Three New Species of *Anthurium* sect. *Belolonchium* from the Eastern Slopes of the Eastern Andean Cordillera in Colombia

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Abstract. Three species of *Anthurium* Schott sect. *Belolonchium* (Schott) Engl. (Araceae) are described and illustrated from the department of Caquetá in Colombia: *A. caquetense* López-Flor., Edwin Trujillo & Croat, *A. florenciense* Croat, López-Flor. & Edwin Trujillo, and *A. marcocorreae* Croat, López-Flor. & Edwin Trujillo.

Key words: *Anthurium*, Araceae, Caquetá, Colombia, conservation.

Anthurium Schott is the largest genus of Araceae, with a minimum of 3000 anticipated species (Boyce & Croat, 2020), and is currently divided into 20 sections (Engler, 1905; Croat & Sheffer, 1983; Croat & Carlsen, 2020; Sierra et al., 2022), including *Anthurium* sect. *Belolonchium* (Schott) Engl. (Schott, 1860: 528; Engler, 1878: 63) with 270 species (Croat, 2019). *Anthurium* sect. *Belolonchium* is recognized by a suite of characters, including usually short, thick internodes; many persistent cataphylls, which dry with distinctive red-brown fibers; long, frequently wing-ribbed petioles; leaf blades that are large, typically sagittate, dark brown–drying, moderately coriaceous, with a near total lack of surface features, and frequently with wing-ribbed major veins; frequently hooding spathes; and frequently pendent spadices (Croat, 2019).

The last revision that dealt with Colombian species of section *Belolonchium* was that of Engler (1905) in *Das Pflanzenreich*, in which only 23 species were cited for the country. Subsequently, floristic reports from small regions in Colombia—Cabo Corrientes in the department of Choco (Croat & Mora, 2004), Bajo Calima in the department of Valle del Cauca (Croat et al., 2006), and La Planada in the department of Nariño (Croat et al., 2009, 2010)—have added some species to the taxonomic work in Colombia with *Anthurium* sect. *Belolonchium*. However, the group is expected to have more than 300 species, most of which have not been described (Croat, 2019). During fieldwork by the authors over the last 15 years, populations of *Anthurium* sect. *Belolonchium* have been located that are identified as new species, which are described below.

Materials and Methods

The species described here followed the pattern established by Croat and Bunting (1979). Species were determined as new based on the second author's unpublished Anthurium Lucid Key (Haigh et al., 2009), an interactive, multichotomous key that contains data on all species of previously published *Anthurium* species, as well as many as yet unpublished species. For examples of published Lucid keys, see <http://www.lucidcentral.com>. Life zone ecology is based on the Holdridge life zone system (Holdridge et al., 1971). IUCN Red List status for all species described is considered Data Deficient (DD), owing to the fact that all three species were known from a single collection (IUCN, 2022).

Taxonomic Treatment

1. Anthurium caquetense López-Flor., Edwin Trujillo & Croat, sp. nov. TYPE: Colombia. Caquetá: Mpio. Florencia, Corregimiento el Caraño, La Ruidosa, 01°44′08.6″N, 75°43′48.5″W, 1764 m, s.d., *O. López & E. Trujillo 280* (holotype, HUAZ!; isotypes, COL!, MO!). Figures 1, 4.

Diagnosis. *Anthurium caquetense* López-Flor., Edwin Trujillo & Croat differs from *A. cuyabenoense* Croat by its broadly ovate to broadly triangular-ovate (vs. broadly cordate) leaf blades, acuminate at the apex (vs. concave near the middle and cuspidate at the apex) with a parabolic sinus (vs. broadly

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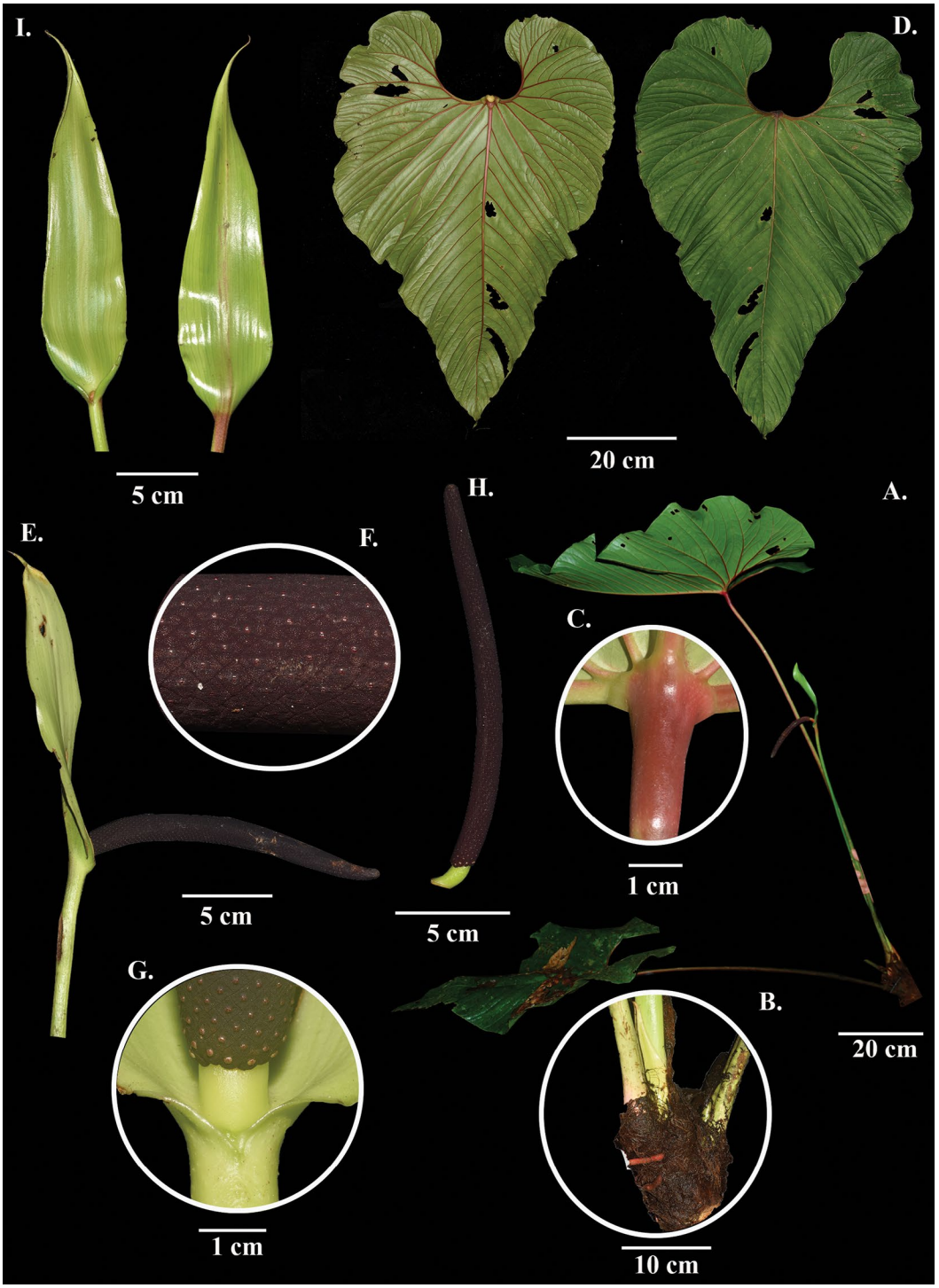

Figure 1. *Anthurium caquetense* López-Flor., Edwin Trujillo & Croat. —A. Habit. —B. Cataphylls. —C. Geniculum. —D. Leaf blades, adaxial and abaxial surfaces. —E. Inflorescence. —F. Close-up of flowers. —G. Stipe. —H. Spadix. —I. Spathe, both surfaces. Photographs by Oscar M. López-Floriano.

to narrowly hippocrepiform) sinus; tapered, dark purple (vs. cylindrical, red to dark red) spadix; and 9 to 13 (vs. 6 to 7) flowers per spiral.

Terrestrial, internodes short, 0.8–1.6 × 4.2 cm; **cataphylls** persisting on stem as brown fibers, 26 cm, 10 cm wide at base. Leaves with **petiole** 81–95 × 1.4 cm, narrowly and obtusely sulcate or narrowly and acutely sulcate, light green to base and magenta toward apex, drying reddish brown; **geniculum** 2.2 × 1.4 cm, dark violet-purple; **blade** broadly ovate to broadly triangular-ovate, 60–76.6 × 44.6–53.5 cm (averaging 68.3 × 49 cm), 1.34–1.43× longer than broad, 0.80–0.83× long as petiole, acuminate at apex, prominently lobed at base, subcoriaceous, matte, dark green adaxially, glossy, pale green, drying dark yellow-green or dark brown adaxially and reddish brown or dark brown abaxially; **anterior lobe** 57–62.2 × 51.5–55.6 cm, straight and broadly concave along margin; **posterior lobe** 18.2 × 20.2 cm, rounded and directed inward and downward; **midrib** convex, above slightly raised, reddish green, below prominently rounded, reddish; **primary lateral veins** 17 per side arising at 35°–50°, light green above, reddish below, drying slightly raised above, acute and prominent below, dark grayish brown on both surfaces; **tertiary veins** visible to naked eye and weakly raised; **collective veins** arising from 5th pair of basal veins, 3–4 mm from margin; **basal veins** 7 to 9 pairs, 1st almost free from base, 2nd fused to 2.3 cm to base, 3rd fused to 4.4 cm, 4th fused to 6.5 cm, 5th fused to 8.2 cm, 6th fused to 9.1 cm, 7th fused to 11.1 cm, and 8th, 9th fused to 12 cm, each with numerous secondary veins; **posterior ribs** gradually curved, naked, 6–10.2 cm; **sinus** parabolic, 13 × 16–18 cm. INFLORESCENCE erect-spreading; **peduncle** 50–73 cm × 8.8–9.3 mm, terete or obtusely and broadly sulcate, light green; **spathe** erect, at 180° to petiole, 17.1–22.6 × 3–4.6 cm, lanceolate, overarching, light green on both surfaces, apex long-acuminate, drying subcoriaceous, dark grayish brown; **spadix** dark purple, stipitate (stipe light green 0.8–1.5 cm × 7.7 mm) tapered, nutant, 16.1–16.5 cm × 7–9 mm, drying dark brown; **flowers** 9 to 13 visible per spiral, 2.5 × 1.6 mm; **fruit** not seen.

Distribution and habitat. *Anthurium caquetense* is endemic to Colombia and was found on the eastern slope of the Andes Mountain range in the department of Caquetá at elevations of 2000 m, in a *Montane wet forest* life zone (Holdridge et al., 1971).

Etymology. The species is named after the Caquetá type locality; this department is part of the Amazon region in Colombia.

Discussion. The species keys out as similar to *Anthurium cuyabenoense* Croat, which differs by having a subrhombic to hippocrepiform sinus, one free basal vein, a cylindrical spadix that is red, dark red, or sometimes purplish red, and six to seven flowers per spiral; *A. jaramilloi* Croat & J. Rodr, which differs by having leaf blades with only six to eight pairs of basal veins, an ovate spathe, and a stubby cylindroid spadix; *A. praealtum* Sodiro, which differs by its narrowly ovate blade with a V-shaped sinus and two free pairs of basal veins; and *A. riofrioi* Sodiro, which differs by the collective veins arising from the primary lateral veins, a much longer spadix (25–50 cm), and a much longer posterior rib (to ca. 30 cm).

2. Anthurium florenciense Croat, López-Flor. & Edwin Trujillo, sp. nov. TYPE: Colombia. Caquetá: Mpio. Florencia, vía Florencia–Neiva, 01°44′08.6″N, 75°43′48.5″W, 1762 m, 14 ene. 2022, *O.* López & A. *Fonseca 135* (holotype, HUAZ!; isotypes, COAH!, COL!, MO!). Figures 2, 4.

Diagnosis. *Anthurium florenciense* Croat, López-Flor. & Edwin Trujillo differs from *A. jaramilloi* Croat by its narrowly ovate-triangular (vs. ovate-cordate) leaf blades, drying dark grayish brown above and reddish brown below (vs. yellowish brown), with a twisted long-acuminate apex (vs. caudate, acuminate at apex) and 8 to 9 pairs (vs. 6 to 8 pairs) of basal veins, the collective vein arising from the 1st pair of basal veins (vs. 3rd to 5th pairs); oblong-lanceolate spathe, 14.5–17.2 × 2.9–5 cm (vs. ovate to cymbiform, 4.5–8 × 2.5–4 cm); and cylindroid-tapered spadix, 12 cm with a stipe 0.4–0.6 cm (vs. cylindric, 5–10 cm with a stipe 0.5–1.8 cm).

Terrestrial; **internodes** short, 0.5–0.7 × 1.6–2.6 cm, **cataphylls** 15–21.6 cm, persisting in network of fibers, these predominantly parallel, dull brownish yellow. Leaves with **petiole** 83.3–107.7 cm, light green and reddish below, obtusely and broadly sulcate, **geniculum** 1.8–2.4 cm × 4.6–8.5 mm, purplish red; **blade** narrowly ovate-triangular, 62.8–75.8 × 40–55.8 cm (averaging 69.5 × 48.1 cm), 1.3–1.6× (averaging 1.45×) longer than broad, broadest at petiole attachment, 0.7–0.8× longer than petiole, apex twisted, long-acuminate (to 2.5 cm), prominently lobed at base, subcoriaceous, dark green and matte above, pale green and semiglossy below, drying subcoriaceous, dark grayish brown and matte above, reddish brown semiglossy below; **anterior lobe** 41.9–52.3 cm, with straight to slightly concave margins in lower half of anterior lobe, distal margin slightly rounded; **posterior lobes** 11.1–20.3 × 14–19 cm, rounded, directed downward and inward; **midrib** narrowly rounded and purple-violet above, rounded and reddish below; **primary lateral veins** 13 to 15 pairs, arising at 45°–55°, collective veins arising from 1st pair of basal veins or one of lowermost primary lateral veins and 2–7 mm from margin; **basal veins** 8 to 9 pairs, 1st pair fused to 2.5 cm to base, 2nd pair fused to 4.5 cm, 3rd pair fused to 6.4 cm, 4th pair

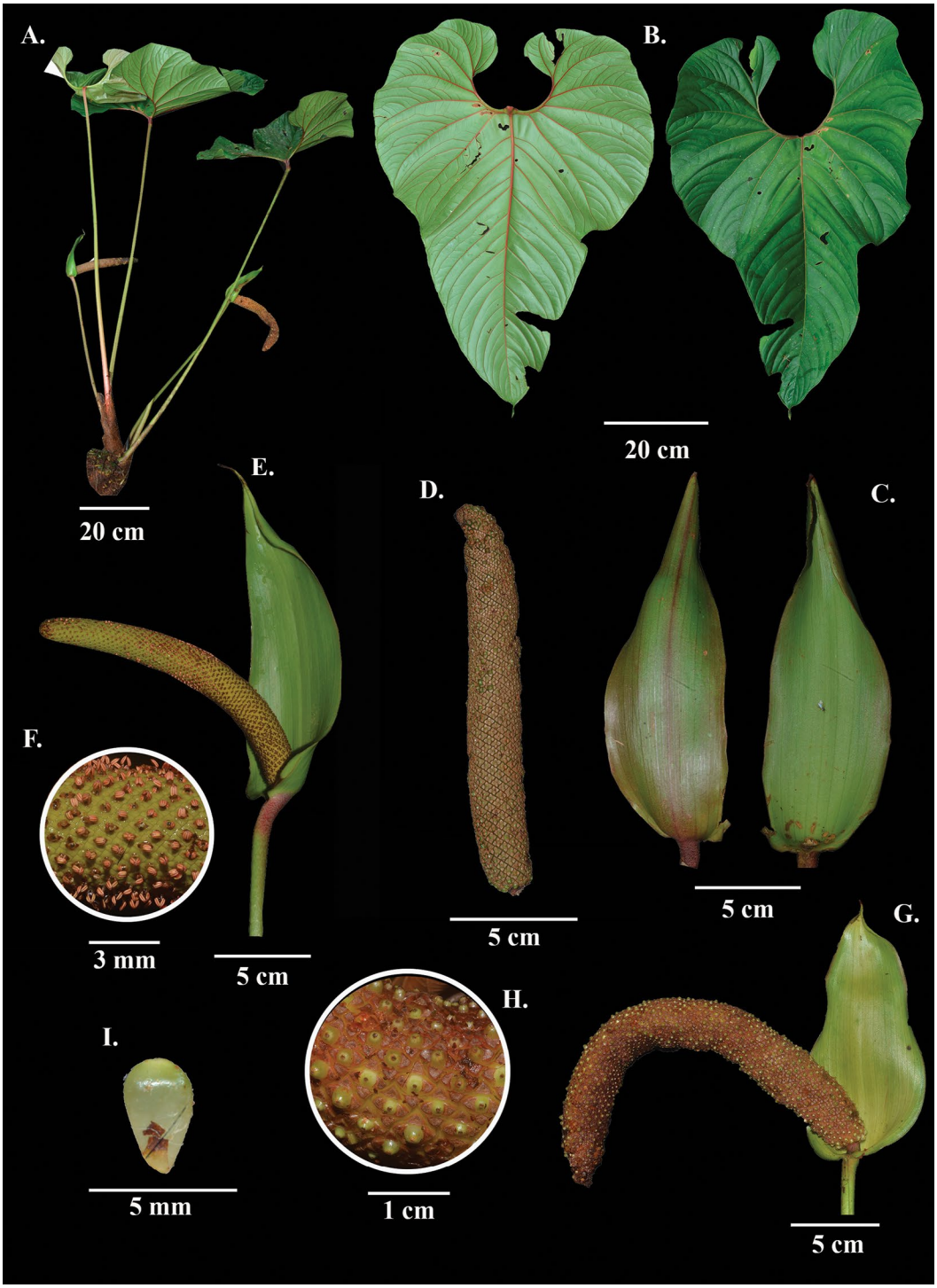

Figure 2. *Anthurium florenciense* Croat, López-Flor. & Edwin Trujillo. —A. Habit. —B. Leaf blades, adaxial and abaxial surfaces. —C. Spathe. —D. Spadix. —E. Inflorescence. —F. Close-up of flowers. —G. Infructescence. —H. Close-up of fruits. —I. Fruit. Photographs by Oscar M. López-Floriano.

fused to 8.5 cm, 5th pair fused to 10.8 cm, 6th, 7th fused to 13.2 cm; **posterior ribs** gradually curved, naked, 11 cm; **sinus** broadly hippocrepiform, 10.8–13.8 × 17.4–21.3 cm. INFLORESCENCE erect-spreading, long-pedunculate; **peduncle** 38–68.7 cm, terete or slightly and sharply sulcate toward apex, purplish dark green–speckled; **spathe** erect, inserted at ca. 180° to peduncle, medium green above and green with purple-red lines below, 14.5–17.2 × 2.9–5 cm, oblong-lanceolate, drying moderately coriaceous, medium reddish brown; **spadix** yellowish green, stipitate 0.4–0.6 cm, cylindroid-tapered, nutant, 12 cm × 10.2 mm, drying reddish brown; **flowers** 10 visible per spiral, ca. 3 × 3 mm; **anthers** reddish brown; **filaments** purplish red. INFRUCTESCENCE with spadix 15–15.5 × 2–2.1 cm, stipitate 0.4–0.9 cm, yellowish brown, drying reddish brown, **berries** ca. 4 mm, light green while unripe.

Distribution and habitat. *Anthurium florenciense* is endemic to Colombia, where it is known only from the type locality in Caquetá Department at about 1700 m in a *Submontane wet forest* life zone (Holdridge et al., 1971).

Etymology. The species is named for the type locality in the municipality of Florencia.

Discussion. The species keys out as similar to *Anthurium effusilobum* Croat, which differs by having prominently 3-lobed blades, and *A. jaramilloi* Croat, which differs by having petioles deeply and sharply sulcate, the lower blade surfaces moderately granular, a more broadly ovate spathe, and a more cylindroid spadix.

3. Anthurium marcocorreae Croat, López-Flor. & Edwin Trujillo, sp. nov. TYPE: Colombia. Caquetá: Mpio. Florencia, Corregimiento El Caraño, Vereda La Ruidosa, 1°52′16.33″N, 75°40′3.82″W, 2128 m, s.d., *O. López, M. Correa, A. Moreno, C. Ortiz, J. Camargo, N. Cutiva & Juan 212* (holotype, HUAZ!; isotypes, COAH!, COL!, MO!). Figures 3, 4.

Diagnosis. *Anthurium marcocorreae* Croat, López-Flor. & Edwin Trujillo differs from *A. bogotense* Schott by its leaf blades with subrhombic (vs. hippocrepiform) sinus, basal veins 8, 1st pair free to base (vs. 10 pairs, 1st and 2nd pairs free to base), the collective vein arising from 1st pairs of basal veins or from the lateral primary veins (vs. 3rd and 4th pairs), and by its tapered, green spadix (vs. dark purple, cylindric).

Terrestrial, **internodes** short, 0.9–1.4 × 2.2 cm; **cataphylls** 15.2–21 cm, persisting intact toward apex and at base persisting as reddish-brown fibers. Leaves with **petiole** 57.3–81.2 cm, sharply and broadly V-sulcate, pale red at base and pale green toward apex, drying reddish brown; **geniculum** 1.7–2.1 × 0.6–0.8 cm, dark purple; **blade** triangular-ovate, 42.6–69.8 × 30.5–40 cm (averaging 58.6 × 35.6 cm), 1.33–1.93× longer than broad, 0.7–0.9× as long as petiole, acuminate at apex, prominently lobed at base, sinuate on margins, coriaceous, light bright green, drying dull brownish yellow or dark yellow-green adaxially, pale bright green, drying reddish brown abaxially; **anterior lobe** 37.6–50.9 cm, straight to slightly concave above middle; **posterior lobe** 13.7–18.1 × 11.7–16.9 cm, directed inward; **mibrib** convex, concolorous, light green on both surfaces, slightly raised above, prominently raised below; **primary lateral veins** 10 to 18 pairs, arising at 45°–60°, light green on both surfaces, drying slightly raised above, prominent and acute below, drying reddish brown; **tertiary veins** distinctly visible but not raised; **collective veins** arising from 1st pairs of basal veins or from lateral primary veins, 2–6 mm from margin; **basal veins** 8(to 10) pairs, 1st free to base, 2nd fused to 2.2 cm, 3rd fused 4.2 cm, 4th fused to 7.8 cm, 5th fused to 9.1 cm, 6th, 7th fused to 9.9 cm; **posterior ribs** curved, naked to 4.3–5.8 cm with the chlorophyllous tissue ending abruptly on the rib at nearly 90°; **sinus** subrhombic, 5–20.5 × 7–11 cm. INFLORESCENCE erect-spreading; **peduncle** 30–70 cm × 4.6–9.9 mm, terete, light green; **spathe** light green on both surfaces, drying reddish brown, 17.1–27.1 × 2.1–4.1 cm, subcoriaceous, inserted at 180° on peduncle; **spadix** deflexed, light green to dark green, stipitate 0.4–0.8 cm, 22.7–34.9 cm × 9.8–15.6 mm, tapered, drying dark brown; **flowers** 11(to 15) visible per spiral; **stamens** weakly exserted, anthers yellow, filaments reddish brown. INFRUCTESCENCE deflexed, spadix 29.1 cm × 14 mm; **berries** green when unripe.

Distribution. *Anthurium marcocorreae* is known from the type locality on the eastern slopes of the Cordillera Oriental in the department of Caquetá bordering the department of Huila. The species grows on roadsides at elevations of 2000–2200 m, in *Lower montane wet forest* life zone (Holdridge et al., 1971).

Etymology. The plant is named in honor of the botanist and biologist Marco A. Correa, who has dedicated his life to the study of the flora of Caquetá, the department where the species was collected.

Discussion. *Anthurium marcocorreae* keys out as *A. bogotense* Schott, which differs by having the sinus evenly hippocrepiform with both sides evenly concave and with margins of the lower portion of the lobe merging acutely onto the naked portion of the posterior rib. In contrast, the sinus of *A. marcocorreae* is subrhombic with its margin ending abruptly and at nearly a right angle on the posterior rib. *Anthurium marcocorreae* also

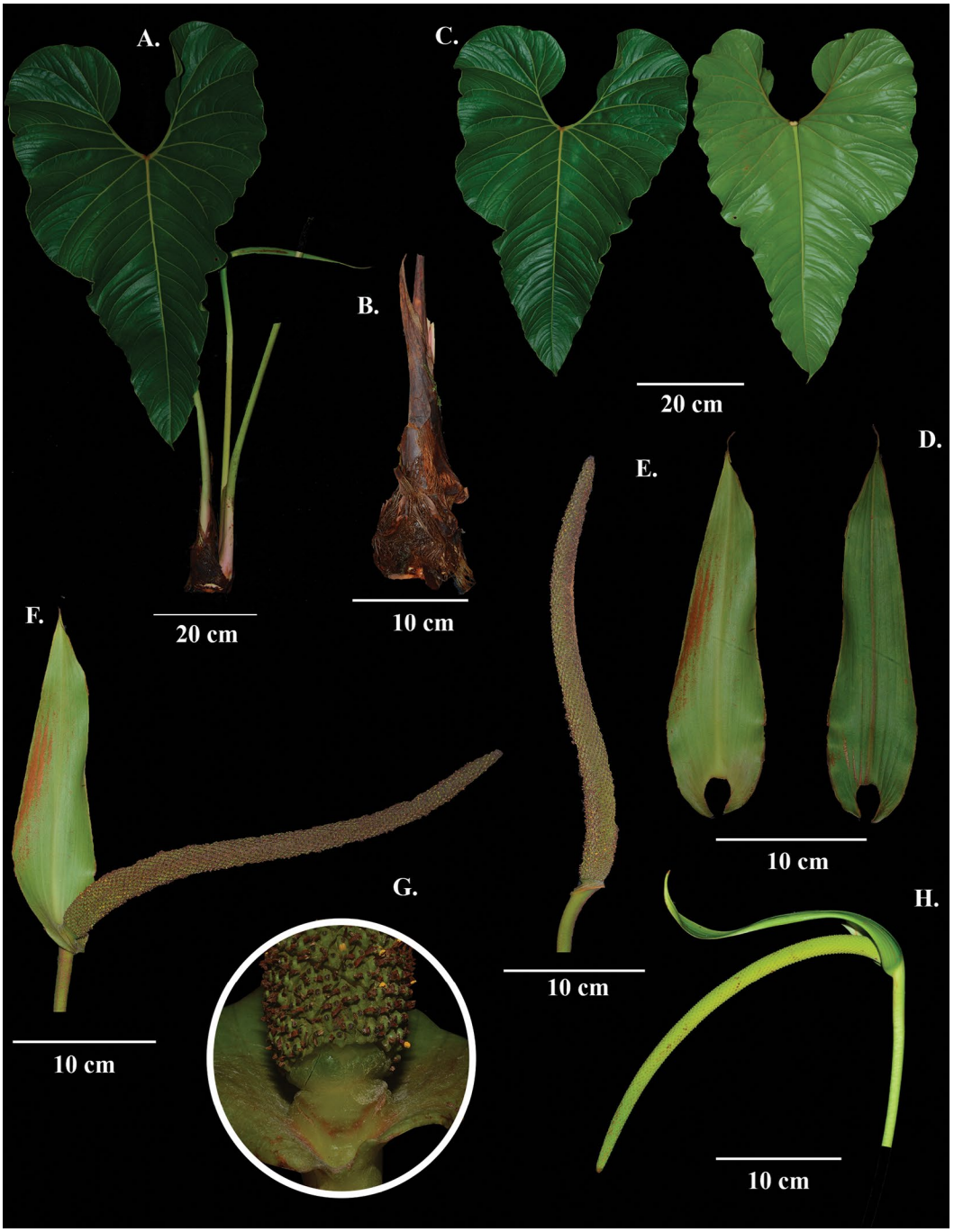

Figure 3. *Anthurium marcocorreae* Croat, López-Flor. & Edwin Trujillo. —A. Habit. —B. Cataphylls. —C. Leaf blades, adaxial and abaxial surfaces. —D. Spathe. —E. Spadix. —F. Inflorescence. —G. Stipe. —H. Immature inflorescence. Photographs by Oscar M. López-Floriano.

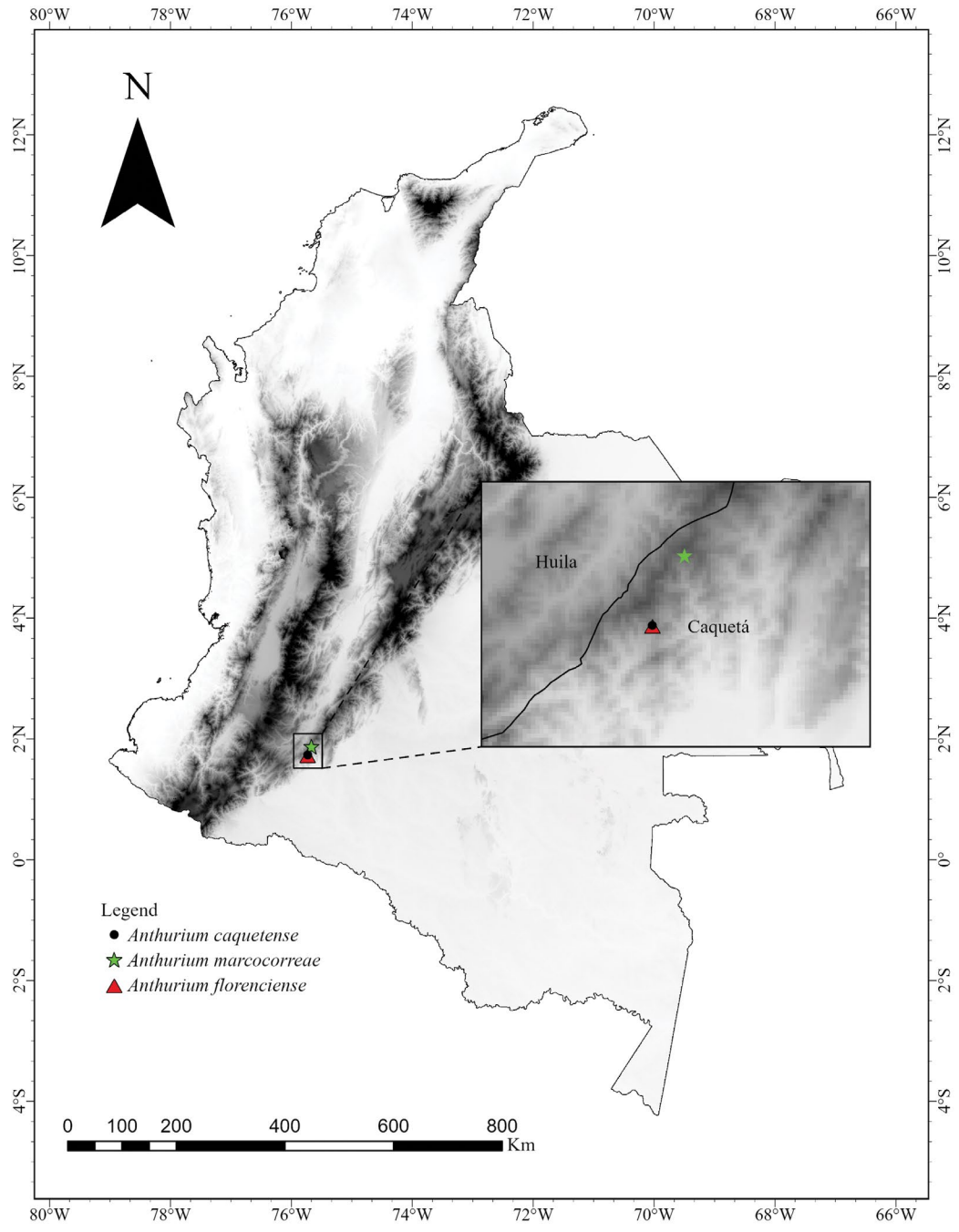

Figure 4. Locations of *Anthurium caquetense* López-Flor., Edwin Trujillo & Croat, *A. marcocorreae* Croat, López-Flor. & Edwin Trujillo, and *A. florenciense* Croat, López-Flor. & Edwin Trujillo in department Caquetá, Colombia. Map by Oscar M. López-Floriano.

keys out as similar to *A. cabrerense* Engl. from Tolima Department, which differs by having a much narrower leaf blade with a spathulate sinus that, like *A. bogotense*, has the chlorophyllous tissue ending acutely on the posterior rib. In addition, *A. cabrerense* has a proportionately broader purplish spathe with dark green veins.

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