oeste de Lita, 0°50′N, 78°32′W, 400 m, 9 Sep. 1990, *D. Rubio & C. Quelal 716* (MO, QCNE, US); betw. Lita & Alto Tambo, 5 km from Lita, Río Chuchubí, 22 Apr. 1990, *H. Wiehler & Gesneriad Research Foundation Study Group 9018* (SEL, US); Río Chuchubí, down slope towards Río Mira, 24 Apr. 1990, *H. Wiehler & Gesneriad Research Foundation Study Group 9072* (SEL, US); below escarpment, 100 m, 23 Apr. 1995, *H. Wiehler & Gesneriad Research Foundation Study Group 9550* (SEL, US).

Columnea herthae Mansf., Report. Spec. Nov. Regni Veg. 41: 146. 1936. *Ortholoma herthae* (Mansf.) Wiehler, Phytologia 27: 321. 1973. *Trichantha herthae* (Mansf.) Wiehler, Selbyana 1: 34. 1975. TYPE: Ecuador. Pichincha [= Santo Domingo de los Tsáchilas], *H. Schultze-Rhonhof 1939* (holotype, B no longer extant); Los Ríos, 12 km E of Patricia Pilas, Montañas de Ila, Centinela, 550–650 m, 10 July 1979, *B. Løjtnant & U. Molau 15808* (neotype, designated by Kvist & Skog, 1993: 376, AAU!). Figure 4.

Columnea parviflora C. V. Morton, J. Washington Acad. Sci. 35(4): 127–129. 1945. TYPE: Colombia. Tutenendo, 20 km N of Quidbó, Intendencia del Chocó, 80 m, 19–20 May 1931, *W. A. Archer 2145* (holotype, US [bc] US00057273!).

Notes. When describing *Columnea parviflora*, Morton (1945: 128) wrote, "*Columnea herthae* was described from San Carlos de los Colorados, Ecuador (*Schultze-Rhonhof 1939*). I have seen no specimens answering the description." The holotype for *C. herthae* at the Berlin herbarium (B) was destroyed by Allied bombing and was no longer extant when Morton described *C. parviflora*. The name was later neotypified by Kvist and Skog (1993) in their monograph of *Columnea* in Ecuador. The neotype (*Løjtnant & Molau 15808*) is conspecific with the holotype for *C. parviflora*, which is a newer name for this taxon. Based on Article 11.4 in the International Code of Nomenclature (Shenzhen Code) (Turland et al., 2018), the earliest legitimate name has priority as the accepted name. In this case, the name published by Mansfeld (1936), *C. herthae*, has priority over the more recent name published by Morton (1945). The accepted name is therefore *C. herthae*, and *C. parviflora* is recognized as a heterotypic synonym.

Fieldwork and herbarium research confirm that *Columnea herthae* is more widespread than initially reported by Kvist and Skog (1993) in their treatment of *Columnea* for Ecuador. That treatment addressed only species from Ecuador, so it is not surprising that the broader taxonomic circumscriptions for material outside Ecuador were not thoroughly evaluated. Kvist and Skog (1993) did note that *C. parviflora* was similar to *C. herthae* and mentioned that Morton (1945) differentiated them by the presence of trichomes on the ovary in *C. parviflora* versus a glabrous ovary in *C. herthae*. In contrast, Kvist and Skog (1993) noted that trichomes on the ovary were present in both species. Morton (1945) published a dichotomous key based on ovary indumentum characters and noted that the type was no longer extant and he had not seen or studied any other specimens. The protologue for *C. herthae* (Mansfeld, 1936) mentions a glabrous style, but there is no description of the ovary indumentum. Thus, it is unclear how Morton could have published a dichotomous key to differentiate *C. herthae* from *C. parviflora* based on characters not mentioned in the protologue (Mansfeld, 1936) and without specimens.

The updated circumscription of *Columnea herthae* to include material previously recognized as *C. parviflora* greatly expands the geographic distribution of this taxon. *Columnea herthae* is a common epiphytic herb in western Ecuador and throughout the western slopes of the Cordillera Occidental in the Colombian Andes, northward through Panama and Costa Rica. There are more than 160 herbarium specimens of *C. herthae*; many of these (especially from Central America) were incorrectly annotated as *C. parviflora*. The authors have done extensive fieldwork in the environs of Centinela in Ecuador, the locality for the neotype, and *C. herthae* is common in this region. Most of the images in Figure 4 are from western Ecuador and they are conspecific with material from the type locality (Centinela).

Columnea illepida H. E. Moore, Baileya 8: 56. 1960. *Trichantha illepida* (H. E. Moore) C. V. Morton, Contr. U.S. Natl. Herb. 38: 12. 1963. *Ortholoma illepidum* (H. E. Moore) Wiehler, Phytologia 27:

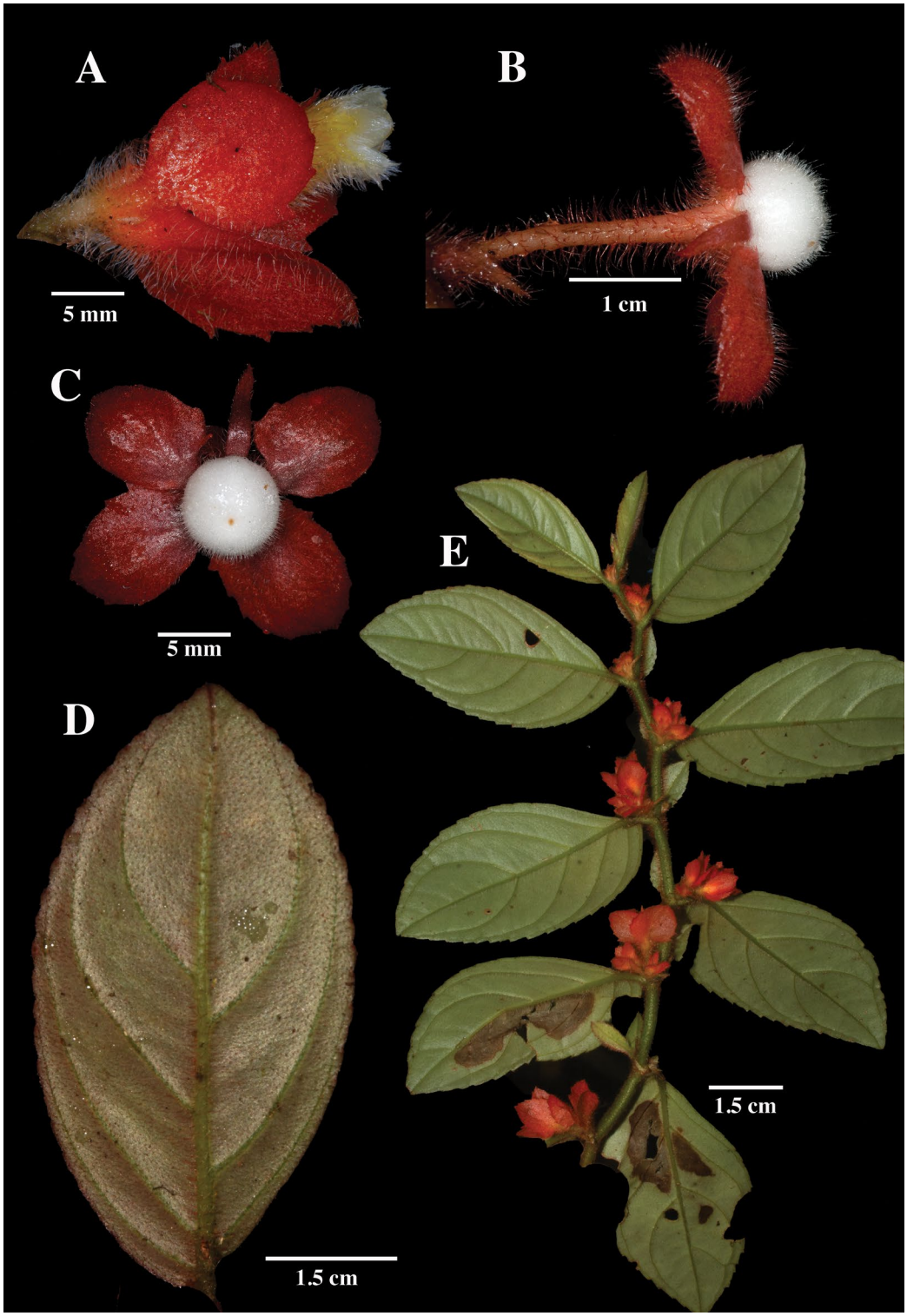

Figure 4. Field images of *Columnea herthae* Mansf. —A, B. Lateral views of flowers. —C. Mature fruit. —D. Abaxial view of leaf blade. —E. Habit. A, *J. L. Clark et al. 16774*; B, *J. L. Clark et al. 17698*; C, *J. L. Clark et al. 11193*; D, *J. L. Clark et al. 17731*; E, *J. L. Clark et al. 18637*. Photos by John L. Clark.

322. 1973. TYPE: Cultivated at Cornell University, Ithaca [New York, U.S.A.], as G-257. Original material from Fantastic Gardens, Miami, Florida, introduced either from Panama or from Tingo María, Peru, *H. E. Moore 7740* (holotype, BH [bc] BH000324589!). Figure 5.

Columnea tenensis (Wiehler) B. D. Morley, Garden (London; 1975+) 100(9): 438. 1975. *Trichantha tenensis* Wiehler, Selbyana 1(1): 39, fig. 2. 1975. TYPE: Type collection made from greenhouse-grown plant cultivated at University of Miami (origin of cultivated material: Ecuador. Napo: Tena, rainforest above Misión Evangelica, past Hacienda Dos Ríos, about 4 km N of Tena, 700 m, 1971, *H. Wiehler 71122a*), accession no. W-1584, 11 Mar. 1973, *H. Wiehler 7318* (holotype, US [bc] US00005448!; isotypes, F-2059260!, GB [bc] GB0047740!, GH not seen, K [bc] K000831462!, MO [bc] MO2195449!, NY [bc] NY00658825!, QCA [bc] 165478!, S-04-5!, SEL [bc] SEL001651!, U!).

Notes. The origin of the type locality for *Columnea illepida* has a confusing history because the plant was passed among private growers and several botanical gardens, often without accurate records. Morton's monograph of *Trichantha* Hook. (Morton, 1963) discussed the type and only known specimens of *T. illepida* as cultivated in the Bailey Hortorium with an unknown provenance. Other specimens referenced were from cultivated material at Fantastic Gardens in South Miami, Florida, from where the species was introduced into cultivation in 1954.

Further discussion by Morton (1963) suggested that the cultivated specimens likely originated from either Tingo María (Peru) or the Canal Zone (Panama). Morton also proposed that Ecuador could be a possible source. Morton (1963) wrote that *Columnea illepida* could not be from Tingo María, as no known collections of that section (= *Trichantha*) had been recorded from Peru. However, since 1963, several species of traditionally recognized *Trichantha* (now *Columnea*) have been documented in Peru, such as *C. purpureovittata* (Wiehler) B. D. Morley (previously *T. purpureovittata* Wiehler) and *C. tenensis* (previously *T. tenensis*).

Despite extensive inventory work in Panama, no collections of *Columnea illepida* have been documented from the country. Nearly two decades after *C. illepida* was first recorded in cultivation—and a decade after Morton's monograph—Morton wrote a letter to Dr. Donald G. Huttleston (Longwood Gardens, Kennett Square, Pennsylvania, U.S.A.) in 1972. A copy of this letter is mounted on an herbarium sheet at the Smithsonian Institution's National Museum of Natural History (US). In it, Morton wrote,

"*When I wrote the revision of* Trichantha *(Morton, 1963), I did not know the locality of* [= Columnea] illepida*, which had been variously reported as from Peru, Ecuador, and the Canal Zone. Later, Henry Butcher told me that he was the original collector and that it was from Cerro Jefe, approximately four miles north of Jefe, Panama, in cloud forest at 3,000 feet elevation. I see no reason to doubt him.*"

The research presented here does not support the origin of *Columnea illepida* in Central America. The Cerro Jefe region has been extensively botanized, yet no known collections that resemble *C. illepida* are from Panama. Wiehler (1975) described *C. tenensis* (as *Trichantha tenensis*), differentiating it from *C. illepida* by calyx morphology: *C. illepida* (sensu Wiehler, 1975) is supposed to have sepals with three to five widely separated, serrate-subulate marginal teeth per side, whereas *C. tenensis* (sensu Wiehler, 1975) is supposed to have eight closely set, laciniate marginal teeth per side.

Recent field expeditions in Ecuador have yielded multiple collections of this taxon from Napo Province, the type locality for *Columnea tenensis*. All observed specimens have fewer than six pairs of laciniate calyx serrations (Fig. 5A–C). Similarly, herbarium research indicates that most specimens currently annotated as *C. tenensis* from Peru and Ecuador have fewer than eight pairs of laciniate teeth per calyx lobe.

The diagnostic character of number of serrations and the dichotomous key presented by Wiehler (1975) to differentiate *Columnea illepida* from *C. tenensis* are inconsistent with both field collections and herbarium research. Given the ambiguous type locality of *C. illepida* and the unreliability of the distinguishing character for *C. tenensis*, we recognize the earlier name (*C. illepida*) as the accepted name and treat *C. tenensis* as a heterotypic synonym.

Additional specimens examined. COLOMBIA. **Putumayo:** Orito, Santuario de Flora Plantas Medicinales Orito Ingi-Ande, camino de herradura desde la vereda Libano hacia el santuario, 0.687777778 N, 77.06805556 W, 850–900 m, 6 Aug. 2018, *M. James-R. 1771* (COAH); Villagarzón, Corregimiento La Castellana; vereda Alto Vides, punto Puente Rojo; Reserva Natural Selva Vides, Turismo e Investigación, 0.88414 N, 76.75474 W, 582 m, 21 Oct. 2021, *L. Clavijo et al. 2414* (COL). **Vaupés:** Taraira, Estación Biológica Mosiro-Itajura (Caparú), bosque de colina, 1.07272222 N, 69.51747222 W, 200 m, 3 May 2004, *L. Clavijo & W. Tanimuka 860* (COAH, COL).

ECUADOR. **Morona-Santiago:** Limon Indanza, Región de la Cordillera del Cóndor, Parroquia Santa Susana, Kuankus, comunidad Shuar, noreste de la comunidad camino al Cerro Chunk Naint, 3°2′36″S, 78°13′3″W, 800 m, 15 June 2005, *T. Katan, C. Morales & J. Un 285* (QCNE, SEL, US). **Napo:** Yasuni Biosphere Reserve, Tiputini Biodiversity Station (Universidad San Francisco, Quito), sendero Harpi to Los Puentes, 0°38′10.7″S, 76°8′57.7″W, 200–250 m, 26 June 2006, *J. L. Clark, L. Bohs & I. Nenquimo 9500* (QCNE, SEL, US); Yasuni Biosphere Reserve, Tiputini Biodiversity Station (Universidad San Francisco, Quito), sendero Maquisapa to sendero Harpia, 0°38′11″S, 76°8′58″W, 200–250 m, 22 May 2008, *J. L. Clark & The University of Alabama in Ecuador Participants 10225* (ECUAMZ, SEL, US); Cantón Archidona, Parroquia Catundo, buffer zone of Parque Nacional Sumaco

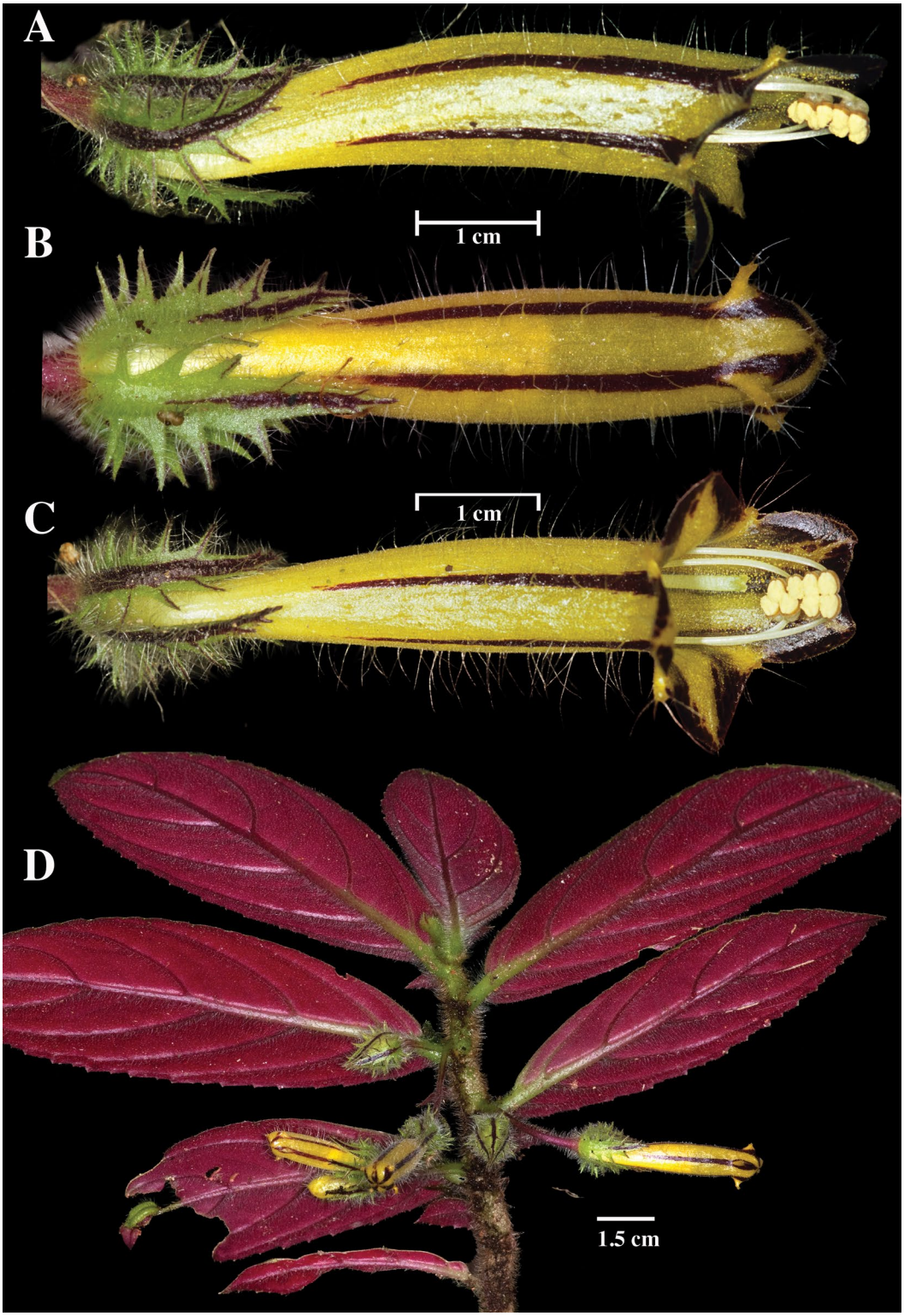

Figure 5. Field images of *Columnea illepida* H. E. Moore. —A–C. Lateral views of flowers. —D. Habit. A, C, *J. L. Clark et al. 9500*; B, D, *J. L. Clark et al. 10225*. Photos by John L. Clark.

Napo Galeras, comunidad Mushullakta, 0°47′49″S, 77°35′10″W, 900–1000 m, 10 May 2011, *J. L. Clark & The University of Alabama in Ecuador Participants 12040* (ECUAMZ, SEL, US). **Pastaza:** vic. of Puyo, from Joe Brenner's garden, 1 May 1979, *H. Wiehler & D. Masterson 79231* (SEL); 8 km from Puyo along rd. to Macas & Canelos, E along stream near distillery, 21 Apr. 1985, *H. Wiehler & Gesneriad Research Foundation Study Group 86109* (SEL). **Sucumbíos:** Alto Río Aguarico, Río Chingual, ridge just before Chingual Bridge, betw. Río Recodo & Río Chinqual, along new trail toward Bermejo, from new rd. to Tulcán, above Puerto Libre, 0°15′22″N, 77°28′25″W, 700–800 m, 7 July 2000, *R. Aguinda et al. 802* (SEL).

PERU. **Loreto:** Cerros Kampankis, Serranía entre los ríos Santiago y Morona, desde río Marañon hasta frontera con Ecuador, 3°50′29.52″S, 77°38′20.70″W, 301 m, 20 Aug. 2011, *I. Huamantupa et al. 16100* (F, SEL). **Oxapampa:** Palcazú, Parque Nacional Yanachaga-Chemillén, camino de la estación Biológica de Paujil hacia el Hito e inmedicaciones, 10°19′25″S, 75°15′49″W, 390 m, 24 Mar. 2006, *L. Hernani et al. 54* (MO, SEL, US); Palcazú, Parque Nacional Yanachaga-Chemillén, camino de la estación Biológica de Paujil hacia pozo Tigre, 10°19′55″S, 75°15′58″W, 400 m, 12 July 2007, *L. Hernani et al. 140* (MO, SEL, US); Palcazú, San Pedro de Pichanaz, Mirado Pichis, 10°30′15″S, 75°4′1″W, 700–1200 m, 10 June 2004, *R. Rojas et al. 2890* (MO, SEL, US).

Columnea purpureovittata (Wiehler) B. D. Morley, Garden (London; 1975+) 100(9): 438. 1975. *Trichantha purpureovittata* Wiehler, Selbyana 1: 38. 1975. TYPE: Peru. Junín: Schunke Hacienda above San Ramón, 1400–1700 m, 8–12 June 1929, *E. P. Killip & A. C. Smith 24873* (holotype, US [bc] US00057250!; isotype, F-928674!).

Columnea reticulata M. Amaya-M., L. E. Skog & C. E. Gonzalez, Caldasia 22(2): 186–189, fig. 1. 2000. TYPE: Colombia. Cauca: Mpio. de Santa Rosa, Bota Caucana, serranía de los Churumbelos, finca La Piedra, 1°13′59.32″N, 76°31′58.24″W, 1100 m, Aug. 1998, *C. E. González CG-770* (holotype, COL[bc] COL000006065!; isotypes, CAUP not seen, HUA [bc] HUA0000484!, MEDEL not seen, US [bc] US00623542!).

Notes. Amaya-Márquez et al. (2000) published *Columnea reticulata*, basing its diagnosis on comparisons with *C. illepida*, *C. tenensis*, and *C. brenneri* (Wiehler) B. D. Morley. However, the publication did not reference *C. purpureovittata*, a species that closely resembles *C. reticulata*. One of the reviewers acknowledged in the publication was John L. Clark (current author), whose review contributed to the citation of his recent collection (*J. L. Clark 5388*, designated as a paratype).

At the time of the review, Clark was a graduate student at George Washington University, conducting most of his herbarium research at the Smithsonian Institution's National Museum of Natural History (US). During this period, all known specimens of *Columnea purpureovittata* were on loan. As a result, when Clark attempted to examine relevant specimens at US, they were unavailable. Given that this occurred in the 1990s—before the widespread use of specimen barcoding and digital imaging—the absence of these specimens significantly limited the ability to thoroughly assess the manuscript. Consequently, the omission of *C. purpureovittata* in the comparative diagnosis went unnoticed. Since then, it has become clear that the type of *C. reticulata* (*C. E. González CG-770*) and a paratype (*J. L. Clark 5388*) cited by Amaya-Márquez et al. (2000) are conspecific with *C. purpureovittata*.

Acknowledgments. We thank Jeanne Katzenstein, James F. Smith, and an anonymous reviewer for helpful comments on an earlier version of the manuscript. We are grateful to Anna M. Stalter from the L. H. Bailey Hortorium Herbarium (BH) for facilitating an image of the holotype of *Columnea illepida*. We thank Patricia Barberá (Universidad Autónoma de Madrid) for helping us with the preliminary IUCN assessment, and Fred Barrie (MO) for his guidance and consultation on the International Code of Nomenclature.

Literature Cited

Amaya-Márquez, M., L. E. Skog, C. E. González & J. F. Smith. 2000. Una nueva especie de *Columnea* (Gesneriaceae) del norte de los Andes. Caldasia 22(2): 185–189.

Bachman, S. & J. Moat. 2012. GeoCAT–An open source tool for rapid Red List assessments. Bot. Gard. Conservation Int. J. 9: 11–13. <https://geocat.iucnredlist.org>, accessed 8 February 2025.

Clark, J. L. & J. F. Smith. 2011. *Columnea pygmaea* (Gesneriaceae), a new species from northwestern Ecuador. J. Bot. Res. Inst. Texas 5: 87–95.

Clark, J. L., M. M. Funke, A. M. Duffy & J. F. Smith. 2012. Phylogeny of a Neotropical clade in the Gesneriaceae: More tales of convergent evolution. Int. J. Pl. Sci. 173: 894–916.

Clark, J. L., L. E. Skog, J. K. Boggan & S. Ginzbarg. 2020. Index to names of New World members of the Gesneriaceae (subfamilies Sanangoideae and Gesnerioideae). Rheedea 30: 190–256.

Clark, J. L. & E. A. Zimmer. 2003. A preliminary phylogeny of *Alloplectus* (Gesneriaceae): Implications for the evolution of flower resupination. Syst. Bot. 28: 365–375.

GRC. 2025 [continuously updated]. Gesneriaceae Resource Centre. Royal Botanic Garden Edinburgh, United Kingdom. <https://padme.rbge.org.uk/GRC>, accessed 8 February 2025.

IUCN. 2012. IUCN Red List Categories and Criteria, Version 3.1. Second edition. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland; Cambridge, United Kingdom.

IUCN. 2024. Guidelines for using the IUCN Red List categories and criteria, Version 16. Prepared by the Standards and Petitions Subcommittee. IUCN, Gland, Switzerland; Cambridge, United Kingdom. <https://www.iucnredlist.org/resources/redlistguidelines>.

Kvist, L. P. & L. E. Skog. 1993. The genus *Columnea* (Gesneriaceae) in Ecuador. Allertonia 6(5): 327–400.

Mansfeld, R. 1936. Gesneriaceae austroamericanae novae vel rarioires. III. Repert. Spec. Nov. Regni Veg. 41: 145–150.

Morton, C. V. 1945. Seven new species of Gesneriaceae from Peru and Colombia. J. Wash. Acad. Sci. 35: 126–131.
Morton, C. V. 1963. A revision of *Trichantha* (Gesneriaceae). Contr. U.S. Natl. Herb. 38: 1–27.
Ogutcen, E., C. Christe, K. Nishii, N. Salamin, M. Möller & M. Perret. 2021. Phylogenomics of Gesneriaceae using targeted capture of nuclear genes. Molec. Phylogen. Evol. 157: 107068.
Schneider, C. A., W. S. Rasband & K. W. Eliceiri. 2012. NIH Image to ImageJ: 25 years of image analysis. Nat. Methods 9: 671–675.
Schulte, L. J., J. L. Clark, S. J. Novak, M. T. Ooi & J. F. Smith. 2014. Paraphyly of section *Stygnanthe* (*Columnea*, Gesneriaceae) and a revision of the species of section *Angustiflorae*, a new section inferred from ITS and chloroplast DNA data. Syst. Bot. 39: 613–636.
Smith, J. F. 2000. Phylogenetic resolution with the tribe Episcieae (Gesneriaceae): Congruence of ITS and *ndh*F sequences from parsimony and maximum-likelihood analyses. Amer. J. Bot. 87: 883–897.
Smith, J. F. & C. L. Carroll. 1997. A cladistic analysis of the tribe Episcieae (Gesneriaceae) based on *ndh*F sequences: Origin of morphological characters. Syst. Bot. 22: 713–724.
Smith, J. F., M. T. Ooi, L. J. Schulte, M. Amaya-Márquez, R. Pritchard & J. L. Clark. 2013. Searching for monophyly in the subgeneric classification systems of *Columnea* (Gesneriaceae). Selbyana 31: 126–142.
Turland, N. J., J. H. Wiersema, F. R. Barrie, W. Greuter, D. L. Hawksworth, P. S. Herendeen, S. Knapp, et al. (editors). 2018. International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code). Regnum Veg. 159.
Weber, A. 2004. Gesneriaceae. Pp. 63–158 *in* J. Kadereit (editor), The Families and Genera of Vascular Plants, Vol. 7. Flowering Plants. Dicotyledons. Lamiales (Except Acanthaceae Including Avicenniaceae). Springer, Berlin.
Weber, A., J. L. Clark & M. Möller. 2013. A new formal classification of Gesneriaceae. Selbyana 31: 68–94.
Weber, A., D. J. Middleton, J. L. Clark & M. Möller. 2020. Keys to the infrafamilial taxa and genera of Gesneriaceae. Rheedea 30: 5–47.
Wiehler, H. 1975. Three new species of *Trichantha* from Ecuador and Peru. Selbyana 1: 36–43.

ISSN 1055-3177 (PRINT); ISSN 1945-6174 (ONLINE)