

Revision of *Anthurium* Sect. *Stipitata* Delannay & Croat (Araceae)

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ABSTRACT

Following recent molecular studies that indicated its distinct lineage, *Anthurium* Sect. *Stipitata* is formed out of *Anthurium* Sect. *Xialophyllum* (Schott) Engl.. The new section comprises 46 species, of which 22 species are new. All 46 species are fully described. Both a dichotomous and a separate unpublished Lucid Key have been prepared. The Lucid Key to *Anthurium* Sect. *Stipitata* will be published later online.

Key Words: Araceae, *Anthurium*, *Stipitata*, new section, new species.

MATERIALS AND METHODS

The study is based on an almost 50 year-long study of the genus throughout its range by the second author, who has made observations and collections in more than 5000 separate sites throughout the neotropics. A total of more than 3000 collections were studied and measured by both authors for this revision, principally those housed at the Missouri Botanical Garden (the world's largest assemblage of aroid specimens) or on loan from dozens of other institutions. The second author personally visited more than 90 herbaria in Europe, North America, Central America and South America during work under an OPUS grant between 2015–2017.

All descriptions presented here follow a pattern modified from that of Croat & Bunting (1979), with particular details ascribed to the surface features and morphology of the vegetation in addition to the characteristics of the inflorescence. Both a dichotomous and a separate unpublished electronic Lucid Key have been prepared. The Lucid Key to *Anthurium* Sect. *Stipitata* will be published later online.

Life zone ecology mentioned is based on the Holdridge life zone maps (Holdridge 1967, Holdridge et al., 1971) where they exist and in areas where they do not exist (Mexico, Brazil) estimates are sometimes made based on experience and comparison to other areas visited.

HISTORY OF ANTHURIUM SECT. STIPITATA SPECIES

The *Anthurium* species now comprising Sect. *Stipitata* had been part of *Anthurium* Sect. *Xialophyllum* until a recent molecular study conducted by Mónica M. Carlsen of the Missouri Botanical Garden (Carlsen & Croat 2013, Carlsen & Croat 2019, Carlsen & Croat, in preparation) indicated that they were phylogenetically distinct (Delannay & Croat, in press).

The authors thus decided to formally separate those species into a new Section *Stipitata* Delannay & Croat.

The first published species that now belongs to Sect. *Stipitata* is *Anthurium stipitatum* Benth., which H.W. Schott included in *Anthurium* grex *Xialophyllum* Schott (Schott, 1860: 440).

In his final revision of sect. *Xialophyllum*, Engler (1905) included the following species now belonging to Sect. *Stipitata*: *Anthurium angosturense* Engl., *A. aristatum* Sodiro (= *A. subandinum* Engl.), *A. fraseri* Engl., *A. geniculatum* Sodiro, *A. mindense* Sodiro, *A. nemorale* Sodiro, *A. popayanense* Engl. (= *A. stipitatum* Benth.), *A. pulchellum* Engl., *A. subandinum* Engl. and *A. stipitatum* Benth. Thus, there were eight accepted species now pertaining to Sect. *Stipitata* included in his revision.

Luis Sodiro created a sectional classification which divided *Anthurium* into three unnatural sections (Sodiro, 1901). Most then-named species in the original Sect. *Xialophyllum* were assigned to his Sect. *Integrifolia* Sodiro, Series *Pinnatinervia* Sodiro which was characterized by having elongated leaf blades with little or no development of posterior lobes with each leaf blade having a solitary midrib with primary lateral veins joining into collective veins. A few of those species now belong to Sect. *Stipitata*. As was done for Sect. *Xialophyllum* (Delannay and Croat, 2025), Sect. *Integrifolia* Sodiro, Series *Pinnatinervia* Sodiro is thus also a synonym section with Sect. *Stipitata*.

Sodiro (1905) published *Anthurium vestitum*. In the same year, he also published it in *Revisita Chilena de Historia Natural*, year 9: 243. Later, Krause (1930) published *A. gracilipedunculatum*, and Madison (1978) published *A. incomptum*, bringing the total of recognized *Stipitata* species to 11. More recently, 12 more species were published by Croat and collaborators: *Anthurium annularum* O.Ortiz, Croat & Baldini, *A. batistae* Croat, O.Ortiz & Baldini, *A. burgeri* Croat & R.A. Baker, *A. cardenasii* Croat, *A. gracilistipum* Croat, *A. gruesoi* Croat, *A. maasii* Croat, *A. monteagudoii* Croat & N. Altam., *A. ottobuchtienii* Croat & Acebey, *A. rodvasquezii* Croat, *A. terracola* Croat & J. Rodr. and *A. valenzuelae* Croat & N. Altam. Finally, López-Floriano and collaborators (2024) published *A. amplexispathum*.

This comes to a total of 24 recognized species published before this revision was started. In the present work, the authors describe a further 22 new species, bringing the total number of known *Stipitata* species to 46. These new species are: *Anthurium aguindae* Croat, *A. andaquiense* Croat, *A. bongareense* Croat, *A. boquetense* Delannay & Croat, *A. cerro-oscuense* Delannay & Croat, *A. charalense* Delannay & Croat, *A. echeverryae* Croat, *A. eloroense* Delannay & Croat, *A. guapareense* Delannay & Croat, *A. guatapense* Croat, *A. guayasense* Croat, *A. hermescuadrosii* Croat, *A. huilense* Delannay & Croat, *A. jorgei* Croat, *A. lasierpense* Croat, *A. marulandae* Croat, *A. mistratoense* Delannay & Croat, *A. pitalitoense* Croat, *A. rioverdense* Delannay & Croat, *A. roblesii* Croat & N. Köster, *A. tulcanense* Delannay & Croat and *A. villagarzonense* Delannay & Croat.

TAXONOMY

Anthurium* Sect. *Stipitata Delannay & Croat, **sect. nov.** — Type species: *Anthurium stipitatum* Benth.

Primarily climbing epiphytes, frequently terrestrial and erect; internodes typically elongated, less commonly short, usually 0.5 to 1.5 cm diam., usually drying brown; cataphylls usually deciduous, sometimes persisting intact. **LEAVES** usually widely scattered along the stem; **petioles** usually subterete, usually sharply flattened adaxially or weakly and obtusely sulcate, usually drying brown; **blades** subcoriaceous, ovate-elliptic or oblong-lanceolate, acuminate at apex, acute, obtuse or rounded at base, never cordate or subcordate, usually drying brown or reddish brown, mostly glossy; midrib usually prominently raised on both surfaces, usually narrowly rounded on upper surface, frequently round-raised on lower surface; primary **lateral veins** and tertiary veins usually not prominent, especially on dry specimens, sometimes barely visible. **INFLORESCENCES** with the **spathe** typically green, lanceolate, drying brown; **spadix** cylindroid or short-tapered, rarely long-tapered, green, purplish violet or reddish, often with a very long stipe; berries typically red or violet-purple; seeds typically 2 per berry.

Comments — Sect. *Stipitata* comprises 46 species ranging from Central America to Bolivia.

List of Species

<i>A. aguindae</i> Croat, sp. nov.	<i>A. huilense</i> Delannay & Croat
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<i>A. angosturense</i> Engl.	<i>A. lasierpense</i> Croat
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<i>A. batistae</i> Croat, O.Ortiz & Baldini	<i>A. marulandae</i> Croat
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<i>A. boquetense</i> Delannay & Croat, sp. nov.	<i>A. mistratoense</i> Delannay & Croat
<i>A. burgeri</i> Croat & R.A.Baker	<i>A. monteagudoi</i> Croat & N.Altam.
<i>A. cardenasii</i> Croat	<i>A. nemorale</i> Sodiro
<i>A. cerro-oscuroense</i> Delannay & Croat, sp. nov.	<i>A. ottobuchtienii</i> Croat & Acebey
<i>A. charalense</i> Delannay & Croat	<i>A. pitalitoense</i> Croat, sp. nov.
<i>A. echeverryae</i> Croat, sp. Nov.	<i>A. pulchellum</i> Engl.
<i>A. eloroense</i> Delannay & Croat, sp. nov.	<i>A. rioverdense</i> Delannay & Croat, sp. nov.
<i>A. fraseri</i> Engl.	<i>A. roblesii</i> Croat & N.Köster, sp. nov.
<i>A. geniculatum</i> Sodiro	<i>A. rodvasquezii</i> Croat
<i>A. gracilipedunculatum</i> K.Krause	<i>A. stipitatum</i> Benth
<i>A. gracilistipum</i> Croat	<i>A. subandinum</i> Engl.
<i>A. gruesoi</i> Croat	<i>A. terracola</i> Croat & J.Rodr.
<i>A. guaparensense</i> Delannay & Croat	<i>A. tulcanense</i> Delannay & Croat, sp. nov.
<i>A. guatapense</i> Croat	<i>A. valenzuelae</i> Croat & N.Altam.
<i>A. guayasense</i> Croat	<i>A. vestitum</i> Sodiro
<i>A. hermesquadrosii</i> Croat	<i>A. villagarzonense</i> Delannay & Croat

KEY TO SPECIES OF *ANTHURIUM* SECTION *STIPITATA*

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- 56b.** Blades 2.6–3.3 times longer than wide, drying dark brown above, medium brown below; species known only from Parque Nacional Yanachanga-Chemillén in Pasco Department at 2000–2430 m. *A. rodvasquezii* Croat

SPECIES DESCRIPTIONS

Anthurium aguindae Croat, **sp. nov.** — Type: ECUADOR. Sucumbíos: Sinangoe Station: Shishicho Ridge, Alto Aguarico drainage. Above (south of) Río Cofanes, west of Puerto Libre. NW of Lumbaqui. Access from Río Sieguyo. Ridgeline trail above camp, 00°12'01"N 77°31'54"W, 1300–1450 m, 14 August 2001, R. Aguinda, N. Pitman & R. Foster 1312 (holotype, MO-6414883).

Diagnosis: *Anthurium aguindae* is characterized by its epiphytic habit, elongated dark-brown-drying internodes, cataphylls persisting as pale, closely spaced fibers, terete brownish-drying petioles shorter than the blades, narrowly ovate-elliptic, gradually acuminate, brownish-drying blades cordulate at the base with the upper surfaces sparsely granular and obscurely pale short-lineate, as well as by the long-pedunculate inflorescence and the long and thin reddish spadix with a 6.5 cm long stipe.

Epiphytic; internodes short, 12 mm diam., drying dark brown; cataphylls slender, to 14 cm long, soon weathering at base with pale, closely spaced fibers, ultimately with only a dense tuft of short fibers persisting. **LEAVES** pendent, hanging from erect-spreading petioles; **petioles** terete, 23 cm long, 3–4 mm diam., narrowly sheathed to the geniculum, drying dark brown; geniculum 8 mm long, shrunk, darker; **blades** narrowly oblong, weakly bicolorous, 52 cm long, 6 cm wide, 8.6 times longer than wide, narrowly acute and gradually and weakly acuminate at apex, cordulate at base, widest near the middle, drying dark reddish brown and weakly glossy above, medium reddish brown and semiglossy below; midrib drying slightly raised and concolorous above, prominently round-raised and concolorous below; basal veins 3 or 4 pairs, all free to base; primary **lateral veins** more than 30 per side, weak and often obscure, sometimes weakly undulated; tertiary veins scarcely visible; collective veins arising from the 1st pair of basal veins, 2–5 mm from margin, not markedly loop-connected; upper surface moderately smooth, sparsely granular and obscurely pale short-lineate. **INFLORESCENCE**

with peduncle 58 cm long, drying 1 mm diam, enclosed within the petiole sheath for its whole length and then extending out for another 35 cm; **spathe** green, linear-lanceolate, about as long as spadix; **spadix** very long and thin, to 44 cm long, 3 mm diam, nearly 150 times longer than broad, stipitate 6.5 cm, ripening reddish, drying brown; **flowers** 3 visible per spiral, 3 mm long, 1.8–2.0 mm wide; tepals 1.3–1.4 mm wide, inner margins broadly rounded, outer margins 2-sided; stamens held at level of tepals, virtually contiguous; anthers 0.3 mm long, 0.7 mm wide, thecae broadly divaricate. **Figure 1.**

Distribution and ecology — *Anthurium aguindae* is known only from Ecuador in the type locality in Sucumbíos Province near the Colombian border at 1300–1450 m in a *Premontane wet forest* life zone.

Etymology — The species is named in honor of Ecuadorian botanist Roberto Aguinda who, along with Nigel Pitman and Robin Foster, collected the type specimen.

Comments — *Anthurium aguindae* is unique and indeed spectacular with its long-pendent, cordulate blades, its very long peduncle, and its slender, long-stipitate, whip-like, reddish spadix. It cannot be mistaken for any other species of *Anthurium*.

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Anthurium amplexispathum López-Flor., M. Correa, E. Trujillo & Zuluaga, Aroideana 47(3). 2024. — Type: COLOMBIA. Caqueta: municipio de Florencia, corregimiento el Carano, vereda La Ruidosa, 01°52'17"N 75°40'03"W, 2197 m, 4 November 2021, *O. López, M. Correa, C. Ortiz, J. Carmago & N. Cutiva* 219 (holotype, HUAZ; isotypes, COL, CUVU).

Terrestrial to 1 m; internodes 1.7–7.5 cm long, soon grayish, drying finely ribbed and minutely striate, semiglossy, the upper internodes pale-pustular; cataphylls 2.6–4.8 cm long, soon deciduous, persisting semi-intact at upper nodes, usually with short fragments or scattered truncated pale fibers at lower nodes. **LEAVES** erect-spreading; **petioles** terete, 2.4–4.5 cm long, 1–2 mm diam., narrowly and weakly sulcate, medium green, matte, drying dark brown, narrowly and sharply sulcate adaxially, sparsely ribbed abaxially; **blades** thinly coriaceous, lanceolate-elliptic, ovate-narrowly elliptic to ovate, 10–16 cm long, 2.5–4.0 cm wide, 3.2–4.1 times longer than wide, 2.5–2.9 times longer than petioles, widest in the lower half, acute and short-acuminate at apex, obtuse to rounded at base, dark green and matte-subvelvety above, paler and weakly glossy below, drying medium pinkish brown above, light pinkish brown below; midrib weakly raised in deep valley above, narrowly rounded and paler below; primary **lateral veins** 7–12 per side, departing midrib at 30–50°, weakly etched and concolorous above, weakly raised below; tertiary veins obscure; collective veins arising from base, more prominently sunken above and below than primary lateral veins, 2–3 mm from margin. **INFLORESCENCE** erect; peduncle 3–5 cm long, 1 mm diam. drying dark brown; **spathe** covering the base of the stipe, oblong-lanceolate, 2.8 cm long, 3 mm wide, drying dark brown; **spadix** stipitate 2.3–7.0 cm, 1.9–3.1 cm long, 1–2 mm diam., yellow-green or dark green, weakly glossy, drying blackish; **flowers** 1.5 mm long and wide; lateral tepals 0.7 mm wide; inner margin rounded, outer margin 2-sided; stigma tufted, weakly exerted. **Figure 2.**

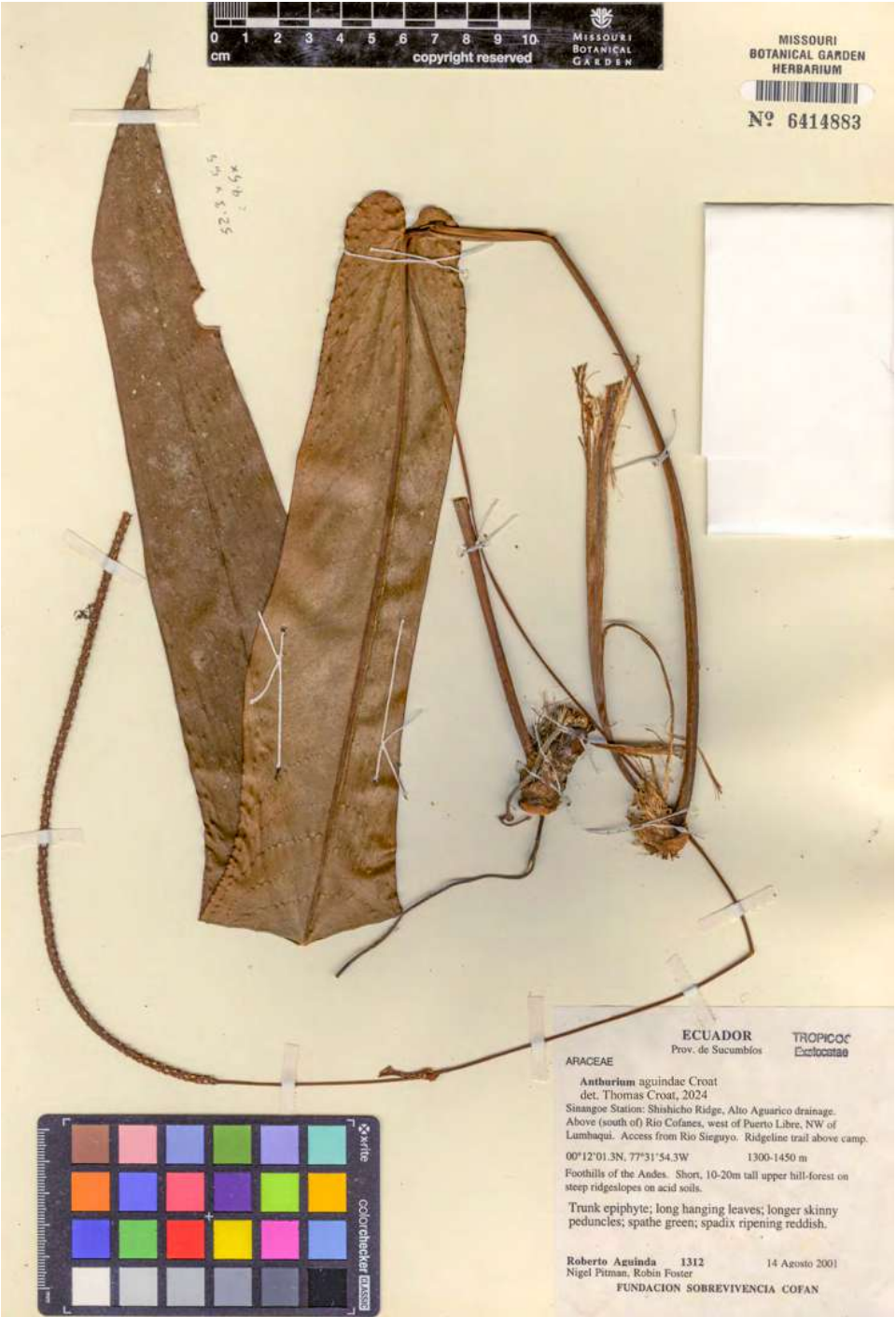


Figure 1. *Anthurium aguindae* (Aguinda et al. 1312, MO-6414883). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 2. *Anthurium amplexispathum* (Croat et al. 100506, MO-6280326). Herbarium specimen showing stems, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

Distribution and ecology — *Anthurium amplexispathum* is endemic to Colombia, found only in Caquetá Department at 2050–2200 m in a *Premontane wet forest* life zone.

Comments — *Anthurium amplexispathum* is characterized by its small size, terrestrial habit, small, pinkish-brown-drying, lanceolate-elliptic to ovate blades 10–16 cm long and 3.2–4.1 times longer than wide, and its very small inflorescences with a short spadix with an elongated stipe 2.3–7.0 cm long.

Anthurium amplexispathum could be mistaken for *A. pulchellum* Engl. which has similar sized blades and also a long-stipitate spadix, but the latter has thicker blades that dry greenish brown (instead of pinkish brown for *A. amplexispathum*). It also grows on the Pacific slopes of the Cordillera Occidental rather than in the Amazon Basin where *A. amplexispathum* is found.

Paratype: COLOMBIA. Caqueta: Along new road between Florencia and Neiva, 7.8 km E of summit of Cordillera Oriental and department limit of Huila Department, between 3rd and 4th tunnel from Florencia, 01°45'11"N 75°44'43"W, 2048 m, 9 November 2008, *T.B. Croat, E. Trujillo & M.A. Correa M.* 100506 (MO).

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***Anthurium andaquiense* Croat, sp. nov.** — Type: COLOMBIA. Huila: Municipio de Acevedo. Parque Nacional Natural Cueva de Guácharos, entre la Cabaña Andaquí y El Pesebre, 01°36'N, 76°06'W, 1900–2100 m., 27 November 2001, *B.R. Ramírez P., H. Mendoza C. & D. Macías P.* 14933 (holotype, HUA-166239; isotype, CAUP).

Diagnosis: *Anthurium andaquiense* is characterized by its short internodes, long, persistent, intact, narrowly pointed cataphylls, sheathed petioles, oblong-ob lanceolate, acuminate blades but especially by its inflorescence with a green, markedly stipitate spadix with the stipe much longer than both the spathe and spadix.

Epiphytic herb; stem moderately short; internodes short, 8 mm diam., drying dark brown; cataphylls 5.6–6.3 cm long, with a long slender rounded extension 5–8 mm long, persisting intact, reddish brown. **LEAVES** with **petioles** 3.3–8.2 cm long, sheathed 1.7–2.3 cm at base, drying dark brown, sheath erect; geniculum 1.0–1.2 cm long, 2 mm diam., drying dark brown and swollen; **blades** oblong-lanceolate. 11.3–23.2 cm long, 1.8–2.0 cm wide, 6.2–11.5 times longer than wide, drying subcoriaceous, gray-brown, matte above, yellow-brown, weakly glossy below, gradually and narrowly acuminate at apex, acute to weakly rounded at base; primary **lateral veins** ca. 15 per side, departing midrib at 25–30°; collective veins arising from the base, moderately straight arising from the base. **INFLORESCENCE** erect, peduncle 6 cm long, 1.5 mm diam.; **spathe** green, 5.3 cm long, tightly enveloping almost ½ of the lower portion of the stipe; stipe 9.2 cm long, 1 mm diam.; **spadix** green, 3.7 cm long, drying 2 mm diam., dark brown; **flowers** 2–3 visible per spiral. **INFRUCTESCENCE** with berries subglobose, 6 mm long, 5 mm wide, color not noted on label. **Figure 3.**



Figure 3. *Anthurium andaquiense*(Ramírez et al. 14933, HUA-166239). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Distribution and ecology — *Anthurium andaquiense* is endemic to Colombia, known only from the type locality in Huila Department at 1900–2100 m in a *Montane rain forest* life zone.

Etymology — The species is named for the Cabaña Andaquí in Huila Department, the only place where it has been found.

Comments — With its narrowly elongated blades and light brown drying color, the species resembles *Anthurium lasierpense* Croat, but the latter differs by its more elongated stems with longer internodes drying black. It also occurs near sea level in Chocó Department rather than at high elevations (1900–2100 m) in Huila Department.

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Anthurium angosturense Engl., Bot. Jahrb. Syst. 25: 378. 1898. — Type: COLOMBIA. Antioquia: Río Dolores, between Angostura and Santa Rosa. 1700–2300 m, December 1891, F.C. Lehmann 7591 (holotype, B).

Epiphyte; internodes short, 0.5–2.0 cm long, 6 mm diam., drying dark brown; cataphylls 5–6 cm long, persisting as dense fibers. LEAVES supervolute; **petioles** 11–25 cm long, 1–3 mm diam., C- to D-shaped or broader than thick, sulcate adaxially, rounded abaxially; geniculum 1.3–2.0 cm long, drying blackish; **blades** elliptic-lanceolate, 10–25 cm long, 3–6 cm wide, 3.0–3.8 times longer than wide, gradually or abruptly acuminate at apex, obtuse or rounded at base, broadest below the middle, smooth above, greenish to olive-green or brownish above and below, drying dark grayish brown above and below, dark glandular punctations present on both surfaces; midrib raised and concolorous below; primary **lateral veins** ca. 15 per side, departing midrib at 50°, prominent and concolorous below; basal veins 1 pair, turning into the collective vein; collective vein prominent below, 5–8 mm from margin. INFLORESCENCE erect; **peduncle** 27–51 cm long, 1–2 mm diam., drying brown; **spathe** 1.5–3.0 cm long, 1–6 mm wide, linear to lanceolate, green; **spadix** tapered, 2–10 cm long, 0.2–0.8 cm diam., green, sessile. **Figure 4.**

Distribution and ecology — *Anthurium angosturense* is found only in Antioquia Department of Colombia at 1700–2300 m in a *Premontane wet forest* life zone.

Comments — *Anthurium angosturense* resembles *Anthurium stipitatum* Benth. which also occurs on the Pacific slopes of the Cordillera Occidental in Colombia, but the latter has more elongated blades (to 5 times longer than broad) that dry medium reddish brown (instead of dark grayish brown for *A. angosturense*). It also occurs farther south in Cauca Department (rather than in Antioquia for *A. angosturense*).

Other specimens seen: **COLOMBIA. Antioquia:** Frontino, area called Murri in western central part de department; c. 13 road-km from Nutibara; forest edge by roadside, 05°30'N 75°50'W,



Figure 4. *Anthurium angosturense* (G. McPherson 13003). Herbarium specimen showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

2000 m, 6 November 1988, *G. McPherson 13003* (HUA, MO); Guatapé, Finca Monte Pinar, 06°20'N 75°10'W, 1850 m, 20 September 1995, *F. Cardona 43* (HUA); Carolina, Embalse de Miraflores 17 km de la cabecera Municipal, 3 km de la presa hacia Santa rosa de Osos, 06°47'06"N 75°20'28"W, 2100 m, 8 April 2011, *F. Cardona et al. 2033* (HUA); Carretera Carolina – Guadalupe, 06°48'37"N 75°17'29"W, 1800–2100 m, 26 August 2011, *H. David et al. 3594, 3664* (HUA).

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Anthurium annularum O. Ortiz, Croat & Baldini, *Phytotaxa* 255(1): 48. 2016. — Type: PANAMA: Darién, Serranía de Majé. Reserva Privada Chucanti. Cima del Cerro Chucanti, 08°47'45"N 78°27'47"W, 1325 m, 30 August 2014, *O. O. Ortiz, R. Flores, A. Sierra, J. Batista, Y. Guadalupe, C. Rodríguez, Z. Samudio & Z. Serracín 2450* (holotype, PMA-110749; isotypes, FT, MO, SCZ, UCH, US).

Epiphytic climbing herb; stems to 1 m long, drying yellow-brown, longitudinally ribbed, matte; internodes alternating between short internodes and much longer internodes, 0.3–7.0 cm long, 2–4 mm diam., with ring-shaped swellings at the apex of each internode; cataphylls persisting intact at apex, later deciduous with a few fibrous remnants at node, drying yellow-brown, 0.5–5.0 cm long; **petioles** terete, 0.9–2.0 cm long, 1.0 mm diam., drying matte, dark brown on geniculum and at base; **blades** subcoriaceous to moderately thin, lanceolate-elliptic or narrowly elliptic, gradually acuminate at apex, obtuse or rounded at base, 5–10 cm long, 1.4–3.3 cm wide, 2.4–3.0 times longer than wide, ca. 5 times longer than petioles, widest slightly below the middle, medium green and semi-glossy above, slightly paler and semi-glossy below, drying yellow-brown; midrib narrowly rounded and slightly paler above, narrowly rounded below; primary **lateral veins** ca. 16 per side, obscure on both surfaces when fresh, moderately obscure when dried, departing midrib at 40–50°; tertiary veins obscure. **INFLORESCENCE** erect-spreading; peduncle 1.5–3.5 cm long, 1.0 mm in diam., slender, reddish; **spathe** reflexed-spreading (at anthesis) or erect, 1.1–1.5 cm long, 4–6 mm wide, whitish-green to green, ovate to narrowly lanceolate, abruptly acuminate at apex; **spadix** yellow-green, erect, cylindrical, 0.7–1.9 cm long, 1–2 mm in diam. on drying, 7–10 times longer than wide, stipitate ca. 1–2 mm when dried, stipe whitish; **flowers** 3–4 visible in the principal spiral, 2–3 in the alternate spiral; stamens slightly exserted; anthers whitish. **INFRUCTESCENCE** pendent; spathe deciduous; spadix cylindrical, 3.5–4.2 cm long, 1.0–1.3 cm diam., 3.2–3.4 times longer than wide, rounded at apex, tepals obscurely purplish red; berries globose, pale green, fading to greenish white, finally translucent in lower half; seeds 1 or 2 per berry. **Figure 5.**

Distribution and ecology — *Anthurium annularum* is endemic to Panama, known only from the type locality in the Serranía de Majé at 1325 m in *Premontane rain forest* and *Tropical wet forest* life zones.



Figure 5. *Anthurium annularum* (Ortiz et al. 2450, PMA-110749). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Comments — *Anthurium annularum* resembles *Anthurium boquetense* Delannay & Croat which has a similar size and also occurs in Panama, but the latter has much longer petioles (11.0–12.5 cm long vs. 0.9–2.0 cm for *A. annularum*) and more elongated blades (4.3–5.0 times longer than wide vs. 2.4–3.0 times for *A. annularum*). *A. boquetense* also grows in western Panama (Chiriquí) rather than eastern Panama (Darién) for *A. annularum*.

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Anthurium batistae Croat, O. Ortiz & Baldini, Phytotaxa 219(3): 256–259. 2016. — Type: PANAMA. Veraguas: Parque Nacional Santa Fe, La Sabaneta, 1240 m, 08°40'33"N 80°59'30"W, 30 October 2014, J. Batista, Á. Cano & M. Perret 1215 (holotype, PMA).

Terrestrial herb to less than 1 m tall; internodes elongate, 6.5–9.0 cm long, 6 mm diam., drying medium yellow-brown; cataphylls 2.0–2.5 cm long, mostly soon deciduous with a few remnants at node; **petioles** subterete, 19.5–22.5 cm long, 1.5–2.0 mm diam.; **blades** narrowly ovate, 18–19 cm long, 9.2–10.5 cm wide, 1.8 times longer than wide, slightly shorter than the petioles, broadest in lower 1/3, narrowly long-acuminate at apex, rounded at base, drying moderately dark brown above, slightly paler and yellowish green below; basal veins one pair; primary **lateral veins** 4 or 5 per side, departing midrib at 55–60°; tertiary veins raised above, prominently raised below; collective veins arising from the only basal veins or the lowermost pair of primary lateral veins, prominently loop-connecting the primary lateral veins, 6–8 mm from margin; upper and lower surfaces lacking short pale lineations. **INFLORESCENCE** erect; peduncle 22 cm long, 1.5 mm diam.; **spathe** lanceolate, 2.5 cm long, 6 mm wide, spreading-reflexed, green weakly tinged with purple; **spadix** 3.2 cm long, 3 mm diam., narrowly cylindroid, obscurely purplish red, prominently stipitate, stipe 2 cm long, 1 mm diam., obscurely tinged red; **flowers** 3 visible per spiral. **Figure 6**.

Distribution and ecology — *Anthurium batistae* is known only from the type locality in Veraguas Province, Santa Fe, Panama, at 1240 m in a *Premontane rain forest* life zone.

Comments — *Anthurium batistae* is similar to *A. microspadix* Schott, but the latter has shorter petioles, proportionately narrower blades, inflorescences with shorter peduncle, longer spathe, a shorter stipe and yellowish green stipe and spadix.

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Figure 6. *Anthurium batistae* (Batista et al. 1215, PMA). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium bongarens Croat, **sp. nov.** — Type: PERU. Amazonas: Distrito Pomacocha, forested hills overlooking eastern end of Lago Pomacocha, 2330 m; on main Moyobamba-Chachapoyas road, 05°51'S 77°50'W, 2330 m, 14 April 1984. *T.B. Croat 58262* (holotype, MO-3154356; isotypes, AMAZ, CUZ, HUT, MOL, USM).

Diagnosis: *Anthurium bongarens* is characterized by its terrestrial habit, elongated internodes, deciduous cataphylls, subterete, weakly and narrowly sulcate petioles, brownish drying, acuminate blades with an acute to rounded leaf base, convex midrib on upper surface, etched primary lateral veins, collective veins arising from one of the lower primary lateral veins as well as by the erect inflorescence with green spreading spathe and a yellow-green stipitate spadix.

Terrestrial, to less than 1 m tall; internodes to 3–10 cm long, 6–12 mm diam; medium green, semiglossy; cataphylls deciduous. LEAVES 41.4 cm long with **petioles** 14.0–17.8 cm long, 3 mm diam., terete, weakly and narrowly sulcate; geniculum 1.3 cm long, drying dark brown; **blades** nearly elliptic, ovate, 25–28 cm long, 9.5–11.0 cm wide, 2.6 times longer than broad, 1.6 times longer than petiole, widest near the base, apex abruptly acuminate with 8 mm apiculum, base broadly rounded or obtuse, drying dark reddish brown above, lighter below; midrib drying dark reddish brown, narrowly convex above, finely ribbed, broadly convex below; primary **lateral veins** 25–29 per side, departing midrib at 70–80°, concolorous, inconspicuous above, weakly raised, somewhat darker than surface below; collective veins arising from the base, 2–4 mm from margin; upper surface subcoriaceous, semiglossy, dark green above, drying dark reddish-brown, semiglossy, epunctate, lower surface much paler, nearly glossy, epunctate. INFLORESCENCE erect; **spathe** medium green, spreading; **spadix** yellowish-green; tepals matte; pistils dark green, exserted. **Figure 7.**

Distribution and ecology — *Anthurium bongarens* is endemic to Peru, known only from the type locality in Amazonas Department, Province of Bongara, at 2330 m in a *Montane wet forest* life zone.

Etymology — The species is named for the type locality in the Province of Bongara in the Department of Amazonas of Peru.

Comments — *Anthurium bongarens* resembles *A. subandinum* Engl. from the western slopes of the Andes in Ecuador, but that species differs in having the cataphylls persisting intact and a purplish spadix. It is also similar to *Anthurium mindense* Sodiro which differs by having the blades generally more proportionately elongated with the primary lateral veins directed at a broader angle.

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Figure 7. *Anthurium bongarense* (Croat 58262, MO-3154356). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium boquetense Delannay & Croat, **sp. nov.** — Type: PANAMA. Chiriquí: Trail to Cerro Pate Macho, above Boquete, 08°49'N 82°24'W, 1500–2000 m, 2 March 1995, *G. de Nevers et al.* 10634 (holotype, NY).

Diagnosis: *Anthurium boquetense* is characterized by its epiphytic habit, its short internodes with the cataphylls mostly deciduous, its long petioles almost as long as the blade, its greenish-brown-drying lanceolate blades 4.3–5.0 times longer than wide and widest in the lower half, and its small inflorescence with a green spathe and spadix.

Epiphyte; internodes 3–4 cm long, 3 mm diam., drying grayish green, weakly flattened to broadly sulcate with narrow ribs on either side, the magnified surface closely and irregularly ribbed; cataphylls mostly deciduous, with a few remaining short fibers at some nodes. LEAVES with **petioles** 11.0–12.5 cm long, 1 mm diam, drying medium brown, sulcate adaxially with marginal ribs, the magnified surface conspicuously warty-granular, irregularly several-ribbed abaxially; **blades** lanceolate, 14.0–17.5 cm long, 3.2–3.5 cm wide, 4.3–5.0 times longer than wide, widest in lower half, acute and narrowly long-acuminate at apex (acumen to 2 cm long), rounded at base, drying medium greenish brown above, slightly lighter and more reddish brown below; midrib flat and concolorous above, round-raised and concolorous below; primary **lateral veins** 8 per side, departing midrib at 50–60°, not prominent; tertiary veins not prominent; basal veins 2 per side; collective vein arising from the upper basal vein, 2–3 mm from margin; upper surface drying moderately smooth; lower surface drying sparsely pustular and short-pale-lineate. INFLORESCENCE with peduncle 11 cm long, 1 mm diam.; **spathe** 2.5 cm long, 4 mm wide, green; **spadix** 2.5 cm long, 3 mm diam., green, stipitate 5 mm; **flowers** 2 mm long and wide; tepals 1.2–1.3 mm wide; stamens held at level of tepals and held prominently erect; anthers 0.4 mm long, 0.55 mm wide; thecae moderately divaricate. **Figure 8.**

Distribution and ecology — *Anthurium boquetense* is endemic to Panama, found only in Chiriquí Province at 1500–2000 m in a *Lower montane wet forest* life zone.

Etymology — The species is named for the locality of Boquete near which the type and only specimen was found.

Comments — *Anthurium boquetense* resembles *A. pulchellum* Engl. which has a similar blade shape and drying color, but the latter has much shorter petioles (2.5–4.5 cm vs. 11–12.5 cm for *A. boquetense*). It also grows on the Pacific slopes of Colombia vs. on the Caribbean slope in western Panama for *A. boquetense*.

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Figure 8: *Anthurium boquetense* (de Nevers et al. 10634, NY). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium burgeri Croat & R.A.Baker, Brenesia 16 (Suppl. 1): 30. 1979. — Type: COSTA RICA. San Jose: ridges and steep slopes above Alfombra along road from San Isidro del General to Dominical (on Pacific coast), 09°18'00"N 83°45'36"W, 1000 m, 19 November 1975, W.C. Burger & R.A. Baker 10096 (holotype, F-1769194; isotypes, CR, K, MO, US; live at MO).

Epiphyte or terrestrial on steep banks; stem short or long, 1.0–1.3 cm diam.; roots few, directed downward; cataphylls moderately thin, 6–14 cm long, blunt to acuminate at apex, drying brown, remaining intact, eventually deciduous. LEAVES usually held erect to spreading; **petioles** 15–20 cm long, 4–6 mm diam. midway, terete; geniculum (0.5)1.5–2.0 cm long, weakly flattened adaxially; **blades** oblong-ob lanceolate, moderately thick, gradually acuminate at apex, narrowly cuneate at base, 36–48 cm long, 6.8–8.0 cm wide, 5.3–6.0 times longer than wide, acute and acuminate at apex, acute at base, widest at or just above the middle, drying reddish-brown or gray with purplish splotches; upper surface glossy to semiglossy or matte, lower surface semiglossy; midrib prominently raised above and below, broad at the base, becoming acute and narrow, then diminished and sunken at apex above, obtusely angled, sometimes tinged reddish near the base below; primary **lateral veins** 10–20 per side, departing midrib at ca. 60°, flat and somewhat obscure above, raised below; collective vein arising from near the base, more conspicuous than the primary lateral veins, 2–9 mm from margin, weakly sunken above, prominulous below. **INFLORESCENCE** spreading, as long as or longer than the leaves; peduncle 40–53 cm long, to 4 mm diam., terete, longer than petioles; **spathe** moderately thin, light green sometimes tinged purple at margins, oblong-lanceolate to lanceolate, 6.5–9.0 cm long, 1.3–2.3 cm diam., broadest near the base, acuminate-cuspidate at apex, rounded to weakly cordate and slightly clasping at base, the margins sometimes joining petiole at slightly different levels; **spadix** sessile, greenish-brown to purplish-brown, 9.0–12.2 cm long, 5–7 mm diam. at base, to 3 mm diam. at apex; **flowers** rhombic to weakly 4-lobed, 2–3 mm wide in both directions, the sides straight to weakly sigmoid; 5–9 flowers visible in either spiral; tepals weakly glossy to matte, pale yellow-green with purplish inner edges, pale punctate, with a few scattered droplets, lateral tepals 1.0–1.3 mm wide, the inner margin broadly convex to almost straight; pistils weakly emergent, greenish; stigma ellipsoid-circular, ca. 5 mm long, brush-like and exserted, dark violet-purple, with a conspicuous droplet appearing briefly, well before first anthers emerge, dry and dark when anthers emerge; stamens emerging promptly from near the middle of the spadix or from the base, held ca. 1 mm above the tepals at anthesis, the filament ca. 3 times longer than the anthers, soon retracting the anther to the level of the tepals; anthers yellow-brown, 0.4–0.5 mm long, 0.7–0.8 mm wide, not contiguous; thecae weakly divaricate, oblong-elliptic; pollen orange, drying tan to whitish, quickly disappearing. **INFRUCTESCENCE** pendent-spreading; spadix ca. 12 cm long, ca. 1.9 cm diam., bearing berries in the basal half only; berries narrowly ovate, 6.0–6.7 mm long, 3.0–3.4 mm wide, acute to narrowly rounded at apex, red-orange; pericarp red-orange; mesocarp gelatinous, pale orange, with numerous raphide cells; seeds 1 or 2, elliptic, pale yellow, sometimes weakly flattened, 3.2–3.5 mm long, 2.0–2.1 mm wide, 1.2–2.0 mm thick, surrounded by a sticky amber envelope. **Figure 9.**

Distribution and ecology — The species is known only from the type locality in Costa Rica at 950–1150 m in a *Premontane rain forest* life zone.

Comments — *Anthurium burgeri* is similar to *A. incomptum* Madison, but the latter has shorter blades (3.2–5.0 times longer than wide vs. 6.8–8.0 for *A. burgeri*). *A. incomptum* is



Figure 9: *Anthurium burgeri* (Burger & Baker 10096, F-1769194). Holotype showing petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

also found mostly on the Pacific slopes of Colombia and Ecuador (with only one collection in Panama) while *A. burgeri* is found only in Costa Rica.

Other specimen seen: **COSTA RICA. Puntarenas:** Osa, Fila Costeña, Fila Cruces; cabeceras del Río Piedras Blancas; Cerro Anguciana. 08°49'12"N 83°10'48"W, 950–1150 m, 10 December 1993, *M.H. Grayum 10654* (CR, MO).

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Anthurium cardenasii Croat, Willdenowia 40: 72. 2010. — Type: COLOMBIA. Antioquia: Municipio de San Luis, Carretera hacia Aquitania, a 12 km de la Autopista Medellín-Bogotá, 05°53'N 74°56'W, 850 m, 24 November 1988, *A. Cogollo, D. Cardenas L. & A. Daza 3739* (holotype, MO-4222659; isotype, HUA).

Epiphyte; internodes ca. 2 cm long, 3–4 mm diam.; cataphylls ca. 6.5 cm long, deciduous after becoming fibrous at base. LEAVES erect; **petioles** terete, thinly sheathed for 1.0–1.5 cm, 5.0–5.5 cm long, 1–2 mm diam., drying dark yellow-brown; **blades** oblong-lanceolate, acuminate at the apex, rounded at the base, 11–21 cm long, 4–6 cm wide, 4.2–5.1 times longer than wide, 3.9–4.5 times longer than petioles, drying weakly glossy and dark yellow-brown above, semiglossy and slightly lighter below; midrib narrowly raised and concolorous above, drying concolorous and with a obscure medial rib, sharply raised and concolorous below, drying darker than the surface; primary **lateral veins** 8–10 per side, departing midrib at 40–50°, slightly raised and concolorous above and below; collective veins arising from the 1st pair of basal veins, 2–4 mm from margin; basal veins 2 pairs, both free to the base, the 2nd pair weak and confined to the base of the blade; tertiary veins prominent, reticulate veins prominent, close with a fine array of minute granules in the areoles, the surface glossy upon magnification. **INFLORESCENCE** erect; peduncle slender, ca. 19 cm long, ca. 1 mm diam., drying dark yellow-brown; **spathe** lanceolate, 8.0–9.5 cm long, 0.8–1.4 cm wide, green, drying dark yellow-brown; **spadix** stipitate 5 mm, cylindrical, ca. 7 cm long, 3 mm diam. when immature, green; **flowers** 2.4–3.0 mm long, 2.1–2.5 mm wide, 3–5 visible per spiral; tepals minutely papillate; lateral tepals 0.8–1.0 mm diam., outer margin 3-sided, inner margin rounded. **Figure 10.**

Distribution and ecology — *Anthurium cardenasii* is known only on the eastern slopes of the Cordillera Central in Antioquia, Colombia at 840–1180 m in a *Premontane rain forest* life zone.

Comments — *Anthurium cardenasii* is most similar to *A. maasii* Croat from the western slopes of the Cordillera Occidental at 150 m elevation. That species is remarkably similar with leaf blades of nearly the same size and coloration, but it differs in having the lower blade surface somewhat paler and more matte, by having the reticulate veins less closely aggregated and with the upper midrib only slightly thicker than broad. In addition, the areoles are sparsely granular



Figure 10: *Anthurium cardenasii* (Cogollo et al. 3739, MO-4222659). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

with frequent pustules. In contrast *A. cardenasii* has the areoles minutely and finely granular and lacks pustules. Were it not for the radical differences in range and elevation these two taxa might be considered only morphological variations within the scope of a single species but in light of the existing range of these two species, it is highly unlikely that they are the same.

Other specimen seen: **COLOMBIA. Antioquia:** Municipio de San Luis, Autopista Medellín-Bogotá, sector Río Samaná – Río Claro, San Luis, 840 m, 20 March 1982, *Juan J. Hernández* 288 (HUA); Amalfi, La María, Montebe, Kms 15–35 en la vía a Chorritos-Los Monos, SNE of Amalfi, 06°40'N 74°52'W, 1150–1180 m, 6 December 1989, *Ricardo Callejas et al.* 9045 (HUA, MO, NY).

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Anthurium cerro-oscuroense Delannay & Croat, **sp. nov.** — Type: ECUADOR. Carchi: Parroquia El Chical, Reserva Cerro Oscuro, James Levy property on Río Blanco, ca. 3 km S of El Chical, 2.3 direct line kilometers, 00°54'49»N 78°11'39»W - 00°54'35»N 78°11'40»W, 1200–1390 m, *T.B. Croat, G. Ferry, D. Scherberich, C.L. Henríquez R. & E. Levy* 104483 (holotype, MO-6434360).

Diagnosis: *Anthurium cerro-oscuroense* is characterized by its terrestrial habit with short internodes, its cataphylls persisting as short pale fibers, its short petioles (0.22–0.27 times as long as blades), its long lanceolate blades 6 times longer than wide and drying dark brown above and medium brown below, and by its small inflorescences with a pale green spathe and a dark violet-purple spadix.

Terrestrial; internodes 1.5–2.0 cm long, drying medium brown; cataphylls 4.3 cm long, medium green, promptly deciduous with only a few short pale fibers persisting. **LEAVES** with **petioles** 5 cm long, bluntly C-shaped, medium green, weakly glossy, drying medium brown; **blades** thinly coriaceous, lanceolate, 21 cm long, 3.5 cm wide, 6 times longer than wide, **acute** and narrowly long acuminate at apex (acumen to 2 cm long), dark green and matte above, much paler and semiglossy below, drying dark brown above, medium brown below; midrib narrowly raised at least bluntly acute and concolorous above, narrowly rounded to round-raised and paler below; primary **lateral veins** 9–12 per side, departing midrib at 70–80° and arcing towards the apex, widely spaced (ca. 1 cm), narrowly sunken and concolorous above, narrowly rounded and concolorous below; collective veins arising from the lower primary laterals veins, 1–2 mm from margin; tertiary veins obscure; upper surface, drying moderately smooth, minutely granular on magnification, sparsely and obscurely short-pale-lineate; lower surface similar but sparsely pustular, lacking pale lines. **INFLORESCENCE** small; peduncle 2.8 cm long, 1 mm diam.; **spathe** pale green, reflexed-spreading, 3.8 cm long, 7 mm wide; **spadix** thin, dark violet-purple, 3.7 cm long, 2 mm diam., matte; **flowers** 3 visible per spiral, 1.2 mm long and wide; lateral tepals 0.9–1.0 mm long, inner margin broadly rounded, outer margin 2- or 3-sided; stamens not seen. **Figure 11.**

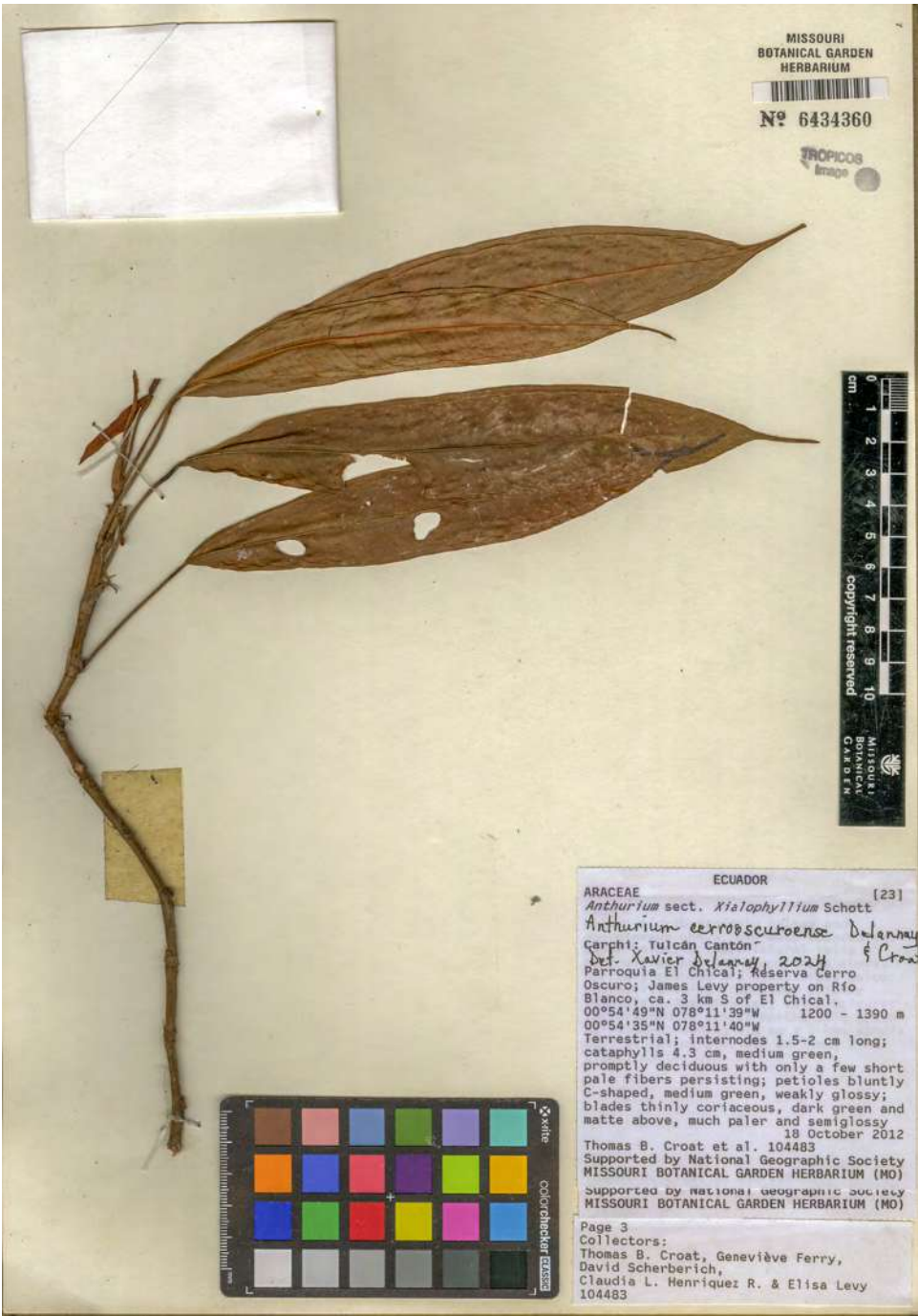


Figure 11: *Anthurium cerrooscuroense* (Croat 104483, MO-6434360). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Distribution and ecology — *Anthurium cerro-oscuroense* is endemic to Ecuador, found only in Carchi Province near El Chical at 1200–1390 m in a *Premontane wet forest* life zone.

Etymology — The species is named for Reserva Cerro Oscuro the only place where it has been found.

Comments — With its small size, its long lanceolate blades and its small inflorescences with a dark violet-purple spadix, the species does not resemble any other species of Sect. *Stipitata*.

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Anthurium charalense Delannay & Croat, **sp. nov.** — Type: COLOMBIA. Santander: Charalá, Sito El Bogotacito, después de El Taladero, via El Carmen – Virolin, 2300 m, 05°58'42»N 73°13'09»W, 23 November 1994, *J. Betancur et al. 5801* (holotype, COL-585388; isotype, MO).

Diagnosis: *Anthurium charalense* is characterized by its terrestrial habit, its short, black-drying, closely ribbed internodes, its medium-brown-drying, lanceolate-elliptic blades 3.7–4.0 times longer than wide with a dense network of primary, interprimary and tertiary veins, and by its long-pedunculate inflorescences with a green spathe and spadix.

Terrestrial, 1.5 m high; internodes 1–3 cm long, 4 mm diam., drying black; cataphylls decaying into pale fibers. **LEAVES** with **petioles** 14.5–16.0 cm long, 2 mm diam., drying medium brown; **blades** subcoriaceous, lanceolate-elliptic, 21–24 cm long, 5.6–6.0 cm wide, 3.7–4.0 times longer than wide, widest near the middle, rounded and abruptly short-acuminate at apex, cuneate at base, drying medium brown and glossy above, slightly lighter and semiglossy below; midrib thinly raised and concolorous above, round-raised and darker below; primary **lateral veins** ca. 7 per side, widely spaced (ca. 1.5 cm), departing midrib at 60–80°, concolorous above and below; interprimary veins almost as strong as primary lateral veins; tertiary veins prominent, densely reticulate, prominent; collective veins arising from the 1st primary lateral veins, 3–4 mm from margin; upper surface moderately smooth, weakly and irregularly ridged on magnification; lower surface weakly areolate-ridged, obscurely short pale-lineate near midrib. **INFLORESCENCE** erect; peduncle 21 cm long, 2 mm diam., drying medium brown; **spathe** reflexed, ca. 3.5 cm long, 1.5 cm wide, green, drying dark brown; **spadix** stipitate (stipe 5 mm long), cylindrical, 6.4 cm long, 4 mm diam., green, drying black; **flowers** 2.8–2.9 mm long and wide; lateral tepals 2.1–2.2 mm wide, inner margin very broadly rounded, outside margin 2(3)-sided. **Figure 12.**

Distribution and ecology — *Anthurium charalense* is endemic to Colombia, found only in Santander Department at 2300 m in a *Premontane wet forest* life zone.

Etymology — The species is named for the Charalá district of Santander Department the only place where it has been found.



Figure 12: *Anthurium charalense* (Betancur et al. 5801, COL-585388). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Comments — With its lanceolate-elliptic brown-drying blades, *Anthurium charalense* resembles *A. incomptum* Madison, but the latter differs by growing at lower elevations on the western slopes of the Cordillera Occidental in Colombia and Ecuador, rather than at high elevations on the Cordillera Oriental in northern Colombia in the case of *A. charalense*.

Paratypes: COLOMBIA. **Santander:** Charalá, Sito El Bogotacito, después de El Taladero, via El Carmen – Virolin, 05°58'42»N 73°13'09»W, 23 November 1994, *J. Betancur et al.* 5807 (COL, MO); *J. Betancur* 5827 (COL, MO); *J. Betancur* 5828 (COL, MO); Gambita, 2100 m, *Díaz* 039 (COL).

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Anthurium echeverryae Croat, **sp. nov.** — Type: COLOMBIA. Antioquia: Municipio Salgar, at departmental boundary with Chocó border, remnants of primary forest at pass, 05°59'N 76°08'W, 2390 m, 13 Mar 1987, *J.L. Zarucchi & B. Echeverry* 4707 (holotype, MO-3431908; isotype, HUA).

Diagnosis: *Anthurium echeverryae* is characterized by its epiphytic climbing habit, elongated internodes, deciduous cataphylls, short, subterete petioles, brownish drying, gradually long-acuminate, oblong-elliptic blades which are rounded at the base as well as by the inflorescence with a green spathe and a peduncle which is as long as or longer than the pale green spadix.

Epiphytic climber on tree trunk; internodes progressively shorter towards top, 0.8–9.5 cm long, 3–4 mm diam., drying grayish-tan, weakly ribbed with an epidermis that exfoliates at lower internodes in smooth flattened pieces; cataphylls 4–5 cm long, intact or semi-intact, drying grayish-tan; LEAVES with **petioles** subterete, sulcate, usually drying sharply sulcate, 2.5–3.4(4.0) cm long, 1 mm diam., drying dark brown to tan; geniculum inconspicuous, ca. 0.5 cm; **blades** ovate-narrowly elliptic, narrowly rounded at the base, 10.5–11.5 cm long, 2.6–3.5 cm wide, 3.2–4.4 times longer than wide, gradually long-acuminate, drying matte, reddish-tan to light tan, slightly more grayish below; upper surface minutely granular including on the veins; lower surface smooth and pale speckled; midrib slightly raised above, prominently raised below, slightly darker above and noticeably darker below the blade; primary **lateral veins** 13–17 per side, departing midrib at (26°)35–53°, weakly raised and almost inconspicuous above, prominently raised below; tertiary veins prominulous; collective veins usually from the 1st basal vein, sometimes from just above the base; basal veins 1 or 2 pairs, free to the base; **INFLORESCENCES** erect; peduncle 4.5–7.0 cm long, ca. 1 mm diam.; **spathe** 3.2–4.0 cm long, 0.9–1.0 cm wide, ovate-elliptic to triangular-ovate, pale green, drying dark to medium brown; **spadix** cylindroid-tapered, 3.4–4.4 cm long, 3–5 mm diam., stipitate 5–9 mm, pale green, drying dark brown; **flowers** 4 visible per spiral, 2.6–2.7 mm long, 2.2–2.4 wide; tepals smooth with a few large cellular inclusions, lateral tepals 1.3–1.8 mm wide, outer margin 3-sided, inner margin broadly rounded to almost straight, thecae weakly divaricate. **Figure 13.**

Distribution and ecology — *Anthurium echeverryae* is endemic to Colombia, known only Antioquia Department at 1350–2390 m in *Lower montane wet forest* and *Montane rain forest* life zones.



Figure 13: *Anthurium echeverryae* (Zarucchi & Echeverry 4707, MO-3431908). Holotype showing stems, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

Etymology — The species is named in honor of Beatriz Echeverry who collected the type specimen along with James Zarucchi. Beatriz is a specialist on *Heliconia* and lives in Medellín, Colombia. She has many years of experience collecting in Colombia.

Comments — *Anthurium echeverryae* can be compared to *A. cardenasii* Croat and *A. maasii* Croat. However both species have conspicuously longer blades: *A. cardenasii* 20–23 cm long, *A. maasii* 18–19 cm long. Furthermore, *A. cardenasii* has the blade with margins that are parallel (whereas *A. echeverryae*'s blade margin is convex) and that dries a much darker reddish brown. *A. cardenasii* also has a much longer peduncle (19 cm) and is found at a much lower elevation (850 m). Also, *A. cardenasii* grows east of the Cordillera Occidental whereas *A. echeverryae* grows on the western side. *Anthurium maasii* has a longer petiole (7.4–9.0 cm long), and the blade/petiole ratio for *A. maasii* is 2.0–2.5 whereas *A. echeverryae*'s is 3.1–4.6. *Anthurium maasii* does not exhibit exfoliating stems (as does *A. echeverryae*), has a longer peduncle (ca. 13 cm long), and a stipe that is shorter (2 mm as opposed to *A. echeverryae*'s 5–9 mm) (especially shorter in proportion to *A. maasii*'s longer peduncle). Moreover, *Anthurium maasii* has been found only at an elevation of 150 m.

Paratypes: **COLOMBIA. Antioquia:** Salgar, at departmental border, Km 15 of road Salgar-El Dauro (Chocó), 05°59'N 76°07'W, 2280 m, 29 September 1987, *James L. Zarucchi et al.* 5960 (MLO); Frontino, corregimiento Nutlbara, cuenca alta del Río Cuevas, 06°52'03"N 75°44'46"W, 1350 m, 10 July 1987, *Dario A. Sánchez S.* 1473 (MEDEL); Urrao, Road between Urrao and Caicedo, 18 km NE of centro of Urrao, in cañada, disturbed shady primary forest, 06°23'N 76°03'W, 2570 m, 27 February 1989, *John M. MacDougal* 4270 (MO); Abejorral, Vereda Aures arriba, 8 km S del desvío a Mesopotamia, 05°50'N 75°22'W, 2200 m, 16 August 1992, *Ricardo Callejas & Francisco J. Roldán* 10468 (NY); Municipio de Guatapé, Vereda Santa Rita, Finca "El Coral", 1900 m, 31 December 1998, *Juan C. Benavides* 444 (HUA); Mpio. de Salgar, ca. 05°05'N, 76°08'W, 20 July 1928, *Rafael A. Toro* 1271 (NY); 21 July 1928, *Rafael A. Toro* 1292 (NY).

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Anthurium eloroense Delannay & Croat, **sp. nov.** — Type: ECUADOR. El Oro: Road from Pinas to Sta. Rosa, Km 19, 03°40'00"S 79°48:00"W, 460 m, 7 October 1979, *C.H. Dodson, A.H. Gentry & E. Schupp* 8890 (holotype, MO-2706489).

Diagnosis: *Anthurium eloroense* is characterized by its terrestrial habit, lanceolate blades 4.2–4.6 times longer than wide and drying grayish brown or medium brown below, its primary lateral veins and minor veins obscure, and its inflorescence with a green spathe and a purple spadix.

Terrestrial on embankment; internodes 1–3 cm long, 8 mm diam., drying grayish brown; cataphylls persisting as short fragments enclosing the stem. **LEAVES** with **petioles** 8.5–10.0 cm long, 2 mm diam, drying medium brown; **blades** lanceolate, 17–21 cm long, 4.0–4.5 cm wide, 4.2–4.6 times longer than wide, widest near the middle, obtuse and short-acuminate at apex, obtuse to rounded at base, drying medium brown above, grayish brown or medium brown below; midrib flat and concolorous above, round-raised and concolorous below;

primary **lateral veins** obscure, difficult to count; tertiary veins and collective veins obscure; both surfaces moderately smooth on magnification. **INFLORESCENCE** with peduncle 11 cm long, 1 mm diam.; **spathe** green, oblanceolate, 2.5 cm long, 1.2 cm wide, drying light brown, the inner surface with branched veins or laticifers; **spadix** 4.2 cm long, 4 mm diam., purple, sessile; **flowers** 5 visible per spiral, 1.5 mm long and wide; tepals 0.8–0.9 mm wide; inner margin rounded, outer margin 2-sided; stamens not seen. **Figure 14.**

Distribution and ecology — *Anthurium eloroense* is endemic to Ecuador, found only in El Oro Province at 460 m in a *Lower Montane moist forest* life zone.

Etymology — The species is named for the El Oro Province where the type and only specimen was found.

Comments — Due to its elongated blades drying grayish brown below, its obscure primary lateral veins and minor veins, and its purple spadix, *Anthurium eloroense* does not resemble any other *Anthurium* species growing in western Ecuador.

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Anthurium fraseri Engl., Flora Brasiliensis, 3(2): 54. 1878— Type: ECUADOR. *Fraser s.n.* (holotype, G).

Scandent epiphyte; internodes longer than broad, 6–12 cm long; roots lax. **LEAVES** with **petioles** 10–12 cm long, 6–7 mm diam., subterete; cataphylls lanceolate, acute at apex, as long as internodes or shorter than internodes; geniculum 0.6–1.0 cm long; **blades** linear to lanceolate or oblong, 22–35 cm long, 4–9 cm wide, 3.9–5.5 times longer than wide, widest below middle, obtuse and abruptly acuminate at apex, acute at base, coriaceous; primary **lateral veins** many, departing midrib at 40–60°. **INFLORESCENCES** with peduncle 22–34 cm long; **spathe** 6–12 cm long, 0.6–1.3 cm wide, linear-lanceolate, fully expanded; **spadix** cylindroid, subsessile, 6–15 cm long, 4–9 mm diam., obtuse at apex. **Figure 15.**

Distribution and ecology — *Anthurium fraseri* is endemic to Ecuador, found only in Chimborazo Province.

Comments — *Anthurium fraseri* has not been seen since it was re-collected by Sodiro in 1886.

Other specimens seen: Engler (1878) in Fl. Brasiliense states that these are different from the Fraser collection: **ECUADOR. Chimborazo:** in silv. subtrop. m. Chimborazo ad S. Jorge, Oct. 1886, *Sodiro s.n.* (B (destroyed), F-011926 (photo); Chimborazo, Thal Pallatanga bei S. Jorge; flowers November, *Sodiro* 9); Bei Quamaxa, flowers, November, *Sodiro* 10.

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Figure 14: *Anthurium eloroense* (Dodson et al. 8890, MO-2706489). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 15: *Anthurium fraseri* (Fraser s.n., G). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium geniculatum Sodiro, Anturios Ecuador., Adiciones: 2. 1903. — Type: ECUADOR. Cañar: Río Cañar, hacienda de San Nicolás, 1500m, 1903, *A. Rimbach* 86 (holotype, B; photo, F).

Internodes 4–15 long; roots lax. **LEAVES** supervolute; **petiole** shorter than leaf blade, 4–15 long, rounded abaxially, drying reddish brown; geniculum 0.5–1.5 long, bent at a sharp angle from petiole, drying blackish; **blades** linear to lanceolate or oblong, 20–40 cm long, 2–8 cm wide, 5–10 times longer than wide, widest below middle, obtuse and abruptly acuminate at apex, acute at base, margins convex, drying reddish brown below; midrib drying round-raised and concolorous below; primary **lateral veins** and minor veins poorly visible; collective vein 1–2 mm from margin. **INFLORESCENCE** with peduncle 20–40 cm long; **spathe** linear to lanceolate, spreading; **spadix** 4–15 long, 8 mm diam., drying dark brown. **INFRUCTESCENCE** yellow to orange or reddish to red or pinkish. **No figures.**

Distribution and ecology — *Anthurium geniculatum* is endemic to Cañar Province of Ecuador, found near the Río Cañar.

Comments — *Anthurium geniculatum* has not been seen since it was collected by Rimbach in 1903. With its large blades to 40 cm long and 8 cm wide, it does not resemble any other species of Sect. *Stipitata* growing in that area.

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Anthurium gracilipedunculatum K.Krause, Publ. Field Mus. Nat. Hist., Bot. Ser., 8: 78. 1930. — Type: PERU. Huánuco, Yanano, 1800 m, 13–16 May 1923, *J.F. Macbride* 3734 (holotype, S; isotype, F).

Epiphytic climber or terrestrial, sometimes on rocky soil; few roots per node, 1 mm wide, light brown to grayish, spreading to descending; stem terete, greenish to reddish brown or deeply brown, smooth; internodes long and short alternating, long internodes 2.0–6.8 cm long, short internodes 1.2–4.1 cm long, 4–6 mm diam.; cataphylls 1.5–6.8 cm long, sometimes 1-ribbed, triangular-lanceolate, reddish brown to grayish brown, persisting almost entire, papyraceous. **LEAVES** erect to spreading; **petioles** 3.9–15.5 cm long, 0.1–0.2 cm diam., terete, green; sheath 1.0–3.2 cm long; geniculum 3–16 mm long, light green to reddish; **blades** subcoriaceous, lanceolate to ovate-oblong, 7.2–22.2 cm long, 1.2–8.5 cm wide, widest in the lower half, acuminate to acute at apex, acumen 1.2–1.5 cm long, obtuse to subcordate at base, matte or semiglossy on both surfaces, darker above than below; midrib convex above, acute below; primary **lateral veins** 5–9(12) per side, departing midrib at 40–50°, straight to lightly

arcuate-ascending, sunken above and raised below; basal veins frequently 2 pair; collective veins arising at the upper basal vein, 2–14 mm from the margins. **INFLORESCENCE** erect; peduncle 16.1–24.7 cm long, 1–3 mm wide, orange, 1.6–4.1 times longer than the petiole; **spathe** membranaceous, greenish turning purple at anthesis, persistent, spreading, 3.2–6.2 cm long, 0.7–1.0 cm wide, oblong-lanceolate, cordate at base; **spadix** cylindrical, 2.8–7.5 long, 2–4 mm wide, dark purple to orangish red; stipe reddish or greenish to orange, sometimes purplish, 1.5–6.9 cm long; **flowers** square to 4-lobed with margins sigmoid to somewhat straight, 3 mm long and wide; 3–4 flowers visible in the principal spiral, 5–7 flowers visible in the alternate spiral; tepals 4- or 5-sided, inner margins strongly convex; pistils ca. 1 mm long; stigmas oblong-rounded; stamens ca. 1.5 mm long (at anthesis); filaments flattened, lightly concave in the inner face; anthers exerted above the tepals at anthesis; thecae not divaricate. **INFRUCTESCENCE** erect; spadix 8.1 cm long, 0.9 cm diam., reddish orange; berries obovate with stigmas exerted, 5 mm long; seeds 2, oblong with irregular margins. **Figures 16 & 17.**

Distribution and ecology — *Anthurium gracilipedunculatum* is endemic to Peru (Pasco, Oxapampa) at 1800–2600 m in a *Lower Montane moist forest* life zone.

Comments — *Anthurium gracilipedunculatum* is easily confused with *A. pulchellum* Engl., a species known only from Colombia which also has a long stipitate spadix. However, *A. pulchellum* differs from *A. gracilipedunculatum* by its erect spathe, green to greenish yellow spadix, and smaller elliptic leaves with primary lateral veins departing midrib at broader angles.

Other specimens seen: **PERU. Pasco:** Oxapampa, *A. Monteagudo et al.* 9525 (HOXA); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén, Sector San Daniel, 10°26'19"S 75°26'16"W, 2600 m, 1 March 2008, *R. Vásquez et al.* 33870 (G, GH, HOXA, HUT, MO, USM); Distrito Oxapampa. Parque Nacional Yanachaga Chemillén, Refugio el Cedro. Bosque primario, 10°32'S 75°21'W, 2430 m, 21 November 2002, *A. Monteagudo, C. Mateo & G. Ortiz* 4356 (HOXA, HUT, MO, USM); *C. Arias C. et al.* 159 (HOXA); Distrito Oxapampa. PN Yanachaga–Chemillén. Sector San Alberto. Refugio el Cedro. Bosque Montano Primario, 10°33'S 75°22'W, 2600 m, 13 March 2003, *J. Lingán* 341 (MO, USM); *Rodolfo Vásquez et al.* 30070 (HOXA); *Rodolfo Vásquez et al.* 32016 (HOXA).

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Figure 16: *Anthurium gracilipedunculatum* (Macbride 3734, F). Isotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.



Figure 17: *Anthurium gracilipedunculatum* (Lingán 341). Live plant showing stem, petioles, leaf blades (adaxial and abaxil surface) and inflorescences. (photo: J. Lingán)

Anthurium gracilistipum Croat, Aroideana 32E: 54. 2009. — Type: COLOMBIA. Nariño: La Planada, 7 km above Chucunés, on road between Tuquerres and Ricaurte, along summit of hill behind Centro Científico, 01°05'N 78°01'W, 1780 m, 28 July 1988, T.B. Croat 69637 (holotype, MO-4369447; isotypes, B, COL, K, PSO, US).

Epiphyte; internodes 6–12 cm long, 3.5 mm diam. (drying 2 mm diam.); cataphylls subcoriaceous, clasping stems, 4–6 cm long, apiculate to acuminate at apex, pale green, drying medium orangish brown, persisting intact at upper nodes, deciduous or persisting as a few unorganized pale fibers lower on stem. LEAVES with **petioles** 1–4 cm long, drying 1.0–1.5 mm diam., terete, narrowly and weakly sulcate; **blades** narrowly ovate or ovate-elliptic, narrowly long-acuminate at apex, obtuse to rounded at base, (5)9–13 cm long, (1.7) 3.0–6.5 cm wide, 2.5–3.0 times longer than wide, 4–7 times longer than petioles, broadest below middle, thinly coriaceous, dark green and weakly glossy above, slightly paler and semiglossy below, drying dark brown above, yellow-brown below, epunctate on both surfaces; midrib narrowly raised and slightly paler above, convex and paler below; primary **lateral veins** 8 or 9 per side, departing midrib at 45–75°, moderately obscure and weakly quilted above, obscure and slightly darker below; other veins obscure; collective veins two pairs, the inner originating from primary lateral veins near base, 2–6 mm from margin, the outer pair originating from the base and running very close to the margin and usually entirely merging with the margin before the middle of the blade. **INFLORESCENCES** erect; peduncle 2–4 cm long, 1 mm diam.; **spathe** erect, ovate, green tinged purplish, 1.5–3.0 cm long; **spadix** purplish at anthesis, cylindroid, 1.5–2.0 cm long, 1.5–2.5 mm diam, stipitate, stipe 1–5 cm long, 1 mm diam., tinged purplish; **flowers** 2–3 visible per primary spiral, 1.1–1.3 mm long, 1.0–1.2 mm wide. **INFRUCTESCENCES** with **fruiting spadix** brownish-red, 3.5–4.5 cm long, 6–9 mm diam.; berries greenish yellow and exserted before becoming mature. **Figure 18.**

Distribution and ecology — *Anthurium gracilistipum* ranges from Colombia (Nariño, Valle del Cauca) to Ecuador (Carchi) at 1500–2275 m in *Premontane wet forest* and *Lower montane wet forest* life zones.

Comments — *Anthurium gracilistipum* can be most easily confused with *A. terracola* Croat & J. Rodr., a species with a similar blade shape and which also has long-stipitate spadices. That species differs in usually being terrestrial, in having internodes typically broader and proportionately shorter, many more persistent cataphyll fibers, blades that are more nearly elliptic, merely short-acuminate and have much more prominent collective veins.

Other specimens seen: **COLOMBIA. Nariño:** Ricaurte: Reserva La Planada. Quebradas: El Mar - La Calladita, 01°10'N 77°58'W, 1500–1800 m, 30 April 1988, O. Salazar de Benavides 9691 (MO); Reserva Natural La Planada, borde Pialapi, 01°10'00"N 77°55'00"W, 1800 m, 18 November 2003, C. Restrepo 791 (MO); Reserva Natural La Planada, 01°10'00"N 77°55'00"W, 1800 m, 20 July 1992, C. Restrepo 583 (MO); Reserva Natural La Planada.

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Figure 18: *Anthurium gracilistipum* (Croat 69637, MO-4369447). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Sendero Las cruces, 2 km siguiendo el caril divisorio. Baja Convenio v. Humboldt/FES-La Planada LP, 01°10'18"N 78°00'09"W, 1820 m, 2 February 1997, *G. Herrera Ch. 9344* (MO); Reserva Natural La Planada. A 7 km de Chucunés, 01°10'N 77°58'W, 1800 m, 1 November 1987, *O. Salazar de Benavides 8701* (COL, MO, PSO); La Planada, Salazar Finca 7 km above Ricaurte, premontane wet forest, 01°08'N 77°58'W, 1750 m, 29 November 1981, *A.H. Gentry 35194* (COL, MO). **Valle del Cauca:** Cordillera Occidental, La Cumbre, 1600–2100 m, 25–27 September 1922, *E.P. Killip 11586* (NY). **ECUADOR. Carchi:** La Planada, 7 km above Chucunes on road between Tuquerres and Ricaurte. Along trail to summit of hill behind Centro de Científicos, 01°05'N 78°01'W, 1780 m, 28 July 1988, *T.B. Croat 69635* (MO); Embankments along Río Verde. From point at which trail from Rafael's Mountain Finca crosses river, 1.5 km, 00°52'N 78°08'W, 1890 m, 29 November 1987, *W.S. Hoover 1961* (MO); Trail beginning above Rafael Quindí Finca, above Untal (along road to Chical) and partly ascending Cerro Obsura, 00°52'N 78°09'W, 1670 m, 26 November 1987, *W.S. Hoover & S. Wormley 1692* (MO).

Anthurium gruesoi Croat, *Aroideana* 45(2): 319. 2022. — Type: COLOMBIA. Chocó, Nuquí, quebrada Chaqui, 05°40'N 77°16'W, 200 m, February–March 1994, *G.A. Galeano, J. Grueso, O. Hurtado & L. Perea 4754a* (holotype, COL-403332).

Epiphyte at 0.5–1.0 m; internodes 0.5–1.5 cm long; cataphylls semi-deciduous, 6.0–6.5 cm long. **LEAVES** with **petioles** 4.5–7.0 cm long, terete; geniculum 1–2 cm, prominent; **blades** ovate to narrowly elliptic, 25.5–40.5 cm long, 5.5–6.0 cm wide, 4.6–6.7 times longer than wide, acuminate at apex, obtuse at base, greenish brown and matte above, lighter green and semiglossy below, drying dark greenish brown above, medium brown below; midrib bluntly acute, drying slightly darker than the blades, slightly raised above, more prominent below; primary **lateral veins** 16–18 per side, departing midrib at 35–40°, difficult to discern; collective veins 1 or 2 pair arising from the lower primary lateral veins, 3–5 mm from margin. **INFLORESCENCE** 34–37 cm long, peduncle 35 cm long, 4–6 mm wide, ribbed, drying brown; **spathe** 6 cm long, 7 mm wide, lanceolate acuminate, green, drying tan; **spadix** 4.5–13.0 cm long, 4–5 mm wide, cylindric, green-violet, drying brown; **flowers** 3–4 visible per spiral, 1–2 mm long and wide; lateral tepals smooth, 2-sided, 1.0–1.5 mm; **INFRUTESCENCE** with fruits intensely bright red; berries 3 mm wide and 7 mm long, drying tan-brown. **Figure 19.**

Distribution and ecology — *Anthurium gruesoi* is endemic to Colombia (Chocó) at 200 m in a *Montane wet forest* life zone.

Comments — *Anthurium gruesoi* is characterized by its large (25.5–40.5 cm long) ovate to narrowly elliptic blades 4.6–6.7 times longer than wide drying dark greenish brown above. It resembles *A. lasierpense* Croat which also grows at low elevations near the coast in Chocó Department, but the latter differs by its smaller blades (14–20 cm long vs. 25–40 cm for *A. gruesoi*) drying gray-green above, yellowish brown below (vs. dark greenish brown above, medium brown below for *A. gruesoi*).

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Figure 19: *Anthurium gruesoi* (Galeano et al. 4754a, COL-403284). Holotype showing petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium guaparense Delannay & Croat, **sp. nov.** — Type: ECUADOR. Cotopaxi: Río Guapara, +/- 20 Km NW of El Corazón, 00°58'59"S 79°15'10"W, 250 m, 24 June 1967, B. Sparre 17337 (holotype, NY; isotype, S).

Diagnosis: *Anthurium guaparense* is characterized by its obovate-oblongate blades rounded and short acuminate at the apex and cuneate and decurrent at the base, drying medium grayish brown or light pinkish brown, and by its densely granular upper and lower blade surfaces as well as by having three large flowers visible per spiral.

Epiphyte; internodes 2–4 cm long, 5–6 mm diam., drying dark grayish brown; cataphylls ca. 9 cm long, promptly deciduous. **LEAVES** with **petioles** 11–13 cm long, 4 mm diam., drying dark brown; geniculum drying black, 1.2–1.5 cm long; **blades** subcoriaceous, obovate-oblongate, 22.0–23.5 cm long; 7.5–8.5 cm wide, 2.5–3.1 times longer than wide, 1.8–2.0 times longer than petiole, widest in upper third, obtuse to rounded and short-acuminate at apex (acumen 5–7 mm long), cuneate and decurrent at base, drying medium grayish brown or light pinkish brown and semiglossy; midrib slightly raised and concolorous below; primary **lateral veins** 13–15 per side, departing midrib at 60–70°, easily visible below; interprimary veins nearly as strong as primary lateral veins; tertiary veins obscure; collective veins arising from the first primary lateral veins, 4–8 mm from margin; upper and lower surfaces densely granular. **INFLORESCENCE** erect; peduncle 14–15 cm long, 2 mm diam.; **spathe** 6–7 cm long, drying medium brown; **spadix** 13–14 cm long, 5–6 mm diam., drying medium brown; **flowers** 3 visible per spiral, 3.2–3.4 mm long, 3.0–3.2 mm wide; tepals 2.0–2.2 mm wide, inner margin nearly straight, outer margin 2-sided; stamens held at level of tepals; anthers 0.3 mm long, 4 mm wide; thecae scarcely divaricate. **Figure 20.**

Distribution and ecology — *Anthurium guaparense* is endemic to Ecuador, found only in Cotopaxi Province at 250 m in a *Tropical moist forest* life zone.

Etymology — The species is named for the Río Guapara in Cotopaxi Province near which it was found.

Comments — With its oblongate blades, *Anthurium guaparense* resembles *A. guayasense* Croat, but that species has much more elongated blades (6–9 times longer than wide vs. 2.5–3.1 times for *A. guaparense*). It also grows near the coast in Guayas Province rather than near the Cordillera in Cotopaxi Province for *A. guaparense*.

Paratypes: **ECUADOR. Cotopaxi:** Río Guapara, +/- 20 Km NW of El Corazón, 00°58'59"S 79°15'10"W, 250 m, 24 June 1967, B. Sparre 17135 (S); Río Guapara, +/- 20 km NW El Corazón, monsoon forest, 00°58'57"S 79°15'10"W, 250 m, 21 June 1967, B. Sparre 17210 (MO, S).

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Figure 20: *Anthurium guaparense* (Sparre 17337, NY). Holotype showing stem, petiole, leaf blade (abaxial surface) and inflorescence.

Anthurium guatapense Croat **sp. nov.** — Type: COLOMBIA. Antioquia: Municipio Guatapé, Vereda Santa Rita, bosque humedo, ca. 1850 m, 3 November 1983, *L. Albert de Escobar, A. Uribe & J. Vallejo 3719* (holotype, HUA-020272; isotype, MO-3104645).

Diagnosis: *Anthurium guatapense* is characterized by its short internodes, long and slender cataphylls persisting at the upper nodes and with only the basal ones persisting as fibers, elongated subquadrate petioles with moderately acute lateral margins, oblong-linear blades with the collective veins arising from the lowermost primary lateral veins and rather remote from the margins as well as by the long-pedunculate inflorescence with a green, spreading spathe (often mottled or bordered with violet-purple), the sessile, long-tapered, slender spadix and violet-purple, early emergent, slender berries.

Epiphyte to 1.5 – 2.0 m; internodes 0.5–1.5 cm long and diam; cataphylls persisting as shredded fibers 2–5 cm long; **LEAVES** 48–93 cm long with **petioles** 13–24 cm long, 0.3 cm diam., four-sided, sulcate adaxially, geniculum 0.5–0.8 cm, often darker, compacted with lengthwise wrinkles; **blades** long-lanceolate, straplike, 36–70 cm long, 3–7 cm wide, gradually acuminate at apex, attenuate at base, 10–16 times longer than wide, 1.8–3.5 times longer than petiole; midrib drying sulcate on upper surface, broadly raised and rounded below; primary **lateral veins** 14–23 per side, departing midrib at 30–40°, drying inconspicuous and concolorous on upper surface, drying finely and acutely raised and lighter on lower surface; basal veins usually 2 pairs which margin out in a few cm; collective veins arising from one of the lower primary lateral veins and loop connecting to the others, running 4–8 mm from the margin, more prominent than primary lateral veins; upper surface drying dark brown, semi-glossy, epunctate, minutely granular, lower surface drying medium brown, semi-glossy, epunctate, minutely granular. **INFLORESCENCE** 37–73 cm long with peduncle 29–46 cm long, 0.2–0.3 cm diam.; **spathe** 7–9 cm long, 0.7–1.3 wide, yellow with purple borders; stipe occasionally present, 2–3 mm long, **spadix** sessile, 8–27 cm long, 0.3–2.2 cm diam., dark purple; **flowers** 4–5 visible per spiral, 2 mm long, 1.2 mm wide, lateral tepals 1.1 mm wide, outer margin 2-sided, inner margin slightly rounded, gaping upward; berries red, 8–9 mm long, 4–5 mm diam. **Figure 21.**

Distribution and ecology — *Anthurium guatapense* is endemic to Colombia, known only from the type locality in Antioquia Department in the Municipio de Guatapé at 1700–1850 m elevation. The estimated coordinates, 06°12'N 76°06'W, fall in an area bounded by 3 life zones, *Lower montane rain forest*, *Premontane wet forest* and *Lower montane wet forest*.

Etymology — The species is named for the type locality at Guatapé Municipio in the Department of Antioquia in Colombia.

Comments — With its long and very narrow blades 10–16 times longer than wide, *Anthurium guatapense* is most similar to *A. guayasense* Croat which grows further south in Chocó Department, but the latter is distinguished by its long-stipitate spadix (rather than being sessile in the case of *A. guatapense*). It also grows at low elevations (600 m) west of the Cordillera Occidental rather than at 1700–1850 m near the top of the Cordillera in the case of *A. guatapense*.



Figure 21: *Anthurium guatapense* (Albert de Escobar *et al.* 3719, HUA-020272). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and infructescence.

Paratypes: **COLOMBIA. Antioquia**: Municipio Guatapé, Vereda Santa Rita, 05°37'00"N 75°54'55"W, ca. 1850 m, 6 September 1984, *L. Albert de Escobar, A. Uribe & J. Vallejo* 4695 (HUA); 14 March 1985, *L. Albert de Escobar, A. Uribe & J. Vallejo* 4981 (HUA).

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Anthurium guayasense Croat, **sp. nov.** — Type: ECUADOR. Guayas: Comuna Loma Alta, al este de El Suspiro hacia el bosque, Bosque húmedo tropical, 01°53'S 80°37'W, 300 m, February 1997, *X. Cornejo & C. Bonifaz* 5562 (holotype, MO-4931350; isotype, GUAY).

Diagnosis: *Anthurium guayasense* is characterized by its elongate, narrow internodes, intact cataphylls with only the basal portion persisting, oblanceolate brown-drying blades 6.0–6.9 times longer than wide and widest near the apex, its obscure primary lateral veins and minor veins, and its inflorescence with a green reflexed spathe and a brown spadix.

Epiphyte; internodes 3–5 cm long, 5 mm diam., drying medium dark, yellow-brown, closely ribbed; cataphylls 5–6 cm long, intact, reddish brown, persisting as short fragments. **LEAVES** erect-spreading; **petioles** 12–13 cm long, 2 mm diam., drying medium brown, narrowly and deeply sulcate toward the apex; geniculum 8–10 mm long, drying darker; **blades** oblanceolate, 23–31 cm long, 3.8–4.5 cm wide, 6.0–6.9 times longer than wide, 1.8–2.5 times longer than petioles, widest near the apex, obtuse, short-acuminate and down-turned at apex, acute and subrounded at base, drying dark brown and semiglossy above, medium brown and glossy below; midrib flat and concolorous above, round-raised and reddish below; primary **lateral veins** obscure, difficult to count, closely spaced; minor veins obscure; surfaces lacking any noticeable features. **INFRUDESCENCE** moderately short-pedunculate; peduncle erect, 15 cm long; **spathe** reflexed, 4.5 cm long, 5 mm wide, green; **spadix** 10 cm long, 6 mm diam. near the base, 4 mm near the apex, brown, drying blackish. **Figure 22.**

Distribution and ecology — *Anthurium guayasense* is endemic to Ecuador, found only in Guayas Province at 300 m in a *Tropical moist forest* life zone.

Etymology — The species is named for the Guayas Province of Ecuador the only place where it has been found.

Comments — With its oblanceolate blades, *Anthurium guayasense* resembles *A. guaparense* Delannay & Croat, but that species has much shorter blades (2.5–3.1 times longer than wide vs. 6–9 times for *A. guayasense*). *Anthurium guayasense* also grows near the coast in Guayas Province rather than near the Cordillera in Cotopaxi Province for *A. guaparense*.

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Figure 22: *Anthurium guayasense* (Cornejo & Bonifaz 5562, MO-4931350). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium hermescuadrosii Croat, **sp. nov.** — Type: COLOMBIA. Bolívar: Serranía de San Lucas, Vereda de Libertad, ca. 150 m elevation, *H. Cuadros* 3682 (holotype, JBGB-5943).

Diagnosis: *Anthurium hermescuadrosii* is characterized by its terrestrial habit, elongate internodes, deciduous cataphylls, slender sulcate petioles, oblong, long-acuminate, greenish brown-drying blades which are inequilaterally rounded at base with 2 pairs of basal veins as well as by the slenderly pedunculate inflorescence with a narrow white spreading spathe and a narrowly cylindroid white spadix.

Terrestrial; internodes (1.7)4.5–5.0 cm long, drying 3 mm diam., finely and acutely ribbed, grayish, sparsely lenticellate; **petioles** 3.5–4.2 cm long, drying 1.5 mm diam., narrowly and deeply sulcate, grayish brown, weakly several-ribbed adaxially; **blades** oblong, (9.5)14.0–19.1 cm long, 1.8–3.4 cm wide, 4.9–6.4 times longer than wide, 3.1–5.0 times longer than petioles, narrowly long-acuminate at apex (acumen ca. 1.5 cm long), inequilaterally rounded at base, drying grayish brown and matte above, grayish green and weakly glossy below; midrib narrowly raised and concolorous above, narrowly rounded and concolorous below; primary **lateral veins** 6–8 per side, moderately weak, departing midrib at 40–50°, weakly raised and undulate above, narrowly raised and concolorous below; tertiary veins moderately obscure. INFLORESCENCE to 20.5 cm long; peduncle 13 cm long, 1.5 mm diam.; **spathe** white, 3 cm long, 4 mm wide, spreading, acuminate; **spadix** white, 6 cm long, 2 mm diam. (stipe present or absent, not visible owing to a missing portion of base of spadix); **flowers** 3–4 visible per spiral, 1.3 mm long, 1.2–1.3 mm long, 1 mm wide; laterals 0.7 mm diam., turned up prominently against the pistils, inner margin broadly rounded, outer margin 2-sided; stamens held at level of tepals. **Figure 23.**

Distribution and ecology — *Anthurium hermescuadrosii* is endemic to Colombia, known only from the type locality in Bolívar Department in the Serranía de San Lucas at ca. 150 m elevation in a *Tropical moist forest* life zone.

Etymology — The species is named in honor Colombian botanist Hermes Cuadros from the Universidad del Atlántico in Baranquilla. Hermes has many new and interesting Araceae during his long career collecting in northern Colombia.

Comments — *Anthurium hermescuadrosii* resembles *A. pulchellum* Engl., but that species has more coriaceous blades that dry dark greenish brown instead of grayish brown in the case of *A. hermescuadrosii*. *A. pulchellum* also grows at high elevations (1800–2400 m) on the western slopes of the Cordillera Occidental rather than at low elevations (150 m) east of the Cordillera in Bolívar Department.

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Figure 23: *Anthurium hermesquadrosii* (Cuadros 3682, JBGB-5943). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium huilense Delannay & Croat, **sp. nov.** — Type: COLOMBIA. Huila: La Plata, Vereda Agua Bonita, Finca Merenberg, 1200–1300 m, 17 July 1975, *S. Díaz P., L. Contreras & J.H. Torres* 667 (holotype, COL-153198).

Diagnosis: *Anthurium huilense* is characterized by its long, thick internodes, its narrowly ovate-elliptic blades rounded at the base and widest in lower half and with all veins distinctly paler, and its inflorescence with a thin cylindrical spathe tightly clasping the unexposed stipe.

Terrestrial or epiphytic; internodes 8–10 cm long, 8–10 mm diam., drying light pinkish brown; cataphylls 7.0–7.5 cm long, withering but persisting semi-intact at most of the upper nodes. LEAVES with **petioles** 7.0–9.5 cm long, 2 mm diam., drying medium brown; **blades** ovate-elliptic, 15.5–17.0 cm long, 5.5–6.0 cm wide, 2.8–2.9 times longer than wide, obtuse and short-acuminate at apex, rounded at the base, widest in lower half, dark green, matte above with venation paler, yellow-green below, drying medium yellow-brown above, grayish green below; all veins distinctly paler than the blade (on live and dry specimens); midrib flat above, slightly raised below; primary **lateral veins** 5 or 6 per side, spaced 1.5 cm, departing midrib at 40–50°, slightly raised below; basal veins 2 pairs; tertiary veins obscure; collective veins arising from the upper basal veins, not prominent, 7–11 mm from margin; upper surface minutely dark-speckled and sparsely short pale-lineate; lower surface smooth, obscurely pale blotched throughout. INFLORESCENCE erect, drying medium green; peduncle 5–6 cm long, 1 mm diam.; **spathe** 3.5 cm long, cylindrical and closely clasping the base of the stipe, yellowish; **spadix** narrow, 2.5–4.2 cm long, 2–3 mm diam., green; stipe very long (5.5–6.7 cm long) and enclosed by the spathe in its lower half; **flowers** 3 visible per spiral, 2.1–2.8 mm long, 1.8–2.0 mm wide, drying greenish yellow-brown, matte with pale cellular inclusions; lateral tepals 1.0–1.3 mm wide; inner margin broadly rounded, outer margin 3-sided; pistils with style slit-like, 0.4 mm long. **Figure 24.**

Distribution and ecology — *Anthurium huilense* is endemic to Colombia, found only in Huila Department at 1200–1300 m in a *Lower montane moist forest* life zone.

Etymology — The species is named for the type locality in Huila Department of Colombia, the only place where it has been found.

Comments — Due to its unusual blade shape, collective vein widely spaced from margin, and its very long stipe enclosed by the spathe in the lower half, *Anthurium huilense* is quite unique but it is similar to *A. gracilistipum* Croat from the Cordillera Occidental in Nariño. However, *A. gracilistipum* differs by having shorter petioles less than 4 cm long, more ovate blades with the collective veins closer to the margin (2–6 mm).

The type locality of *Anthurium huilense* at Finca Merenberg belonged to German immigrants who faithfully preserved the forest in a large portion of their dairy farm property. Gunther Bush and his wife invited and hosted many botanists over several decades to collect on the property and as a result it became one of the best-known spots in Colombia. It is exceedingly rich in species and there are many more species to be published from the region.

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Figure 24: *Anthurium huilense* (Díaz et al. 667, COL-153198). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium incomptum Madison, Selbyana 2(2&3): 286. 1978. — Type: ECUADOR. Los Ríos: Río Palenque Science Center, km 56 Quevedo-Sto. Domingo. Tropical wet forest. 00°35'00"S 79°22'00"W, 200 m, collected, 7 September 1978, *M.T. Madison 2114* (holotype, SEL).

Epiphyte, internodes longer than broad, 2–10 cm long; roots lax; cataphylls deciduous or persisting intact, 10–29 cm long. **LEAVES** with **petioles** 15–27 cm long, 3–5 mm diam., rounded abaxially, margins obtusely raised; geniculum 1.5–5.0 cm long; **blades** obovate to oblanceolate, oblong or elliptic, 25–59 cm long, 5.0–18.5 cm wide, 3.2–5.0 times longer than wide, acute or abruptly acuminate at apex, acute or attenuate at base, widest above middle, drying dark reddish brown above, medium reddish brown below; midrib broadly convex or round-raised above, broadly convex or round-raised below; primary **lateral veins** 8–12 per side, departing midrib at 40–50°; basal veins absent to not clearly visible; collective veins arising from the primary lateral veins, 3–10 mm from margin. **INFLORESCENCES** shorter than leaves; peduncle 16–42 cm long; **spathe** 6–16 cm long, 1.2–2.2 cm wide, linear to lanceolate fully expanded, erect or spreading, green to greenish or violet-purple to purple to magenta; **spadix** cylindroid or tapered, 6–20 cm long, 4–8 mm diam., magenta to purplish to maroon or brown, sessile. **INFRUCTESCENCE** with berries yellow to orange or reddish to red or pinkish, seeds 1 or 2 per locule. **Figures 25–27.**

Distribution and ecology — *Anthurium incomptum* ranges from Panama (Veraguas) to Colombia (Chocó, Nariño, Valle del Cauca) and Ecuador (Bolívar, Carchi, Cotopaxi, El Oro, Esmeraldas, Imbabura, Los Ríos, Pichincha) at 0–2400 m in multiple life zones.

Comments — *Anthurium incomptum* resembles *A. subandinum* Engl. which also grows in that area of Ecuador, but it differs from the latter by its more elongated blades (to 5 times longer than wide) that are acute at the base, rather than being obtuse or rounded as is the case for *A. subandinum*. It is important to note that clonotypes (specimens made from the living type plant) were distributed to AAU, F, MEXU and MO).

Other specimens seen: **COLOMBIA. Chocó:** Hoya del Río San Juan. Quebrada Máncamo, afluente del Río Tamaná. Cerrito en la March gen izquierda, 04°57'N 76°38'W, 11 April 1979, *E. Forero et al.* 5050 (COL); *H. Valois-Cuesto* 817 (CHOCO); About 2 km south of Río Baudo, near Estero del Medio, east of the latter, 04°57'00"N 77°22'00"W, 2 February 1967 – 29 March 1967, *H.P. Fuchs & L. Zanella* 21954 (COL, MO, US); *H.P. Fuchs & L. Zanella* 21962 (MO, US); Municipio de Pizarro, carretera Pié de Pepé-Berrecul. Km. 21–24, 04°57'N 77°22'W, 17 November 1985, *J. Espina* Z. 1913 (COL, MO); Along road between Bolívar and Quibdó, 41 mi W of Bolívar. Premontane moist forest, 05°41'N 76°22'W, 550 m, 16 December 1980, *T.B. Croat* 52139 (MO); Road between Bolívar and Quibdó between Km 137 and 138 Markers, 79–80 km E of Quibdó, 05°45'00"N 76°21'30"W, 910–920 m, 11 March 1984, *T.B. Croat* 57355 (CHOCO, COL, MO); Along road between Quibdo and Las Animas, ca 1 km N of Las Animas; disturbed forest with large trees missing, 05°14'N 76°40'W, 100 m, 15 April 1983, *T.B. Croat* 55967 (MO); Along road between Quibdo and Lloro ca 5 km E of turnoff along Quibdo-Las Animas road ca 1 km S of ferry over Río Atrato, 05°29'N 76°35'W, 150 m, 16 April 1983, *T.B. Croat* 56010 (MO); Along road between Quibdo and Yuto, 12 km S of Quibdo, 05°38'N 76°40'W, 60 m, 21 April 1983, *T.B. Croat* 56245 (MO);



Figure 25: *Anthurium incomptum* (Madison 2114, MO- 2730980). Isotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 26: *Anthurium incomptum* (Madison 2114, MO- 3880265). Isotype showing petiole, leaf blade (abaxial surfaces) and inflorescence.



Figure 27: *Anthurium incomptum* (Croat 61501). Live plant showing leaf blades (adaxial surface), and inflorescences (photo T.B. Croat).

Along road between Choco and Medellin, at km 185, 14 km E of Tutunendo, 05°44'N 76°43'W, 300 m, 22 April 1983, *T.B. Croat 56283B* (MO); Along road between Quibdó and Istmina, at Km 14 S of Quibdó. Tropical rain forest, 05°32'N 76°37'W, 100 m, 17 December 1980, *T.B. Croat & Á. Cogollo P. 52193* (MO); Along road between Las Animas and Quibdó, 9.4 km N of Las Animas. GPS coordinates, 05°21'50"N 76°37'14"W, 90 m, 13 August 1997, *T.B. Croat & J.F. Gaskin 80837* (CHOCO, MO). **Nariño:** Ricaurte. Along road between Altaquer and Tumaco; Río Nambí; 7 km W of Altaquer, 01°18'N 78°04'W, 1100–1130 m, 20 March 1990, *T.B. Croat 71613* (MO). **Valle del Cauca:** Mouth of Río Naya to mouth of Río Yurumanguí, 03°21'08"N 77°23'59"W, 0 m, 24 February 1983, *A.H. Gentry & A. Juncosa 40704* (COL, MO); Lower Calima R., 03°59'47"N 76°58'28"W, 0 m, *H.F. Winters 9889* (MO, US); Bajo Calima; Concesión Pulpapel/Buenaventura, 03°55'N 77°00'W, 100 m, 31 August 1984, *M. Monsalve B. 302* (MO); Bajo Calima Region; along road between Buenaventura and Málaga; vicinity of Km 50.7, right (N side) of road in deep ravine along stream, 04°02'N 77°05'W, 12 July 1993, *T.B. Croat & D. Bay 75671* (MO, US); Vicinity of Bajo Calima; along road from Buenaventura to Málaga, Km 49, 04°02'N 77°04'W, 150 m, 17 July 1993, *T.B. Croat & D. Bay 75837* (MO); Escalarete. Cultivated at Jardín Botánico de San Jorge, 19 September 2012, *T.B. Croat et al. 103777* (MO); Buenaventura. between Buenaventura and Río Calima, Cartón de Colombia Forest Concession Area, 11 km NW of Cali-Buenaventura Highway. 18 year old regrowth, forest plot behind Pulpapel head- quarters, 03°56'30"N 77°01'00"W, 17 July 1988, *T.B. Croat 69309* (MO); between Buenaventura and Río Calima, Cartón de Colombia Forest Concession Area, 11 km NW of Cali-Buena- ventura Highway. 18 year old regrowth, forest plot behind Pulpapel head- quarters, 03°56'30"N 77°01'00"W, 17 July 1988, *T.B. Croat 69337* (MO); Bajo Calima, within Forestry Concession

of Cartón de Colombia, between Buenaventura & Río Calima, 6.3 Km north of Frente La Brea, Km 18 on main road, about 6 km southeast of village of San Isidro on Río Calima; primary forest, 04°02'N 77°03'W, 50 m, 7 July 1986, *T.B. Croat 61315* (HUA, COL, CUV, MO); Bajo Calima Region, along road from Buenaventura to Málaga vicinity, Pulpapel Headquarters (located at km 11), at km. 9, unburned regrowth of primary forest, 03°56'N 77°01'W, 185 m, 3 February 1990, *T.B. Croat 70117* (B, CAS, K, M, MO, NY, QCNE, UB, US, VEN); Bajo Calima Region; along road between Buenaventura and Málaga, Km 51.7 from main Cali-Buenaventura Hwy, 04°03'N 77°05'W, 16 July 1993, *T.B. Croat & D. Bay 75763* (MO, NY, US); Bajo Calima Region: along the road between Buenaventura-Málaga at km 51.3, deep gorge in virgin forest, 04°09'N 77°11'W, 100 m, 8 February 1990, *T.B. Croat & J. Watt 70376* (CM, MEXU, MO). **ECUADOR.** Cultivated plants of Selby Botanical Garden, Sarasota, Florida, September 1983, *SEL 77-2072* (MO); Cultivated plants at Ecuagenera, 1 November 2018, *T.B. Croat 107661* (MO). **Azuay:** Parroquia: Molleturo. Camino desde Santa Cruz hasta Manta Real, 02°48'S 79°26'W, 700–1200 m, 14 January 1991, *A. Castellanos 216* (QCA). **Bolívar:** Guaranda. Recorrido entre el recinto Chazo Juan hasta el km 3 del sendero a la Chorrera de Moras. Bosque Húmedo Pre-Montano, 01°23'36"S 79°08'59"W, 1030 m, 18 February 2005, *H. Vargas et al. 5063* (MO, QCNE). **Carchi:** Canton Tulcán, along road from El Chical to Tulcán, along side road to Chilma Bajo, 1 3/4 km from turnoff at Chilma Alto, 00°51'26"N 78°03'35"W, 2230 m, 18 August 2013, *T.B. Croat et al. 104955* (MO); Along road from Lita to Baboso, along Río Baboso, near bridge, 00°53'00"N 78°27'00"W, 672 m, 9 October 2012, *T.B. Croat et al. 104082* (MO); Tulcán. Along road between El Chical and Tulcan, south of Chilma Alto, N of Maldonado, 00°51'56"N 78°03'55"W, 2410 m, 15 October 2012, *T.B. Croat et al. 104350* (MO). **Cotopaxi:** 1 km N of Pacayacu, 14 km N of Río Guasaganda, at Guasaganda, 22 km N of Pal March (village NE of La Maná on Quevedo-Latacunga rd. 13 km NE of La Maná) along riverbank at edge of pasture, 00°41'30"S 79°06'30"W, 670 m, 11 October 1983, *T.B. Croat 57077* (MO); La Maná. Along road between Guayacan (13.1 km N of La Maná) and Montinuevo (N of Pucayacu), at end of road which branches to the right 23.6 km from Guayacan, in vicinity of Escuela Quindigua, 10.7 km beyond the junction in road to Escuela Quindigua, 00°39'S 79°05'W, 1480–1530 m, 9 April 1992, *T.B. Croat 73741* (MO, S). **El Oro:** 10 km W of Piñas in patch of woods dominated by Gonzalgunia, 03°40'07"S 79°45'00"W, 900 m, 8 October 1979, *C.H. Dodson et al. 8978* (MO); Selby Accession 76-15-43, 9 April 1986, *E.A. Christenson 1452* (MO); Piñas. Buffer zone/border region of Reserva Ecológica Buenaventura; 11 km (air-km) north of the Entrada la Virgen on road towards Viron. Premontane wet forest, 03°17'S 79°49'W, 1300–1700 m, 13 May 2003, *J.L. Clark 7996* (COL, HUA, MO, QCNE, US). **Esmeraldas:** Along road from San Lorenzo and Mataje on border with Colombia, 1.5 Km W of end of road near Mataje, 01°21'05"N 78°42'54"W, 40 m, 14 July 2000, *T.B. Croat et al. 83968* (MO); Reserva Cotacachi-Cayapas, al pie de río Bravo, en interior del bosque. Bosque muy húmedo tropical, 00°39'N 78°59'W, 50 m, 6 May 1998, *X. Cornejo S. & C. Bonifaz B. 6252* (GUAY, MO); Reserva Ecológica Manglares Cayapas-Mataje (REMCAM), El Viento, 01°21'N 78°50'W, 0 m, 22 March 2010, *X. Cornejo S. & M.A. Canga Arguelles 8196* (MO); Eloy Alfaro. Reserva Ecológica Cotacachi Cayapas. San Miguel. Propiedad de Miguel Chapiro. Bosque húmedo tropical. Parcela Permanente 7, 00°45'N 78°55'W, 130 m, 15 January 1993, *G.A. Tipaz 2664* (MO, QCNE); Quinindé. Bilsa Biological Station. Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel. Premontane Wet Forest, 00°21'N 79°44'W, 400–600 m, 26 February 1996, *J.L. Clark 2162* (QCNE); Bilsa Biological Station. Mache

Mountains, 35 KM W of Quinindé, 5 KM W of Santa Isabel. Premontane wet forest. Cube tributary from Manuel's house to Humberto Alcibar's house (invador), 00°21'N 79°44'W, 400–600 m, 20 November 1994, *J.L. Clark et al.* 294 (F, MO, QCNE); The Mache-Chindul Ecological Reserve. Bilsa Biological Station. Mache Mountains, 35 km W of Quinindé. Premontane wet forest, 00°21'N 79°44'W, 500 m, 1–10 January 1997, *J.L. Clark et al.* 3729 (MO, QCNE); The Mache-Chindul Ecological Reserve. Bilsa Biological Station. Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel. Premontane wet forest. Near permanent plot #1, 00°21'N 79°44'W, 500 m, 6 February 1996, *J.L. Clark et al.* 1941 (MO, QCNE); Fundacion Paraiso de Papagayos. Centro de Rescate de Aves y Mamíferos. Km 2 via Esmeraldas. Tropical wet forest, 00°20'N 79°28'W, 100–300 m, 6–8 July 1996, *J.L. Clark et al.* 2790 (MO, QCNE, WU); Bilsa Biological Station. Montañas de Mache, 35 km W of Quinindé, 5 km W of Santa Isabel. S side of ridge SW of banana plantation behind Station. PriMarch y forest. Premontane Wet Forest, 00°21'N 79°44'W, 400–600 m, 8 November 1994, *M.S. Bass & N. Pitman* 206 (MO, QCNE); Bilsa Biological Station, 00°21'00"N 79°42'00"W, 450–650 m, October 2006, *N. Köster & A. Schnell* 1916 (BONN, MO, QCA, QCNE); Noreste de Las Golondrinas. Cooperativa 3 de Septiembre en sector San Isidro, cerca a Río Jordán, 00°20'N 79°12'W, 300 m, 9 October 1993, *Walter A. Palacios* 11484 (MO, QCNE).

Imbabura: Cotacachi. Parroquia: García Moreno. Cordillera de Toisán. Cerro de la Plata. Bosque Protector Los Cedros. Sendero Camino del Oso (north of Lodge). Premontane/montane wet forest, 00°01'N 78°46'W, 1500–2600 m, 19 March 2003, *J.L. Clark* 7438 (MO, QCNE, US).

Los Ríos: Río Palenque Biological Station, km 56, 00°35'S 79°22'W, 150–220 m, 26 October 1974, *C.H. Dodson* 5671 (MO, RPSC, SEL, US); Km 56, 00°35'20"S 79°22'21"W, 200 m, *M.T. Madison* 4143 (MO).

Pichincha: Immediately below the confluence with Río Toachi, 00°06'00"S 79°14'00"W, 300 m, 16–18 March 1959, *G.W. Harling* 4514 (MO, S); Immediately below the confluence with Río Toachi, 00°06'00"S 79°14'00"W, 300 m, 16–18 March 1959, *G.W. Harling* 4511 (S); ENDESA Reserve, 00°03'N 79°07'W, 650–800 m, 19 July 1984, *J.L. Jaramillo* 6773 (QCA); ENDESA Reserve, 00°03'N 79°07'W, 650–800 m, August 1984, *J.L. Jaramillo* 6990 (QCA); ENDESA Reserve, 00°03'N 79°07'W, 650–800 m, 1984, *J.L. Jaramillo* 7582 (QCA); Carretera Quito-Puerto Quito, Km 113, 10 km al norte de la carretera principal, bosque virgen y alrededores de la reserva, 00°05'N 79°02'W, 800 m, 8 December 1984, *J. Rodríguez* 379 (MO, QCA); Km 113, 10 km N of main highway, 00°05'N 79°02'W, 800 m, 8 December 1984, *J. Rodríguez* 374 (QCA); Carretera Quito-Puerto Quito, km 113, 10 km al norte de la carretera principal, bosque virgen y alrededores de la reserva, 00°05'N 79°02'W, 800 m, 25 February 1984, *J. Rodríguez* 228 (CR, MO, QCA); Carretera Quito-Puerto Quito, Km 113, 10 Km al Norte de la carretera principal, bosque virgen alrededores de la reserva, 00°05'N 79°02'W, 800 m, 17 August 1984, *J. Rodríguez* 315 (QCA, S); carretera Quito-Puerto Quito, Km 113, 10 Km al Norte de la carretera principal, bosque virgen alrededores de la reserva, 00°05'N 79°02'W, 800 m, 24 May 1984, *J. Rodríguez* 317 (QCA); Carretera Quito-Puerto Quito, km 113, 10 km al norte de la carretera principal, bosque virgen y alrededores de la reserva, 00°05'N 79°02'W, 800 m, 28 February 1984, *J. Rodríguez* 245 (CR, MO, QCA); Reserva de Endesa. NE of Vicente Maldonado, 00°06'N 79°02'W, 600 m, 2–3 June 1984, *S. Lagaard* 52242 (AAU, QCA); Vicinity Hotel Tinalandia, S of hwy. between Santo Domingo de los Colorados & Aloag; along Río Toachi; 9.6 km E of Santo Domingo de los Colorados, 00°16'S 79°07'W, 600 m, 2 April 1983, *T.B. Croat* 55676 (B, MO, QCA); Western slopes of Volcán Pichincha, along road from main Calcalí-Nanegalito Road, departing main road 4.3 km E of Nanegalito, 11.7 km N on old road to Mindo, 6.6 km

S of Tandayapa, 12.6 km S of junction with main asphalt highway near Mindo, 00°01'19»S 78°00'W, 2277 m, 3 September 2004, *T.B. Croat 94028* (MO); Road from Calacalí to Tandayapa, at Km 22 (west of junction into town of Calacalí), 00°01'03»N 78°36'25»W, 1000 m, 20 July 1998, *T.B. Croat & J. Whitehill 82734* (MO, S); Reserva Endesa, 9 km N of Km. 113 on Quito- Pto. Quito Highway, 00°05'N 79°02'W, 750 m, 15 July 1986, *T.B. Croat & J. Rodríguez 61496* (MO, QCA); Reserva Endesa, about 8 km North of Km. 113 on Quito-Pto. Quito Highway, vicinity of Río Cabayales, 00°05'N 79°02'W, 700 m, 16 July 1986, *T.B. Croat & J. Rodríguez 61501* (MO); Vicinity of Santo Domingo de Los Colorados; vicinity of Peripa SW of Santo Domingo; virgin forest, 00°09'34»S 78°28'43»W, 250 m, 25 June 1998, *T.B. Croat & M. Nuñez 82097* (MO); Along road between Pacto and Cielo Verde (Prov. Imbabura) on Río Guayabamba, 10.2 km SW of Pacto, 34.8 km SW of Armenia junction with Nanegalito-Pto. Quito Hwy, 00°09'42»N 78°41'23»W, 1619 m, 25 March 2006, *T.B. Croat et al. 96349* (AAU, CAS, COL, CUV, DUKE, F, GB, GH, GOET, HUA, K, M, MEXU, MO, NY, PMA, QCA, QCNE, RSA, UB, US, S); Along road from San Miguel dos Bancos to Pacto, 50 km NE of junction of road to Cielo Verde, 00°09'37»N 78°50'40»W, 800 m, 12 February 2005, *T.B. Croat, C. Davidson & S.R. Christoph 94547* (CUVC, HUA, MO, US); Along old road from Mindo to Tandayapa departing main Nanegalito-Puerto Quito Hwy, just east of turn-off to Mindo, 2.2 km from main asphalt highway, 00°01'46»S 78°44'27»W, 1920 m, 16 October 2007, *T.B. Croat et al. 100052* (B, MO); Quito. 00°05'N 79°02'W, 800 m, 3 February 1984, *J. Rodríguez 265* (QCA, S); Along road between Calacalí and Nanegalito, 24.6 km W of Mitad del Mundo, 16.8 km W of Calacalí, 14 km E of bridge at junction of road to Tandayapa and Nanegalito, 00°01'N 78°34'W, 2175 m, 11 March 1992, *T.B. Croat 72886* (MO); Reserva Mashpi, along road leading into reserve, departing main Pacto-San Miguel de los Bancos Road, 14.0 km N of plaza in Pacto, then 4.6 km on road to left, Valley of Quebrada Mashpi, main gate is 3 km from road, this stop was 2.9–3.5 km from gate, 00°09'23»N 78°51'55»W, 1150 m, 6 December 2008, *T.B. Croat 101133* (MO); Santo Domingo de Los Colorados. Along Río Baba, 28 km S to Santo Domingo, 00°22'36»S 79°16'11»W, 350 m, 3 November 1961, *C.H. Dodson & L. B. Thien 1180* (MO); Bosque humedo tropical, 00°00'09»S 79°22'53»W, 140 m, April 1999, *G. Benavides 489*; Bosque humedo tropical, 00°09'34»S 78°28'43»W, 250 m, 18 March 1999, *Gladys Benavides & V. Calazacón 430*. **PANAMA.** **Veraguas:** Ridge of Cordillera de Tute, along trail to Cerro Tute, ca 3-4 km past Escuela Agrícola Alto de Piedra, just W of Santa Fé, 08°32'N 81°07'W, 800–1400 m, 20 March 1982, *S. Knapp & W.J. Kress 4366* (MO).

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Anthurium jorgei Croat, **sp. nov.** — Type: COLOMBIA. Valle del Cauca: Municipio Cali, Finca Zingara, km 6 on road from the main Cali to Buenaventura Road to Dapa, departing from km 18, Cordillera Occidentale, eastern slope, cloud forest, 03°32'N 76°36'W, 19 February 2000, P. Silverstone-Sopkin, N. Paz & J. Giraldo G. 8461 (holotype, CUV-38292).

Diagnosis: *Anthurium jorgei* is characterized by its climbing epiphytic habit, elongate internodes, deciduous cataphylls, short-petiolate, narrowly oblong-lanceolate, narrowly acuminate blades with moderately obscure primary lateral veins and a narrowly triangular upper midrib as well as by the pale green, reflexed-spreading spathe and short-stipitate, narrowly cylindroid-tapered, pale green spadix.

Climbing epiphytic herb to less than 1 m; internodes 3.2–6.7 cm long, drying 1.5–2.0 mm diam., light brown, finely ribbed, semiglossy; cataphylls promptly deciduous; **petioles** 1.5–3.0 cm long, 1.0–1.5 mm diam., sulcate adaxially, drying light brown, matte, finely ridged; geniculum ca. 8 mm long, scarcely darker on drying, sulcate; **blades** elliptic-lanceolate, 11.3–12.1 cm long, 3.0–3.5 cm wide, 3.4–3.8 times longer than wide, widest near the middle, narrowly long acuminate at apex, acute to obtuse at base, drying yellowish brown and weakly glossy above, brownish green and semiglossy below; midrib narrowly and acutely raised and concolorous above, narrowly rounded and slightly paler below, drying finely ridged and densely granular below; primary **lateral veins** 10–12 per side, departing midrib at 35–55°, narrowly rounded on both surfaces, moderately obscure above, barely discernable beneath; collective veins arising from the base, 2–4 mm from margins, weakly loop-connecting the primary lateral veins, a second pair of collective veins joining the margin within about 2 cm from the base; tertiary veins weakly and evenly raised on both surfaces, the areoles sparsely granular. **INFLORESCENCE** erect-spreading; peduncle 1.8 cm long, drying 0.6 mm diam., acutely ribbed, light brown, matte; **spathe** light green, reflexed-spreading, 2.5 cm long, 6 mm wide, abruptly acuminate at apex; **spadix** pale green, stipitate 3.2 cm (stipe drying 0.8 mm diam.), 4.4 cm long, 3 mm diam at base, 2.5 mm diam. near apex; **flowers** 3–4 visible per spiral, 2.7–2.9 mm long, 2.0–2.2 mm wide; tepals drying moderately smooth, yellow-brown; lateral tepals 1.2 mm wide, the outer margins 2-sided, inner margin broadly rounded, almost transparent; stamens held at the level of the tepals; anthers 0.3–0.4 mm long, 0.5 mm wide, slightly divaricate. **Figure 28.**

Distribution and ecology — *Anthurium jorgei* is endemic to Colombia, known only from the type locality in Valle del Cauca Department on the eastern slopes of the Cordillera Occidental at 1900 m in a *Lower montane rain forest* life zone.

Etymology — The species is named in honor of Jorge Giraldo who, along with Phillip Silverstone-Sopkin and Nestor Paz, collected the type specimen. Jorge's family also owns the property and is preserving the forest there in this pristine spot where several new species have been discovered.



Figure 28: *Anthurium jorgei* (Silverstone-Sopkin et al. 8461, CUVC-38292). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Comments — *Anthurium jorgei* resembles *A. mistratoense* Delannay & Croat, but it differs from the latter by its long-stipitate spadix (3.2 cm vs. 7 mm for *A. mistratoense*). The species also grow far apart from each other, on the eastern slopes of the Cordillera Occidental in Valle del Cauca Department for *A. jorgei* rather than farther north in Risaralda Department for *A. mistratoense*.

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Anthurium lasierpense Croat, **sp. nov.** — Type: COLOMBIA. Chocó, Hoya del Pio San Juan. Quebrada La Sierpe, afluente del Río San Juan, 04°10'N 77°10'W, 5 m, 1 April, 1979, E. Forero & R. Jaramillo 4470 (holotype, COL-04965).

Diagnosis: *Anthurium lasierpense* is characterized by its epiphytic habit, elongated internodes, mostly deciduous cataphylls; long-petiolate, narrowly oblanceolate, narrowly long-acuminate blades which dry gray-green above and yellow-brown below, moderately obscure primary lateral veins, collective veins arising from the first primary lateral veins as well as by the long-pedunculate inflorescence with a slender, short, white spathe and a very slender, moderately long, yellow spadix.

Epiphyte; internodes 1–3 cm, green, drying black, smooth; cataphylls to 4.2 cm long, 1.0–1.3 cm of the base persisting as fragments, not becoming fibrous; **petioles** 5–10 cm long, 1.6 mm diam., C- shaped. LEAVES scattered along the stems; **blades** narrowly oblanceolate, 14.5–20.0 cm long, 2.5–3.1 cm wide, 5.8–6.5 times longer than wide, widest slightly to considerably above middle, gradually long-acuminate at apex, narrowly acute to attenuate at base, dark green above, moderately paler below, drying gray-green, matte above, yellowish brown and weakly glossy below, paler below, with regular protrusions on leaf, not pustules or lenticels, visible at 10X, darker than blade surface; midrib drying round-raised and concolorous above, round-raised and darker below; primary **laterals veins** 10–15 per side, difficult to discern from above with several conspicuous pointed puckers on drying, narrowly rounded and scarcely more prominent than interprimary veins below, departing midrib at 25–30°; basal veins lacking; collective veins arising from the 1st pair of primary lateral veins, 2–3 mm from margin. **INFLORESCENCE** 17 cm long; peduncle terete, 12 cm long, green drying brown; **spathe** linear, 2.5 cm long, 2 mm wide, white, drying medium brown; **spadix** 5.5 cm long, narrowly oblong-cylindroid, light yellow, drying dark brown; **flowers** 2–3 visible per spiral, 1.0–1.6 mm long, 1.2 mm wide; tepals granular, matte, lateral tepals 1.0–1.2 mm wide, inner margin broadly rounded, outer margin 2-sided; stamens held at level of tepals; anthers 2 mm long, 3 mm wide; thecae ovoid-ellipsoid, scarcely divaricate; berries not seen. **Figure 29.**

Distribution and ecology — *Anthurium lasierpense* is endemic to Colombia, known only from the type locality in Chocó Department in the valley of the Río San Juan, at sea level in a *Premontane wet forest* life zone.



Figure 29: *Anthurium lasiarpense* (Forero & Jaramillo 4470, COL-04965). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Etymology — The species is named for the type locality along the Quebrada La Sierpe, a tributary of the Río San Juan in Chocó Department of Colombia.

Comments — *Anthurium lasierpense* resembles *A. valenzuelae* Croat & N. Altam. which has a similar blade shape, but *A. valenzuelae* ranges from eastern Ecuador to Peru in the Amazon Basin instead of western Colombia for *A. lasierpense*. *A. valenzuelae* also has the blades drying greenish or reddish brown rather than gray-green for *A. lasierpense*.

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Anthurium maasii Croat, Willdenowia 40(1): 89–91. 2010. — Type: COLOMBIA. Valle del Cauca: New road between Cali and Buenaventura, km 85, Boquerón, 150 m, 6 October 1974, P.J.M. Maas & T. Plowman 1941 (holotype, GH; isotypes, CUV, U).

Semi-erect vine; caudex to 1.5 m tall, with long slender roots ca. 1 mm diam. extending from the nodes; internodes elongated, 2.5–3.5 cm long, ca. 5 mm diam.; cataphylls 7.5–9.5 cm long, deciduous. **LEAVES** spreading from the elongated caudex; **petioles** terete, 7.4–9.0 cm long, ca. 2 mm diam., drying dark yellow-brown; **blades** semicoriaceous, ovate-elliptic, 18–19 cm long, 5.0–6.5 cm wide, 3.2–3.6 times longer than wide, widest near the middle, long-acuminate at apex, obtuse at base, drying weakly glossy and dark yellow-brown above, semiglossy and light yellow-brown below; upper surface minutely granular, lower surface with subcylindrical pustules; midrib narrowly raised and drying slightly darker than the surface above, rounded and drying light brown below; primary **lateral veins** 6 or 7 per side, departing midrib at 40–50° and arching towards the apex, slightly raised above and below; collective veins arising from the 1st pair of basal veins, 3–5 mm from margin; basal veins 2 pairs, both free to the base, the 2nd pair weak and confined to the base of the blade; tertiary veins prominulous and reticulate. **INFLORESCENCES** erect; peduncle slender and elongated, ca. 13 cm long, 1 mm diam., drying dark yellow-brown; **spathe** lanceolate, ca. 6 cm long, 7 mm wide, green; **spadix** yellow, stipitate 2 mm, cylindrical, 6.5–9.0 cm long, 3 mm diam., drying dark brown; **flowers** 1.7–1.8 mm long, 0.7–0.8 mm wide (dried), five visible per spiral, smooth, drying dark yellow-brown; lateral tepals 1.1–1.2 mm wide, the outer margin broadly 2-sided, inner margin nearly straight, often curled outward upon drying; stamens barely emergent, closely arranged around pistil, 0.2 mm long, 0.25 mm wide, thecae ovate, slightly divaricate. **Figure 30.**

Distribution and ecology — *Anthurium maasii* is endemic to Colombia, known only from the type locality in Valle del Cauca Department at 150 m elevation in a *Premontane rain forest transition* life zone.

Comments — *Anthurium maasii* is characterized by its terrestrial habit, elongated internodes, sulcate petioles, brown-drying ovate-elliptic, long-acuminate leaf blades, long-pedunculate



Figure 30: *Anthurium maasii* (Maas & Plowman 1941, GH). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

inflorescences with a slender, erect-spreading, green spathe and slender, elongate, yellow spadix. Also characteristic are the prominulous tertiary veins and subcylindrical pustules on the lower surface.

The species is most similar to *A. cardenasii* Croat from the eastern slopes of the Central Cordillera at 850 m elevation. Both *A. maasii* and *A. cardenasii* have remarkably similar leaves with similar shape and coloration but *A. maasii* differs in having the lower blade surface somewhat paler and more matte, by having the reticulate veins less closely aggregated and with the upper midrib only slightly thicker than broad. In addition, the areoles are sparsely granular with frequent pustules. In contrast *A. cardenasii* has the areoles minutely and finely granular and lacks pustules and also has the upper midrib markedly thicker than wide. Were it not for the radical differences in range and elevation these two taxa might be considered only morphological variations within the scope of a single species, but in light of the existing range of these two species it is highly unlikely that they are the same.

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Anthurium marulandae Croat, **sp. nov.** — Type: COLOMBIA. Antioquia: Mpio. Yarumal, Alto de Ventanas, along road to El Cedro to ca. 6 km from its junction with Yarumal-Pto. Yaldivia Hwy, 7°10'N, 75°28'W, ca. 2100 m, 8 November 1987, *J.L. Luteyn & O. Marulanda* 11883 (holotype, MO-3514895; isotypes B, COL, HUA, NY, US).

Diagnosis: *Anthurium marulandae* is characterized by its scandent, pendulous habit, elongate slender internodes, persistent, intact cataphylls, short-petiolate, narrowly oblong-ovate, grayish yellow, long-acuminate, epunctate leaf blades with moderately obscure venation as well as the slender-pedunculate inflorescences with a nearly sessile orange spadix.

Scandent, pendent, climbing epiphyte; internodes 2–4 cm long, 3.0–3.5 mm diam.; cataphylls persisting intact entirely clasping the stem, 5.0–6.5 cm long, filiform 6–10 mm, light grayish brown. **LEAVES** with **petioles** 1.5–2.3 cm long, 1.0–1.5 mm in diam., weakly caniculate, drying deeply and narrowly sulcate; petiolar sheaths 1.3–2.4 cm long, longer on newer leaves (note: on earlier leaves the petioles are clasped to the stem whereas on leaves of plants that are flowering the petiole and peduncle break free from the stem); geniculum 4–6 mm long, concolorous to slightly darker than petiole; **blades** lanceolate, 7.5–13.0 cm long, 2.1–3.3 wide, 3.9–4.2 times longer than wide, widest ca. 1.5–2.5 cm above base, gradually long acuminate (acumen ca. 1.0–1.5 cm and prominently apiculate ca. 3 mm) at apex, obtuse to attenuate at base, margins rolled down and sometimes recurled, subcoriaceous, medium to darker grayish green above, pale grayish green below, matte above and below; upper surface moderately smooth, purple-speckled, drying minutely and irregularly ridged; lower surface somewhat less

densely purple-speckled, moderately densely pustular; midrib extremely narrow and sharply raised and concolorous above, flat and yellowish brown below; primary **lateral veins** 8–12 per side, departing midrib at 36–50°, weakly raised above, not prominent but narrowly rounded to convex and concolorous below; tertiary veins inconspicuous above and below; antemarginal vein present; collective veins arising from base, 2.5–4.0(5.0) mm from margin; basal veins 2 pairs, free to the base, the innermost becoming the collective veins, the outer one joining the margin. **INFLORESCENCES** slender-pedunculate; peduncle (6.5)8.3–10.0 cm long, 0.5–1.0 mm diam. midway, significantly longer than petioles, drying deeply sulcate, medium brown, matte, 3.5 times longer than spathe; **spathe** 2.5–2.7 cm long, 4–5 mm wide midway, lanceolate, prominently apiculate; **spadix** stipitate 1.5 mm, 2.0–3.2 cm long, 1.5–3.0 mm diam. midway, very cylindrical with rounded apex, orange with ovaries turning green, drying medium reddish brown; **flowers** 2–3 visible per spiral, 1.8–2.3 mm long, 1.9–2.2 mm wide, tepals 1.1–1.2 mm wide, very obtusely 3(4)-sided, surface smooth with a few sub-globular cellular inclusions; stamens not fully emergent; anthers 0.3 mm long and 0.4 mm wide; thecae weakly divaricate; stigmas rounded and raised, **INFRUDESCENCE** 3.0 cm long, 5 mm wide; berries 1.8 mm diam., subglobular with pale subglobular cellular inclusions. **Figure 31.**

Distribution and ecology — *Anthurium marulandae* is endemic to Colombia, known only from the type locality in Antioquia Department in the Municipio of Yarumal at about 2100 m in a *Premontane wet forest* life zone.

Etymology — This species is named for Colombian botanist Orlando Marulanda who collected the type specimen along with James L. Luteyn.

Comments — *Anthurium marulandae* is most similar to *A. pulchellum* Engl. with which it shares similar leaf blades, but that species differs in having a much longer, more slender stipe which usually far exceeds the length of the spathe and spadix. In addition, *A. pulchellum* has primary lateral veins (at least in Antioquia) which spread at nearly 90° and have collective veins proportionately closer to the margin.

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Figure 31: *Anthurium marulandae* (Luteyn & Marulanda 11883, MO-3514895). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium mindense Sodiro, Anales Univ. Centr. Ecuador 15(108): 8. 1901. — Type: ECUADOR. Pichincha: in decliv. occid. m. Pichinchae in valle Mindensi, December 1899, Sodiro s.n. (lectotype, QPLS (photo: MO-3390939); isoelectotypes MO-2131279, MO-2131280), designated here.

Epiphyte or terrestrial; stem shortly erect; internodes 1–12 long; roots lax; cataphylls 1–4 cm long, persisting intact or persisting as fibers. **LEAVES** with **petioles** 12–15 long, 2–3 mm diam.; **blades** oblong or elliptic, 12–40 cm long, 4–12 cm wide, 2.1–4.2 times longer than wide, widest near the middle, abruptly acuminate at apex, obtuse or rounded at base, moderately bicolorous, matte or matte-subvelvety or velvety above, semiglossy to glossy below, texture smooth above, drying greenish to olive-green, brownish to reddish-brown above, greenish to olive-green, brownish or reddish-brown below; midrib bluntly acute or narrowly rounded or narrow to sharply acute above, broadly convex or round-raised below; primary **lateral veins** 9–14 per side, departing midrib at ca 60°, sunken or etched above, raised or narrow to sharply acute below; collective veins arising from the lowest primary lateral veins, 3–5 mm from margin. **INFLORESCENCE** shorter than leaves; peduncle 8–16 long; **spathe** linear-lanceolate, 3–5 cm long, 0.6–1.2 cm wide, spreading or reflexed, green to greenish, white to cream or yellowish to yellow to orange; **spadix** cylindroid or tapered, 4–9 cm long, 2–3 mm diam., green, orange to orangish, magenta to purplish to maroon or reddish to red. **INFRUTESCENCE** yellow to orange or reddish to red or pinkish. **Figures 32–34.**

Distribution and ecology — *Anthurium mindense* ranges from Colombia to Ecuador (on both sides of the Andes) and Peru (Amazonas, Cajamarca, Huánuco, Pasco) at (200)400–2800 m in multiple life zones.

Comments — *Anthurium mindense* is characterized by its long internodes, oblong-elliptic blades, and its small inflorescences with the spathe white, yellow or orange and the spadix green, orange or red. The species could be confused with *A. ottobuchtienii* Croat & Acebey, but it differs from it in having longer and proportionately more slender internodes and generally proportionately broader leaf blades.

Selected specimens seen (See www.tropicos.org for a complete list): **COLOMBIA.** Caquetá: Cordillera Oriental, vertiente oriental. Sucre, orillas del Río Hacha, matorrales, 01°47'13"N 75°39'13"W, 1000 m, 3–7 April 1940, J. Cuateocasas 9037 (MO, US); Municipio Florencia; along new road from Neiva to Florencia, vicinity of Km Post 49, 01°43'00"N 75°43'41"W - 01°44'26"N - 75°44'19"W, 1541–1896 m, 20 September 2012, T.B. Croat, G. Ferry, D. Scherberich, E. Trujillo & G. Oyuela 103831 (MO); San Vicente de Caguan, Carretera entre San Vicente y Neiva, campamento El Condor, sitio los andes, bosque primario que hace parte de la cuenca del Río Pato Medio, Cordillera Oriental, ladera oriental, 26 November 1990, J.C. Betancur B. & S.P. Churchill 2183 (MO); Florencia, Carretera Florencia-Suaza. Km 47. “La Esperanza”, 01°36'N 75°37'W, 200–2150 m, 17 November 1993, J.G. Ramírez et al. 5143 (MO); Vereda Villaraz, Quebrada El Caraño, km 20 on road to Neiva, Finca La Estrella, 900 m, 26 August 2007, T.B. Croat & E. Trujillo 98140 (MO). **Huila:** Agrado. Parque Nacional Natural Cueva de los Guácharos, 01°36'14"N 76°08'13"W, 1900 m, 27 January 2010, P. Stevenson, E. Cifuentes & Ramírez 2825 (MO). **Nariño:** La Planada, Salazar Finca 7 km above Ricaurte, premontane wet forest, 01°08'N 77°58'W, 1750 m, 29 November 1981, A.H. Gentry



Figure 32: *Anthurium mindense* (Croat 101111). Herbarium specimen showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 33: *Anthurium mindense* (Croat 105129). Live plant showing stem, petioles, leaf blade (abaxial surface), inflorescence and infructescence (photo T.B. Croat).



Figure 34: *Anthurium mindense* (Croat 105129). Live plant showing stem, petiole, leaf blades (abaxial surface) and a close-up of the infructescence (photo T.B. Croat)

35200 (COL, MO); La Planada Biological Reserve, ca. 7 km S of Chucunéz, along trail opposite the posada, 01°10'N 77°55'W, 1800–1900 m, 9 August 1990, *J.L. Luteyn & S. Sylva* 13960 (MO); Reserva Natural La Planada Sendero “Al Rondon”. SW of the science center, 01°09'37"N 77°59'13"W, 1850–1950 m, 19 June 1996, *J. Bittner et al.* 2519 (MO, PSO); La Planada, 7 km above Chucunéz on road between Tuquerres and Ricaurte. Along trail to summit of hill behind Centro de Científicos, 01°05'N 78°01'W, 1780 m, 28 July 1988, *T.B. Croat* 69636 (MO); La Planada, 7 km above Chucunéz on road between Tuquerres and Ricaurte. Regrowth secondary forest with primary forest elements and trail above “La Posada” building, 01°05'N 78°01'W, 1780 m, 26 July 1988, *T.B. Croat* 69576 (AAU, COL, F, HUA, MO, S, UB, VEN). **Putumayo:** Pasto to Mocoa; along roadside on steep slopes, 01°10'N 76°51'W, 1000–2500 m, 10 December 1986, *B.E. Hammel* 15917 (MO); Mocoa. Corregimiento de San Antonio, vereda Alto Campucana, finca La Mariposa. Vertiente amazónica de Colombia, 01°12'N 76°38'W, 1350–1420 m, 20–21 April 1994, *J.C. Betancur B. et al.* 4997 (MO); Carrette Mocoa-Sibundoy, entre “Las Mesas” y poco después del “Mirador”. Vertiente amazónica de Colombia, 01°12'N 76°38'W, 1300–2000 m, 4 May 1994, *J.C. Betancur B. et al.* 5509 (MO). **ECUADOR. Azuay:** San José de Huigra, alrededores, Bosque seco Subtropical andino en laderas, con microhábitats de B. húmedo a lo largo del Río Huigra. Secundario, 02°44'S 79°23'W, 1600 m, 3 October 1994, *X. Cornejo S. & C. Bonifaz B.* 3299 (GUAY, MO, QCNE). **Cañar:** Along road between Azoques and El Triunfo (road to Guayaquil, Machala, Riobamba), 1 km S of La Delicia. Premontane or lower montane moist forest, 02°27'S 79°10'W, 22 October 1980, *T.B. Croat* 50869 (MO). **Carchi:** 9–10 mi SE of Maldonado on road to Tulcan. Cut-over hillside with fallen trees, 00°51'N 78°02'W, 2480–2550 m, 27 July 1983, *S.A. Thompson & J.E. Rawlins* 907 (MO); Along road from El Chical to Tulcán, 27.3 km E of El Chical, 15.2 km E of Maldonado, 00°59'01"N 78°11'37"W, 2700 m, 10 August 2004, *T.B. Croat & G. Ferry* 93173 (MO); Along road from El Chical to El Limonal (Imbabura), 16 km S of junction with main El Chical–Peñas Blancas road, 2 km S of Río Gualpi Bridge, vicinity of Km 15.5–15.8 markers, 00°52'N 78°13'W, 2043 m, 13 October 2012, *T.B. Croat et al.* 104219 (AAU, B, COL, CUV, F, GB, HUA, K, M, MO, NY, NCY, PMA, S, TEX, US, USM); Further ascent of Río Verde approaching headwaters of river at base of Cerro Golondrinas stopping at point where prominent stream with waterfall enters from SW, 00°52'N 78°17'W, 1900 m, 30 Nov. 1987, *W.S. Hoover* 2090 (MO, QCA); Mira. El Carmen. Cerro Golondrinas. Bosque Montano. Bosque primario en colinas, 00°50'N 78°11'W, 2000–2400 m, 18–25 August 1994, *Mi. Tirado et al.* 1332 (MO, QCNE); Parroquia Gualchan; along road from El Chical and Gualchan, eastern slopes of divide between El Chical and Gualchan; 19 km S of bridge over Río Gualpi, 00°50'02"N 78°13'13"W, 1929 m, 16 October 2012, *T.B. Croat et al.* 104399 (MO); Norte del Carmen, camino a Chical. Bosque primario alterado, 00°17'N 78°13'W, 2000–2200 m, 10 February 1992, *W.A. Palacios et al.* 9759 (MO). **Chimborazo:** Along road between Alausí and El Triunfo, 26.4 km West of Huigra, 35.1 km East of border of Guayas Province, 02°20'S 79°02'W–02°20'S 79°02'W, 1270 m, 19 July 1986, *T.B. Croat* 61570 (LE, KRAM, MEXU, MO, QCA, Z). **Cotopaxi:** La Maná. Reserva Ecológica Los Ilinizas, sector Brasil, acceso desde La Carmela, Cordillera Occidental, vertiente occidental, bosque nublado primario, 00°40'37"S 79°05'09"W, 1480 m, July 13, 2003, *P.A. Silverstone-Sopkin et al.* 9135 (QCNE); Sigchos. Parroquia: San Francisco de las Pampas. Bosque Integral Otonga. Premontane wet forest, 00°25'S 79°00'W, 1900 m, 26 January 2001, *J.L. Clark* 6137 (MO, QCA, QCNE, US); **El Oro:** Between Paccha and Muluncay. Remnants of montane forest, 1400–1500 m, 12 March 1993, *G.W. Harling* 27056 (MO); Piñas.

Parroquia El Placer. Reserva Buenaventura, propiedad de la Fundacion Jocotoco. Recorrido desde la estacion hasta el bosque Puma, 03°38'41"S 79°45'46"W, 1000 m, 3 April 2005, *H. Vargas et al.* 5131 (ECUAMZ, MO, QCNE). **Esmeraldas:** Burbón, 01°05'18"N 78°59'20"W, 300 m, October 1980, *L. Cobb* 60 (MO); Quinindé. 00°21'N 79°44'W, 17 May 1995, *J.L. Clark* 920 (MO); Reserva Ecologica Mache-Chindul, 25 km west of Quinindé. Collections from lake at La Laguna de Cube (near La "Y" de la Laguna), 00°23'29"N 79°38'53"W, 358 m, 19 May 2007, *J.L. Clark* 9595 (MO); Noreste de Las Golondrinas. Cooperativa 3 de September en sector San Isidro, cerca a Río Jordán, 00°20'N 79°12'W, 300 m, 9 October 1993, *W.A. Palacios* 11489 (MO, QCNE). **Guayas:** Cord. Chongón-Colonche. Bosque Protector Loma Alta., 01°55'S 80°39'W, 450 m, July 1996, *X. Cornejo S. & C. Bonifaz B.* 5224 (GUAY, MO); San Jacinto de Yaguachi. Reserva Comunal Loma Alta, 5 km NW of Suspiro. Fog Forest, 01°53'S 80°37'W, 450 m, 22 January 1997, *J.L. Clark* 3870 (MO). **Imbabura:** Sector San Luis de la Delicia, vegetación de Bosque Nublado, 00°10'00"N 78°51'00"W, 2600–3000 m, 6 December 1986, *J.L. Jaramillo* 9265 (AAU, MO, NY); Bosque Andino, Faldas Occ. del Cotacachi, 00°29'00"N 78°20'00"W, 2600–3000 m, 21 June 1944, *M. Acosta-Solis* 8249 (F); Along road from Cotacachi to Apuela, 41.0 Km from Quiroga, 15.5 Km E of Apuela, 00°22'03"N 78°27'23"W, 2415 m, 28 April 2003, *T.B. Croat & L.P. Hannon* 88209 (MO); Along road between Apuela and El Rosario, vic. of Rosario, 13.4 Km N of Cuellaje, along Río Cristo, 00°28'06"N 78°31'07"W, 2168 m, 30 April 2003, *T.B. Croat & L.P. Hannon* 88353 (MO); Cotacachi. Parroquia Garcia Moreno, 1240 m, 1 July 2005, *A. Mariscal* 7294. **Loja:** Road Celica-Guachanamá, Km 8 at the Roldós memorial monument, secondary scrub, 2700 m, 15 February 1985, *G. Harling & L. Andersson* 22321 (GB); Selva, and riverbanks, Shandia, 01°06'00"S 77°54'00"W, 3100 m, 15 August 1957, *H.G. Barclay* 4913 (MO); Km 8 from Sozoranga along track to Reserva Natural El Tundo, propiedad de fundacion ARCOIRIS, ca. 2 km above reserve, 04°08'S 79°23'W, 1900 m, 20 August 1997, *Lewis* 3505 (MO); Sozoranga. El Tundo, 04°19'S 79°49'W, 22 November 1996, *P. Lozano et al.* 588 (LOJA); Cantón Macará. Parroquia Sabiango. Barrio Achime, faldas del Cerro Jatunpamba, punto a bosque Protector El Tundo, 04°19'57"S 79°50'08"W, 1100 m, 30 July 2009, *W.A. Palacios* 16891 (MO, QCNE). **Morona-Santiago:** Canton Macas. Parque Nacional Sangay, Sendero que une la Laguna Sardina y Volcán al Upano, propiedad de la Sra. Lusmila Vele, 02°04'40"S 78°13'41"W–02°05'57"S 78°09'06"W, 1340–1730 m, 27 May 2003, *C.E. Cerón* 48781 (MO); Río Chihuasi, 25 km SE of Logroño, Cord. de Cutucú, 02°44'00"S 78°04'00"W, 800 m, 16 January 1976, *M.T. Madison* 2606 (SEL); Along road between Palora and Yushin, departing main Palora-San Vincente de Tarqui Road, 8.7 Km NW of Palora, 3.4 Km S of Río Amundalo, 2.1 Km E on road to Yushin, 01°41'46"S 78°01'21"W, 922 m, 25 August 2002, *T.B. Croat & L.P. Hannon* 86958 (MO); Along road between Santiago and Río Morona, 30.3 km W of Santiago, 02°58'24"S 77°49'36"W, 322 m, 10 July 2004, *T.B. Croat et al.* 90760 (MO); Gualaquiza. Cordillera del Cóndor, ridge top above Banderas, near disputed Ecuador-Peru border, primary forest, 03°28'S 78°15'W, 1350 m, 17 July 1993, *A.H. Gentry* 80001 (MO, QCNE); Parque Nacional Sangay. Bosque Sardinayacu, 02°05'44"S 78°10'54"W, 1500 m, 7 February 1999, *G. Toasa et al.* 5280 (MO, QCNE); Cordillera de Cutucú. Centro Shuar Uunsuants/TransKutuku, 02°32'S 77°54'W, 650 m, 18 January 2002, *G. Toasa et al.* 8598 (MO, QCNE); Cordillera del Cutucu, along road to Macuma, departing main Puyo-Macas Hwy 22.9 km N of turnoff to Sevilla, ca. 1 km E of Río Macuma, steep forested slopes above road, 02°06'57"S 77°49'04"W, 889 m, 28 November 2008, *T.B. Croat* 100723 (MO); Cordillera de Cutucú. Centro Shuar Uunsuants/Transkutuku. Bosque primario con

afloramiento de rocas calizas, 02°32'S 77°54'W, 700 m, 19 January 2002, *W.A. Palacios et al. 15605* (MO, QCNE). **Napo:** 8 km W of Lumbaque on Quito-Lago Agrio road, 5 km N of highway, edge of Cayambe-Coca National Park. Rich soil, 00°02'S 77°25'W, 500 m, 21 July 1986, *A.H. Gentry & J.S. Miller 54950* (MO); Entre el Río Pucuno y el Río Guamaní. Bosque primario y borde de carretera. Bosque pluvial Premontano. Carretera Hollín-Loreto-Coca, 00°46'S 77°26'W, 1100–1200 m, 11 December 1987, *C.E. Cerón 2910* (GH, MO); Loreto. Comunidad 10 de August. Río Pucuno. Bloque 19, línea sísmica 22. Compañía Triton. Bosque pluvial Premontano. Bosque secundario. Suelo de origen volcánico, 00°44'S 77°32'W, 1000 m, 28 March 1996, *E. Freire & J. Cerda 317* (F, MO, NY, QCNA); Baeza-Tena Road, Jondachi, disturbed rain forest, 00°43'00»S 77°48:00»W, 900 m, 8 February 1980, *G.W. Harling & L. Andersson 16391* (GB, MO); Sarajacu, collected in 1990 by van der Knapp & van Rosmalen as Bleiswijk 90-10-125, 4 September 1992, *T.B. Croat 74040* (MO); Along Río Piatua beginning at Botanical Garden on Campus of Universidad Amazonia (CIPCA) and moving up river, 01°14'37»S 77°53'21»W, 570 m, 10 January 2015, *T.B. Croat, G. Ferry, D. Scherberich, T. K. Croat & R. Qualls 105518* (ECUAMZ, MO); Vicinity of Mushullacta along Río Huayusayacu, vic. of Comunidad Mushullacta, south of main Narupa-Coca Road, 13.2 Km S of main road which 41 Km E of Narupa, 00°48'S 77°34'W, 1150–1250 m, 20 April 2003, *T.B. Croat et al. 87891* (MO); Canton Archidona. Carretera Hollín-Loreto, Km 17. Cerca del Río Hollín. Bosque pluvial Premontano. Bosque primario, 00°41'S 77°41'W, 1100 m, 14 February 1989–22 February 1989, *F. Hurtado & J. Shiguango 1697* (MO); Along road between Coca and the main Baeza-Tena road, via Loreto and Hollin, 133.1 km W of Río Payamino, 51.3 km W of Loreto, 7.5 km E of main Tena-Baeza Road, 00°49'S 77°47'W, 1350 m, 2 March 1992, *T.B. Croat 72640* (MO); El Chaco. Proyecto Hidroeléctrico Coca, Punto ST3. Margen derecha del Río Quijos, ca. 10 km al sur de Reventador. Bosque pluvial Premontano. Bosque primario, suelos volcánicos con pendientes 10-20%, 00°11'S 77°39'W, 1500 m, 3–5 October 1990, *W.A. Palacios 5912* (MO). **Pastaza:** Puyo-Macas Road, km 48-53, primary rain forest, 01°45'00»S 77°49:00»W, 800 m, 11 March 1980, *G.W. Harling & L. Andersson 17176* (MO); Along road from Mera north past Río Anzu, ca. 1 km N of bridge over Río Anzu, along trail to Río Anzu in Reserva Río Anzu, a private reserve of Fundación Eco Minga, 01°24'32»S 78°03'04»W–01°24'38»S 78°05:11»W, 1150–1300 m, 24 August 2013, *T.B. Croat 105129* (ECUAMZ, MO); Vicinity of Shell, ca. 1 Km north of town along Río Claro, 00°29'39»S 78°03:52»W, 1085 m, 27 August 2002, *T.B. Croat & L.P. Hannon 87050* (AAU, GB, MO); Vicinity of Shell; 1.2 km N of main highway, along Río Claro, 00°29'39»S 78°05:52»W, 1085 m, 8 October 2007, *T.B. Croat, M. Carlsen & D. Levin 99497* (MO); Mera. Along Río Allpayacu, riverside thickets, 01°28'00»S 78°08:00»W, 1000 m, 6 March 1980, *G.W. Harling & L. Andersson 16973* (GB, MO); 01°27'54»S 78°07:58»W, 1400 m, 15 February 1996, *Jaramillo 18785* (QCA); Napo-Pastaza, Mera, 01°28'00»S 78°08:00»W, 26 March 1940, *M. Lugo 119* (MO, S); Along road from Mera to Río Anzu and beyond, 01°22'33»S 78°03:09»W, 1217 m, 11 January 2015, *T.B. Croat et al. 105558* (ECUAMZ, MO); Pastaza. Between Shell and Mera, 5.3 km NW of Center of Shell, along gravel road 1.1 km N of highway; disturbed virgin forest at end of a board covered path 25 m E of road, 01°27'S 78°04'W, 1180 m, 4 April 1992, *T.B. Croat 73504* (CAS, MO, NY, TEX, QCNE). **Pichincha:** Reserva Florística-Ecológica «Río Guajalito», Km 59 de la carr. antigua Quito-Sto Domingo de los Colorados, 3.5 km al NE de la carretera. estribaciones occidentales del Volcán Pichincha, 00°13'53»S 78°48:10»W, 1800–2200 m, 22 June 1985, *J.L. Jaramillo & V. Zak 7815* (MO); Along western slope of Volcán Pichincha; along road between main Calicalí-Nanegalito Road, departing

main road 4.3 km E of Nanegalito, 21.8 km from main road, 00°01'48"S 78°44'21"W, 1943 m, 3 September 2004, *T.B. Croat 94067* (MO); Along road from Pacto to Miguel de los Bancos, 8.8 km S of Pacto, 00°09'21"N 78°49'11"W, 1674 m, 6 September 2007, *T.B. Croat & G. Ferry 98368* (B, K, MO, NY, S, US); Along road from Nanegalito to Mindo, 16.5 km SSW of Nanegalito, 00°01'14"N 78°44'23"W, 1500 m, 21 July 1998, *T.B. Croat & J. Whitehill 82756* (AAU, CAS, GB, MO, RSA, S, USM); Mejía. Bosque humedo Premontano, 00°30'00"S 78°34'00"W, 1750–2000 m, June 1999, *G. Benavides et al. 530* (QCNE); Canton Quito. Parroquia Calacalí. 20 km de la carretera Calacalí–Nanegalito. Bosque húmedo Premontano, 00°02'N 78°39'W, 2000 m, 19 January 1989, *C.E. Cerón et al. 5900* (MO); Along road between Pacto and San Miguel de los Bancos, 9.1 km NW of Pacto main plaza, 3.4 km N of La Delicia, 00°09'35"N 78°49'22"W, 1672 m, 9 December 2008, *T.B. Croat 101079* (MO); Bosque Protector Maquipucuna, montane rain forest, upper slopes of Cerro Monte Cristi, ca. 9 km airline SE of Nanegalito, 00°03'N 78°36'W, 2600 m, 8–9 September 1993, *Webster 30569* (DAV, QCNE). **Sucumbíos:** Río Bermejo to Cerro Sur Pax, Cofan community of Alto Bermejo, accessed from Bermejo oil field road to Pozo 2 (paralleling Río Pucruchoa), NW of main Lumbaquí to Lago Agrio Road located between Lumbaquí and El Dorado de Cascales, foothills of the Cordillera Oriental near the Colombian border, 00°18'13"N, 77°24'32"W, 1200–1300 m, 28 July, 2001, *R. Aguinda, N. Pitman & R. Foster 1056* (MO, QCNE); Along road between Baeza and Lago Agrio (Nuevo Loja), 4 km E of Río Azulla, 78.3 km E of Baeza, 00°0'S 77°42'W, 1280 m, 28 February 1992, *T.B. Croat 72558* (MO); Gonzalo Pizarro. Campo Bermejo 6 Norte, 2 km N of Campo, 30 km NW of Lago Agrio. Bosque húmedo Premontano. Orilla del río; suelo muy colinado. Transectos, 00°14'N 77°13'W, 1050 m, 30 March 1990, *C.E. Cerón et al. 9386* (MO); Reserva Ecológica Cayambe-Coca, sendero a El Reventador, colecciones en la ruta del nuevo oleoducto de crudos pesados. Bosque húmedo premontano, vegetación primaria, suelo colinado bien drenado, 00°06'S 77°36'W, 1600 m, 11 August 1999, *H. Vargas et al. 3900* (MO, QCNE). **Tungurahua:** Road from Banos to Puyo, 3 km from Río Negro, 01°24'00"S 78°13'00"W, 8 January 1962, *C.H. Dodson & L.B. Thien 1990* (MO); Río Negro, forest on shore of Río Pastaza, 01°24'00"S 78°13'00"W, 1200 m, 12 November 1955, *E. Asplund 18370* (MO, S); 1200 m, 13 March 1980, *G.W. Harling & L. Andersson 17245*; Cashurco, near Río Negro, northern side of Río Pastaza, 01°24'00"S 78°13'00"W, 18 March 1969, H. Lugo S. 792 (GB, MO); Along road from Río Negro to La Estancia and Parque Nacional Sangay, 1.8 Km S of bridge over Río Pastaza, 01°25'24"S 78°13'01"W, 1335 m, 4 May 2003, *T.B. Croat et al. 88505* (MO); Baños. Parque Nacional Llanganates. Cordillera Sacha Llanganates. Summit ridge, overlooking Amazon lowlands to east, Río Zuñac watershed to west, 01°21'50"S 78°07'32"W, 2740 m, 28 November 2004, *D.A. Neill et al. 13499* (MO, Q, QCNE). **Zamora-Chinchipe:** Area of Estación Científica San Francisco, road Loja–Zamora, ca. 35 km from Loja; moist montane forest. Transect Q2: uncommon, 2100 m, 8 January 2005, *F.A. Werner 1425* (MO); Cordillera del Cóndor. Bosque montano sobre roca arenisca, cerca del destacamento militar Cóndor Mirador, en la frontera Ecuador–Perú, 03°38'28"S 78°23'13"W, 1800 m, 15 December 2000, *J. Caranqui et al. 199* (MO, QCNE); Cordillera del Condor, vicinity of Ecuacorrientes copper mine region, valley of Río Waiwaime, 5.9 Km above gate near copper mine camp near Río Quimi, along trail to summit above parking, 03°34'54"S 78°26'06"W, 1331 m, 5 April 2006, *T.B. Croat et al. 96664* (MO); Nangaritza. Río Nangaritza, upper valley. 3 km east of Miazí, near disputed Peru–Ecuador border. Primary forest. Premontane Wet Forest, 04°18'S 78°40'W, 1000 m, 11 December 1990, *D.A. Neill & W.A. Palacios 9698* (MO); “Las Orquídeas”, parte alta del Tepui,

04°15'01"S 78°39'36"W, 1120 m, 6 November 2006, *D. Reyes et al.* 1263 (MO, QCNE); Cordillera del Cóndor region, Parroquia Zurmi; vicinity Las Orquideas, forest near Cabañas Yancuam, ca. 3 km S of Las Orquideas, slopes W of Río Nangaritza, 04°15'01"S 78°39'33"W, 1130–1250 m, 17 April 2006, *T.B. Croat* 97114 (ECUAMZ, MO); Vicinity of Las Orchideas; near Cabañas Yancuam; along Río Nangaritza, S of camp, old trail along river and on steep slopes of forest W of River, 04°15'06"S 78°39'29"W, 877 m, 16 September 2007, *T.B. Croat & G. Ferry* 98681 (MO); Yantzaza. Parroquia las Peñas, Kinross Aurelian, Fruta del Norte, Cordillera del Cóndor. Sector sobre la Antena, cuchilla bajo la colina, cuenca del río Machinaza. Sector sobre la Antena, cuchilla bajo la colina, 03°47'56"S 78°28'56"W, 1900 m, 2 November 2011, *A.B. Cerón Carpio et al.* 705680 (MO, QAP). **PERU. Amazonas:** Condorcanqui, Cordillera del Cóndor. Puesto de Vigilancia 'Alfonso Ugarte' (PV3). Cabeceras del Río Comainas, tributario al oeste del Río Cenepe, cuchillo atrás del campamento, bosque intacto, muy húmedo, 03°53'35"S 78°25'30"W, 1200 m, 15 July 1994, *H. Beltrán & R.B. Foster* 791 (MO, USM); Puesto de Vigilancia Alfonso Ugarte (PV 3), cabeceras del Río Comainas, tributario al oeste del Río Cenepe, 03°54'S 78°25'W, 1200–1400 m, 18 July 1994, *H. Beltrán & R.B. Foster* 940 (MO); Cordillera del Cóndor, cabeceras del Río Comainas, cuchillo abajo del Cerro Machinaza, cresta de roca arenosa, 03°54'S 78°26'W, 1800, 3 August 1994, *H. Beltrán & R.B. Foster* 1585 (F, USM); Luya, Camporedondo, Tullanya, base Cerro Huicsocunga: La Laguna, 06°06'33"S 78°20'55"W, 2080 m, 1 December 1996, *C. Díaz S. & A. Peña Cruz* 8746 (MO). **Cajamarca:** San Ignacio, San José de Lourdes, Base del Cerro Picorana, restos de bosque andino y arbóreo, 04°59'25"S 78°54'05"W, 2050–2160 m, 4 December 1998, *C. Díaz S.* 10223 (B, MO); San José de Lourdes. Base del Cerro Picorana, 04°59'25"S 78°54'05"W, 2010 m, 20 January 1999, *Camilo Díaz S. et al.* 10355 (CAS, GH, MO, QCNE); Distrito Huarango, Cordillera Huarango (prolongación al sur de la Cordillera del Cóndor). Sector El Romerillo, 05°16'17"S 78°40'13"W, 2060 m, 24 April 2006, *E.F. Rodríguez R.* 3004 (HUT, MO, QCNE, USM); *J. Campos de la Cruz* 697 (HUT); Dist. San Jose de Lourdes, Santo Tomas. Bosque Primario, 04°55'S 78°50'W, 2070 m, 1 November 1995, *R. Vásquez* 20487 (MO). **Huánuco:** Distrito Chinchao, San Pedro de Carpath. Forest west of Carpath tunnel, 09°42'00"S 76°06'35"W, 9 June 2003, *J.L. Clark, I. Salinas & H. Beltrán* 8239 (MO). **Pasco:** Cordillera Yanachaga, new road in construction from Oxapampa to Villa Rica, 7–9 km E of main road, montane cloud forest, 10°40'S 75°20'W, 2100–2500 m, 1 March 1982, *A.H. Gentry & D.N. Smith* 35836 (AAU, CM, MO, USM); Oxapampa. Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén. Bosque montano primario muy húmedo subtropical, 10°26'46"S 75°26'17"W, 2300 m, 28 November 2006, *A. Monteagudo et al.* 13575 (MO, USM); Distrito Huancabamba. Parque Nacional Yanachaga Chemillén. Sector San Daniel, alrededor del hito. Bosque montano maduro, 10°26'47"S 75°26'18"W, 2270 m, 2 September 2006, *G. Castillo* 309 (AMAZ, HUT, MO, USM); Distrito Chontabamba. Carretera camino a la Suiza nueva. Bosque Montano Primario, 10°33'S 75°27'W, 2211 m, 4 April 2003, *J. Lingán* 379 (MO, USM); Road in construction between Oxapampa and Villa Rica, km 7 SE from Miraflores crest, steep forested ridge slopes, 10°37'S 75°20'W, 2100–2400 m, 11 October 1982, *R.B. Foster* 9124B (MO); Distrito Huancabamba, Sector Grapanazu. Pajonal con suelo esponjoso con Sphagnum, 10°26'S 75°27'W, 2400 m, 17 October 2003, *R. Rojas et al.* 1960 (HUT, MO, USM); Distrito Huancabamba. Parque Nacional Yanachaga-Chemillén, Sector San Daniel, trocha del Hito. Bosque primario, 10°26'47"S 75°26'18"W, 2400 m, 12 February 2007, *R. Vásquez* 31815 (HUT, MO, USM); Dist. Huancabamba, Parque Nacional Yanachaga-Chemillén, Sector San Daniel. Bosque primario, suelo muy húmedo, falda de montaña y

pajonal, 10°26'35»S 75°26'16»W, 2200–2500 m, 6 March 2006, *Rodolfo Vásquez 30999* (HUT, MO, USN). **Tumbes:** Zarumilla. Matapalo. Parcela “V” de evaluación permanente, 03°50'29»S 80°15'33»W, 720 m, 5 November 1992, *C. Díaz S et al. 5678* (MO).

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Anthurium mistratoense Delannay & Croat, **sp. nov.** — Type: COLOMBIA. Risaralda: Corregimiento de Puerto de Oro, vereda Chirrinchá. Finca La Cilia, 950–1000 m, 14–19 September 1991, *C.I. Orozco, J.L. Fernández, P. Franco & J. Betancur 2216*, (holotype, COL-352781).

Diagnosis: *Anthurium mistratoense* is characterized by its epiphytic branching habit, long, slender, thinly ribbed, brown, semiglossy internodes with swollen nodes, its cataphylls decaying into loose fibers and persisting at many lower nodes, its short petiolate, small, medium-brown-drying, lanceolate-elliptic leaves with acuminate blades 3.1–3.7 times longer than wide, its moderately obscure primary lateral veins and tertiary veins, and its slender green spadix with 2–3 flowers visible per spiral.

Epiphyte; stems branching; internodes elongate, slender, 5–10 cm long, 2–3 mm diam., drying medium brown, thinly ribbed, semiglossy with nodes swollen; cataphylls 4.5–6.0 cm long, slender, seemingly not deciduous, decaying into loose fibers with little epidermis, twisting, spreading to reflex at lower nodes. **LEAVES** with **petioles** 1.0–1.5 cm long, 1 mm diam., drying medium brown, drying sharply sulcate adaxially; geniculum 5–6 mm long, drying darkened, flattened adaxially; **blades** subcoriaceous, lanceolate-elliptic, 11.5–14.5 cm long, 3.1–4.7 cm wide, 3.1–3.7 times longer than wide, widest in lower half, acute and gradually long-acuminate at apex, obtuse to subacute at base, drying medium grayish brown, matte above, medium reddish brown, weakly glossy below; midrib slightly raised, narrowly rounded to acute and concolorous above, narrowly rounded and slightly paler below; primary **lateral veins** 8–12 per side, departing midrib at 50–60°, moderately obscure; tertiary veins scarcely visible; collective veins arising from the base, 1–2 mm from margin. **INFLORESCENCE** erect; peduncle 5.5 cm long, 1 mm diam.; **spathe** erect-spreading, reflexed in fruit, 2.5 cm long, 5 mm wide, green, drying medium brown; **spadix** 4.5 cm long, 5 mm diam., stipitate 7 mm, green, drying medium brown; **flowers** 2–3 visible per spiral, 1.2–1.4 mm long and wide; lateral tepals 0.6–0.7 mm wide, inner margin rounded, outer margin 2- or 3-sided. **Figure 35.**

Distribution and ecology — *Anthurium mistratoense* is endemic to Colombia, found only in Risaralda Department at 950–1000 m in a *Montane rain forest* life zone.

Etymology — The species is named for the locality of Mistrató in Risaralda Department where the type and only specimen was found.



Figure 35: *Anthurium mistratoense* (Orozco et al. 2216, COL-352781). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Comments — *Anthurium mistratoense* resembles *A. cardenasii* Croat which has a similar blade shape, but the latter differs by its longer petioles and slightly larger blades with prominent primary lateral veins and tertiary veins (rather than being obscure in the case of *A. mistratoense*). *A. cardenasii* also occurs farther north in Antioquia Department.

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Anthurium monteagudoii Croat & N.Altam., Aroideana 35: 73, f. 1. 2012. — Type: PERU. Pasco: Oxapampa, sector Abra esperanza. Parque Nacional Yanachaga-Chemillén. 10°31'54»S 75°20'59»W, 2550 m, primary forest, 28 February 2007, R. Vasquez, A. Monteagudo & V. Flores 32014 (holotype, MO-6242273; isotypes, B, Q, US).

Terrestrial; stem erect; internodes 4.0–8.5 cm long; cataphylls 2–7 cm long, persisting as fibers, drying reddish brown. **LEAVES** 25 cm long with petioles sheathed, subterete, 5–17 cm long, 1.5–2.0 mm diam.; geniculum 0.8–1.7 cm long; **blades** ovate-elliptic to lanceolate, 9.5–21.0 cm long, 2.5–3.5 cm wide, 4.0–8.4 times longer than wide, widest in lower half, tapered acuminate at apex, obtuse to rounded at base, drying medium brownish green above, reddish brown below; midrib prominent and drying acute on both surfaces, often drying darker brown on lower surface; primary **lateral veins** 7–12 per side, departing midrib at 50–55°, inconspicuous, slightly rounded on upper surface, more acutely raised on lower surface, concolorous on both surfaces; collective veins arising prominently from the base, running 4–6 mm, forming a straight-sided V shape, 2–4 mm from the margin, concolorous on both surfaces; tertiary veins reticulate; upper surface drying semiglossy, subcoriaceous, minutely papillate, epunctate, drying brown; lower surface drying semiglossy, papillate, with white pustules, yellow-green. **INFLORESCENCES** 25 cm long, erect, spreading 60–65° from the stem; peduncle terete, 9.7–28.0 cm long; **spathe** 3.0–6.5 cm long, 0.5–0.8 cm wide, elliptic-lanceolate, reddish green fresh, drying dark brown, semi-transparent; **spadix** cylindroid, 2.0–7.2 cm long, 0.1–0.5 cm diam., red, drying dark brown, stipe 3.0–4.5 cm long; **flowers** 3.0–3.3 mm long, 2.3–2.5 mm wide, 4–5 visible per spiral, outer tepal 2-sided, inner tepal broadly rounded, lateral tepal 1.2 mm wide. **Figures 36 & 37.**

Distribution and ecology — *Anthurium monteagudoii* is endemic to Peru (Cajamarca, Pasco) at 1900–2910 m in a *Tropical moist forest* transition to *Tropical wet forest* life zone.

Comments — The blades of *Anthurium monteagudoii* resemble some of the less typical blades of *A. valenzuelae* Croat & N. Altam. also collected from Peru. *A. monteagudoii* is distinguished from *A. valenzuelae* in having fewer primary lateral veins (8–12 versus 11–21), distinctive collective vein pattern and a stipe that measures in cm rather than mm.

Other specimens seen: **PERU. Cajamarca:** Jaén, Pomahuaca, Aguas verdes, bosque húmedo, 2370 m, 6 November 1999, C. Díaz & L. Campos 10868 (MO, QCNE, UB, US, USM). **Pasco:** Oxapampa, R. Vasquez et al. 31961 (MO); Oxapampa, Yanachaga-Chemillén National Park, San Alberto watershed, San Alberto Trail to Refugio El Cedro, 7–9 km above main



Figure 36: *Anthurium monteagudo* (Vasquez, et al. 32014, MO-6242273). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.



Figure 37: *Anthurium monteagudo* (Perea 4732). Live plant showing leaf blade (adaxial surface) and infructescence.(photo: J. Perea).

highway to Pozozo, 27 July 2017, *T.B. Croat et al.* 106906 (MO); Parque Nacional Yanachaga-Chemillén, Refugio El Cedro, Abra Esperanza, Laguna, 10°31'43"S 75°21'17"W, 2923 m, 12 November 2010, *J. Perea & H. Santiago* 4732 (HOXA, MO); Huancabamba, Sector Abra Esperanza, Parque Nacional Yanachaga-Chemillén 10°22'S, 75°27' W, 2900 m, 1 August 2003, *R. Vásquez et al.*, 28432 (MO, USM); Distrito Oxapampa. Chacos, carretera hacia La Antena, 10°37'S 75°20' W, 2050 m, 21 September 2003, *J. Lingan et al.* 688 (MO, USM); Parque Nacional Yanachaga-Chemillén, Refugio Abra Esperanza y sus alrededores, 10°31'55"S 75°20'59"W, 2786 m, 23 April 2009, *M. Cueva* 582 (MO); Sector Grapanazu, 10°25'S 75°27' W, 2410 m, 12 Oct 2003, *J. Lingan et al.* 707 (MO, USM); Sector Chacos-Antena, 10°37'S 75°17' W, 2600 m, 14 January 2004, *R. Vásquez et al.* 28679 (MO, USM); Dist. Huancabamba. Torrebamba, 10°18'24"S 75°35'06"W, 2550 m, 20 May 2004, *R. Rojas et al.* 2361 (MO, USM); Sector Chacos, 10°3'25"S 75°17'43"W, 2100 m, 3 June 2004, *R. Rojas et al.* 2600 (MO, USM); 10°22'33"S 75°36'48"W, 2720 m, 18 Sep 2004, *A. Monteagudo et al.* 7094 (MO, USM); Sector Chacos, 10°38'42"S 75°17'30"W, 2740 m, 4 November 2004, *A. Monteagudo et al.* 7527 (B, K, MO, USM); Camino desde el refugio El Cedro hacia el Abra Esperanza-Sector San Alberto, Parque Nacional Yanachaga-Chemillén, 10°32'34"S 75°21'43"W, 2410–2520 m, 16 March 2005, *E. Ortiz & J. Mateo* 496 (MO, USM); Cerca de la laguna San Daniel, 10°15'S 75°16'W, 2400 m, 13 August 2005, *A. Monteagudo et al.* 9287 (MO, QCNE, USM); Parque Nacional Yanachaga-Chemillén, a 40 minutos del Refugio Abra Esperanza, 10°31'37"S 75°21'16"W, 2910 m, 12 October 2006, *A. Monteagudo et al.* 12783 (COL, MO, USM); Parque Nacional Yanachaga-Chemillén, desde el hito de San Daniel hacia la trocha erica en la cordillera Yanachaga, 10°26'46"S 75°26'18' W, 2260 m, 21 Apr 2007, *A. Monteagudo et al.* 13674 (M, MO, S, USM); Parque Nacional Yanachaga-Chemillén, parte alta de la trocha Yanachaga-Palcazú, 10°22'42"S 75°27'00"W, 2650 m, 1 December 2007, *A. Monteagudo et al.* 16066 (F, MO, NY, USM); Sector Quebrada San Alberto (Abra Esperanza), 10°32'22"S 75°21'23"W, 2636 m, 24 October 2004, *Juan Perea & J. Mateo M.* 1954 (MO, USM); Dist. Huancabamba, parte media de la Quebrada Yanachaga, 10°13'S 75°16'W, 2200–2400 m, 21 January 2005, *Carlos Arias C.* 0146 (AMAZ, HUT, MO, MOL, URP, USM); Parque Nacional Yanachaga Chemillén - Estación Biológica San Alberto. Refugio El Cedro, 10°32'56"S 75°21'32"W, 2666 m, 10 February 2012, *R. Vásquez & L. Valenzuela G.* 37589 (HOXA, MO, US, USM); Parque Nacional Yanachaga Chemillén, Estación Biológica San Alberto, Abra Esperanza, 10°31'43"S 75°21'17"W, 2903 m, 4 November 2012, *R. Vásquez et al.* 38163 (HOXA, MO, USM); Distrito Oxapampa. Parque Nacional Yanachaga Chemillén, camino del Refugio al Abra La Esperanza. Bosque primario, 10°32'S 75°21'W, 2490–2610 m, 22 November 2002, *A. Monteagudo et al.* 4404 (HOXA, HUT, MO, USM).

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Anthurium nemorale Sodiro, Anales Univ. Centr. Ecuador 15(108): 7. 1901. — Type: ECUADOR. Pichincha: Quito Cantón, Reserve Mashpi, along road leading into reserve, departing main Pacto-San Miguel de los Bancos Road, 14.0 km N of plaza in Pacto, then 6.3 km into reserve., 00°09'57"N 78°52'17"W, 1045 m, *T.B. Croat 100963* (neotype, MO-6486449, designated here).

Terrestrial, scrambling or climbing; internodes 3–10 cm long, 4–8 mm diam., medium green, semiglossy; cataphylls 6–7 cm long, linear-lanceolate, marcescent, green, persisting at most upper nodes eventually only the basal 1/3 persisting, red-brown. LEAVES with **petioles** 6–20 cm long, terete, medium green, semiglossy, drying medium brown; **blades** thinly coriaceous, ovate, 10–30 cm long, 3–15 cm wide, 2.0–3.3 times longer than wide, widest below the middle, abruptly acuminate at apex, rounded at base, dark green and matte above, moderately paler and semiglossy below, drying dark brown and matte above, medium brown and semiglossy below; midrib narrowly rounded in valley, mostly concolorous above, narrowly round-raised and paler below; primary **lateral veins** 8–20 per side, departing midrib at 70–80°, weakly quilted and concolorous above, narrowly rounded and slightly darker below; tertiary veins moderately obscure, collective vein originating from the first primary lateral veins, 3–10 mm from margin. INFLORESCENCE with **peduncles** shorter than petioles, somewhat compressed laterally; **spathe** 1–7 cm long, 2–9 mm wide, linear to lanceolate; **spadix** stipitate 2–3 mm, cylindroid, 2–8 cm long, 2–8 mm diam., green or yellow to yellowish. **Figure 38.**

Distribution and ecology — *Anthurium nemorale* is endemic to Ecuador (Pichincha) at ca. 1000 m in a *Lower montane dry forest* life zone.

Comments — *Anthurium nemorale* resembles *A. subandinum* Engl. which also occurs in the same area, but the latter differs by its cataphylls persisting intact (rather than being essentially deciduous for *A. nemorale*) and its blades being widest near the middle (rather than in the lower half for *A. nemorale*).

Since the original holotype specimen was lost, the authors decided to designate a neotype from a modern collection that closely matches Sodiro's original description..

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Figure 38: *Anthurium nemorale* (Croat 100963). Neotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium ottobuchtienii Croat & Acebey, Novon 15(1): 85, f. 3A, B. 2005 — Type: BOLIVIA. La Paz: Murillo, 44 km below Lago Zongo dam, vic. of Cahua hydroelectric plant, 16°03'S 68°01'W, 1200 m, 12–15 Sep. 1983, *J. Solomon 10749* (holotype, MO-3158417; isotypes, B, K, LPB, NY, US, USM).

Terrestrial on steep bank; stem 30–100 cm long; internodes (0.5)1.0–1.5(2.5) long, 1.0–1.8 cm diam., medium green and weakly glossy, soon gray-green to gray-brown, semiglossy, often longitudinally and narrowly ribbed, sometimes transversely cracked; cataphylls (5.5)10.0–13.5 cm long, medium green, soon dead except parts of base and thin pale fibers at upper nodes, sometimes turning brown and persisting intact at upper nodes, finally weathering to pale fibers with fragments of epidermis of the base of the cataphylls, finally completely deciduous. LEAVES with **petioles** (11)14–28 cm long, drying 1–2 mm diam., subterete, oval, narrowly and sharply to obtusely flattened, sometimes weakly flattened, sometimes weakly and narrowly sulcate to deeply sulcate, sometimes sharply flattened with weak medial rib, medium green, weakly glossy; **blades** subcoriaceous, oblong-lanceolate to narrowly oblong-oblancheolate, sometimes ovate-elliptic to narrowly elliptic, (12)17–44 cm long, 4–6 cm wide, (2.7)3.4–8.0 times longer than wide, 1.3–2.5 times longer than petioles, narrowly acuminate at apex, abruptly acute to obtuse at base (sometimes inequilateral), semiglossy, slightly bicolorous, medium to dark green above, moderately paler below, drying dark green to dark reddish brown to yellow-brown above, moderately paler and yellow-green to reddish brown below; midrib acute to narrowly raised and concolorous above, often in deep valleys above, narrowly raised and slightly paler below, drying acute and concolorous above, paler than surface, round-raised and brown to reddish brown, sometimes finely costate below; primary **lateral veins** 10–14 per side, departing midrib at 40–60°(70°), weakly quilted-sunken and concolorous above, usually about as prominent as the collective veins above, narrowly raised and concolorous below, scarcely more prominent than the interprimary veins; collective veins arising from one of the lowermost primary lateral veins (sometimes from near the middle of the blade), or from the 1st basal veins, 1–7 mm from margin, loop-connecting the primary lateral veins. INFLORESCENCE erect to semi-erect; peduncle (6)17–25 cm long, less than 3 mm diam. on drying; **spathe** lanceolate, spreading, (2.3)4.0–5.5 cm long, 7–10 mm wide, light to medium green, margin purple; **spadix** (3.0)4.5–8.0 cm long, dark purple-violet, erect to slightly curved, matte; **flowers** ca. 3 visible per spiral, 2.5 mm long; lateral tepals shield-shaped, 1.0–2.4 mm wide, the inner margin broadly rounded, the outer margins 2-sided; pistils early-emergent. INFRUCTESCENCE to 14 cm long, nodding; berries subglobose, ca. 4 mm diam., dark violet-purple. **Figure 39.**

Distribution and ecology — *Anthurium ottobuchtienii* is endemic to Bolivia (Cochabamba, La Paz) and Peru (Cusco) at 1100–2650 m in multiple life zones.

Comments — *Anthurium ottobuchtienii* is perhaps most easily confused with *A. mindense* Sodiro of Ecuador and northern Peru, but the latter differs in having longer and proportionately more slender internodes and generally proportionately broader leaf blades.

Other specimens seen: **BOLIVIA.** Nequejahuira, 1950 m, 15–24 May 1926, *G.H. Tate 633* (MO, NY). **Cochabamba:** Carrasco. 118 km antigua carretera Cochabamba-Villa Tunari. Bosque siempre verde, virgen de 10 m de altura, en ladera superior, 17°08'S 65°38'W, 2300



Figure 39: *Anthurium ottobuchtienii* (Solomon 10749, MO-3158417). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

m, 8 July 1996, *M. Kessler et al.* 7100 (LPB, MO); Localidad El Palmar, Palmares y bosque pluviales subandinos superiores de los yungas, 17°06'S 65°33'W, 1050 m, 17–20 March 2004, *N. Altamirano* 515 (MO); Chapare. Territorio Indígena Parque Nacional Isiboro-Secure, cordillera de Mosetenez, cresta arriba de laguna Carachupa, 16°14'S 66°25'W, 1550 m, 2 September 2003, *M. Kessler, I. Jiménez & T. Krömer* 13215 (MO); Tiraque. Localidad Limbo, 17°07'23"S 65°34'27"W, 1706 m, 28 October–7 November 2003, *N. Altamirano* 450 (MO).

La Paz: Hacienda Simaco sobre el camino a Tipuani, 16°54'00"S 67°41'00"W, 1400 m, February 1920, *O. Buchtien* 5345 (NY, US); Hacienda Casana, sobre el camino a Tipuani, 1400 m, 23 October 1922, *O. Buchtien* 7172 (US); Hacienda Simaco sobre el camino a Tipuani, 16°54'00"S 67°41'00"W, 1400 m, February 1920, *O. Buchtien* 5345 (GH, MO); Caranavi. Serranía Bella Vista. 42 km de Caranavi hacia Sapecho. Al borde de la carretera, en bosque húmedo, 15°40'S 67°29'W, 1400 m, 27 August 1997, *M. Kessler et al.* 11491 (LPB, MO); Serranía Bella Vista, 37 km de Caranavi hacia Sapecho. Bosque siempre verde, 15°40'S 67°29'W, 1500 m, 24 August 1997, *M. Kessler et al.* 11349 (MO); Franz Tamayo. Parque Nacional Madidi, Keara, campamento Tocoaque, 14°38'19"S 68°57'33"W, 2930 m, 11 November 2007, *A. Araujo M. & A.T. Fernández C.* 4058C (LPB, MO, NY); Madidi, Pelechuco-Apolo, Coranara-Santa Ana, 14°46'17"S 68°58'54"W, 2250 m, 15 June 2008, *A.F. Fuentes & H. Huaylla* 13082 (LPB, MO, USZ); Área Natural de Manejo Integrado Madidi, entre Pata y Moima, 14°39'06"S 68°35'47"W, 1930 m, 21 August 2008, *A.F. Fuentes et al.* 13322B (LPB); Parque Nacional Madidi. Sector Pilcobamba, por el antiguo camino Pelechuco-Apolo, 14°44'43"S 68°56'26"W, 1794 m, 22 June 2009, *A.F. Fuentes et al.* 14705 (HSB, LPB, MO, USZ); Área Natural de Manejo Integrado Madidi, comunidad Mamacona, sobre camino de Apolo a San José de Uchupiamonas, a 1 km subiendo el río Mamacona. Parcela Permanente IV, 14°27'02"S 68°11'47"W, 1626 m, 8 August 2002, *C. Maldonado et al.* 2658 (LPB, MO); Madidi, Pelechuco, Tanhuara, 14°44'50"S 68°56'47"W, 1835 m, 5 July 2009, *L. Cayola et al.* 3190 (LPB, MA, MO, USZ); 30.5 km N (below) of dam at Lago Zongo. Trail up Río Jachcha Cruz. Moist forest with little disturbance, 16°07'S 68°05'W, 2200 m, 16–17 December 1982, *J.C. Solomon* 9098 (MO); Valle del Zongo. 32.8 km al norte (abajo) de la cumbre (ca. 300 m al sur de la Planta Hidroeléctrica Chururaqui). Bosque húmedo, muy intervenido, 16°07'S 68°06'W, 2080 m, 10 May 1990, *J.C. Solomon et al.* 19062 (B, LPB, MO); Valle de Zongo, 44 km después del abra de Zongo. Bosque montañoso en cañada precipitosa sobre arroyo, 1650–1750 m, 19 Nov. 1981, *S.G. Beck* 7245 (LPB, MO); Valle de Zongo, along trail from the end of the road at the Kahua Power Plant. Subtropical lower montane wet forest, 16°15'S 68°07'W, 1660–1690 m, 23 November 1980, *T.B. Croat* 51426 (LPB, MO); Nor Yungas. Sacramento, between Chuspipata and Yolosa. (non-transect), 16°18'S 67°48'W, 2380–2400 m, 4 October 1985, *A.H. Gentry & J.C. Solomon* 52045 (F, GH, LPB, MO); On the trail to Campo de Don Pedro, trail to the mine, 16°12'S 67°53'W, 2450 m, 8 August 2000, *Bach* 443 (LPB, MO); Along the trail to Campo Don Pedro, trail to the mine, 2550 m, 8 August 2000, *Bach* 499 (LPB, MO); Estación Biológica de Tunquini, senda del campo de Dn. Pedro al camino de la mina, 16°12'S 67°53'W, 2400 m, 26 July 2000, *E. García* 4434 (LPB, MO); 8 August 2002, *I. Jiménez* 499 (LPB); PN-ANMI Cotapata, senda El Choro, trayecto Sandillani-Chairo, por senda que va a la loma de Sandillani, 16°13'01"S 67°52'17"W, 2060 m, 24 August 2005, *Iván Jiménez* 3147 (LPB, MO); PN-ANMI Cotapata, loma de Sandillani, desde el pastizal (2050 m) se va por una senda en dirección SO, 16°13'00"S 67°52'07"W, 2180 m, 27 September 2005, *I. Jiménez & F. Miranda* 3295 (LPB, MO); Estación Biológica de Tunquini, senda del campo de Dn. Pedro al camino de la mina, 16°12'S 67°53'W, 2550 m, 8 August 2000, *I. Jiménez et al.*

499 (LPB, MO); Estación Biológica de Tunquini, senda del campo de Don Pedro al camino de la mina, 16°12'S 67°53'W, 2450 m, 8 August 2000, *I. Jiménez et al.* 443 (LPB, MO); 9.5 km NE (below) Chuspipata (20.2 km S of Yolosa). Lower cloud forest, 16°17'S 67°49'W, 2350 m, 19 July 1982, *J.C. Solomon* 8103 (COL, LPB, MO, USZ, VEN); Serranía de Bella Vista, 16 km N of Carrasco (37 km N of Caranavi) on road to Palos Blancos, 15°35'S 67°34'W, 1500 m, 31 October 1984, *J.C. Solomon & M.H. Nee* 12716 (MO); Estación Biológica de Tunquini, senda del Pajonal (atrás del Río Cedroni) al camino de la mina, 16°12'S 67°52'W, 1700 m, 9 September 2000, *K. Bach* 973 (LPB, MO); Estacion Biologica de Tunquini, Hornuni Bajo, senda del campo Don Pedro a la quebrada al Oeste, 16°13'S 67°53'W, 1850 m, 31 August 2001, *K. Bach et al.* 1780 (LPB, MO); Estación Biologica de Tunquini, Hornuni Bajo, senda cafetal al camino de la mina, 16°12'S 67°52'W, 1700 m, 29 August 2001, *K. Bach et al.* 1692 (MO); 8 km de Chuspipata hacia Coroico. Bosque siempre verde, poco disturbado de 15 m de altura, 16°23'S 67°48'W, 2650 m, 19 September 1997, *M. Kessler et al.* 12049 (LPB, MO); Polo-Polo near Coroico, 16°11'20"S 67°43'37"W, 1100 m, October–November 1912, *Otto Buchtien* 3667 (MO, NY, US); Along road between Unduavi and Caranavi, 34.8 km E of Unduavi, 16.3 km SW of Yolosa. Tropical lower montane moist forest, 16°25'S 67°46'W, 2980 m, 27 November 1980, *T.B. Croat* 51575 (MO); Parque Nacional Anmi Cotapata; Estación Biológica Tunquini, NW of Coroico, NNE of La Paz; vic. of Chairó, 23 Km W of Yolosa, 16°12'S 67°50'W, 1300–1500 m, 21 August 2000, *T.B. Croat et al.* 84754 (MO); Parque Nacional Cotapata. Bosque siempreverde, disturbado, al lado de la senda, 16°12'S 67°51'W, 1550 m, 24 August 1999, *T. Krömer* 734 (LPB, MO); Bosque Humedo Montano de los Yungas, 16°11'S 67°53'W, 1700 m, 21 May 2000, *T. Krömer s.n.*; Parque Nacional Cotapata. Bosque humedo montano de los Yungas, 16°11'S 67°53'W, 1700 m, 21 May 2000, *T. Krömer & A. Acebey* 1170 (LPB, MO); Along road between Rurrenabaque and Caranavi, 28.4 Km SW of middle of bridge over Río Beni near Sapecho, 21.4 Km SW of Río Piquendo, Serrania Bella Vista, 15°39'59"S 67°28'19"W, 1330 m, 20 August 2000, *T.B. Croat et al.* 84733 (LPB, K, M, MO). **PERU. Cusco:** Dist. Santa Ana, Subcuenca Chuyapi, Poromate, Bosque Primario húmedo, 12°55'43"S 72°47'30"W, 2000–4064 m, 23–24 September 2002, *L. Valenzuela G et al.* 632 (CUZ, MO); La Convención. Distrito Quellouno, Abra de Yavero. Bosque montano primario, 12°28'43"S 72°29'00"W, 2301 m, 23 September 2007, *G. Calatayud* 4668 (CUZ, MO, US, USM); Dist. Huayopata, Incatambo, quebrada Curcur, Bosque Primario, 13°02'S 72°16'W, 2477 m, 18 November 2004, *L. Valenzuela G.* 4393 (CUZ, MO).

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Anthurium pitalitoense Croat, **sp. nov.** — Type: COLOMBIA. Huila: SSW of Pitalito, Parque Nacional Natural Cueva de Los Guácharos, cerca del alto de Consuelo, 01°35'00»N 76°00'00»W, 119 m, 28 August 1993, *C. Barbosa 15470* (holotype, FMB-51156).

Diagnosis: The species is characterized by its terrestrial habit, internodes slender and longer than broad, brownish-drying, often heavily sheathed, sulcate petioles, reddish brown-drying, narrowly oblong-elliptic, long-acuminate blades which are acute at the base with moderately numerous, broadly spreading primary lateral veins, the collective veins arising from the lower primary lateral veins and loop-connected with the primary lateral veins as well as by the long-pedunculate inflorescence, narrowly lanceolate, spreading, green spathe and long-stipitate, violet-purple, narrowly tapered spadix.

Terrestrial; internodes 1–3 cm long, 0.6 cm diam., cataphylls persistent, 7–10 cm long, drying dark brown. LEAVES 35–40 cm long with **petioles** 9.3–12.5 cm long, 2–4 mm diam., drying narrowly and deeply sulcate adaxially, with a prominent medial rib abaxially, geniculum 0.6 cm long, drying somewhat darker than petiole; **blades** long elliptical, 26.4–31.5 cm long, 5.3–7.3 cm wide, 3.9–5.7 times longer than wide, 2.3–3.3 times longer than petiole, apex gradually acuminate with 2 cm apiculum, cuneate at base, drying dark greenish brown above, slightly lighter below; midrib drying narrowly rounded on upper surface, more broadly rounded below, reddish on both sides; primary **lateral veins** 26–30 per side, departing midrib at 70–80° curving sharply upward near the margins, inconspicuous above, finely raised and slightly darker than blade surface below; collective veins arising at the base, loop connecting to the primary lateral veins, 4–6 mm from margin, slightly more prominent than primary lateral veins; upper surface drying dark brown, semiglossy, epunctate, micro-granular with abundant white raphide cells visible under magnification, lower surface drying lighter brown, semi-glossy, epunctate with micro-granular texture. **INFLORESCENCE**, erect, 14.6–30.5 cm long with peduncles 10.5–23.3 cm long, 1–2 mm diam.; **spathe** green, reflexed, 7.2–9.3 cm long, 8–9 mm wide, **spadix** cylindrical with slight tapering to apex, 4.1–7.2 cm long, 2–5 mm diam., wine colored, stipe 1.0–2.6 cm long; **flowers** 3–4 visible per spiral, 1.8 mm × 1.4 mm, lateral tepal 1.4 mm wide, outer margins 2-sided, inner margins rounded, tepal surface crusty and blackened with light inner margin edges. **Figure 40.**

Distribution and ecology — *Anthurium pitalitoense* is endemic to Colombia, known only from the type locality in Huila Department at 1120–1980 m in Parque Nacional Natural Cueva de Los Guácharos and in the Municipio Palestina in *Premontane* to *Lower montane wet forest* life zones.

Etymology — The species is named for the type locality near the city of Pitalito in Department of Huila.

Comments — *Anthurium pitalitoense* appears close to *A. stipitatum* Benth., a species collected in the Cordillera Occidental but differs in having only 16–19 primary lateral veins, shorter blades (19–22 cm long), smaller stipe (3–5 mm long) and smaller spathes (4–6 cm long).



Figure 40: *Anthurium pitalitoense* (Barbosa 15470, FMB-51156). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.

Paratype: **COLOMBIA. Huila**: Municipio de Palestina, Vereda Jerico, a. W de Cerro L Mensura, sitio Jerico, 01°39'54"N, 76°08'28"W, 1980 m, 30 August – 2 September 2005, G.A. Luna, S. Medina, A. Robles, R. Ortiz & L. Oyo Muñoz 81(FMB).

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Anthurium pulchellum Engl., Bot. Jahrb. Syst. 6: 273. 1885. — Type: COLOMBIA. Cauca: Above Cali, 2000 m, F.C. Lehmann 2871 (holotype, B).

Terrestrial or epiphytic; internodes 2–9 cm long, 4 mm diam., pale olive-green, matte; cataphylls 2–7 cm long, persisting ± intact. LEAVES with **petioles** 1–5 cm long, 1–2 mm diam.; **blades** subcoriaceous, linear to lanceolate, 6–16 cm long, 1.5–3.0 cm wide, 5–6 times longer than wide, acuminate at apex, acute or obtuse at base, semiglossy, dark green above, moderately paler below, drying dark greenish brown above, light greenish brown below, midrib narrowly raised and concolorous above, narrowly rounded and slightly paler below; primary **lateral veins** 15–25 per side, weakly etched and concolorous above, weakly raised and concolorous below; basal veins 1 or 2 pairs; collective veins arising from the uppermost basal veins, 2–4 mm from margin. INFLORESCENCES with peduncle 3–14 cm long; **spathe** 1.5–5.0 cm long, 0.5–1.5 cm wide, linear to lanceolate, green to greenish; **spadix** cylindroid, 1.5–5.0 cm long, 2–4 mm diam., green or yellow; stipe 1–6 cm long. **Figures 41–43.**

Distribution and ecology — *Anthurium pulchellum* is endemic to Colombia, found only in Antioquia, Cauca, Huila and Valle del Cauca Departments at 1800–2400 m in *Lower montane wet forest* life zones.

Comments — *Anthurium pulchellum* resembles *A. valenzuelae* Croat & N.Altam., but that species has much longer blades and grows in eastern Ecuador and Peru instead of western Colombia for *A. pulchellum*.

Other specimens seen: **COLOMBIA. Antioquia**: Briceno, c. 1 km from main highway along road to El Cedro, 07°00'N 75°25'W, 2200 m, 26 November 1988, G. McPherson 13286 (MO); Along road inside Parque Regional Ecoturístico Arví, Corregimiento Santa Elena, Mpio. Santa Elena, Vereda Piedra Blanca, 13.5 km W to junction with Medellín-Río Negro Highway, 06°17'58"N 75°29'40"W, 2305 m, 28 April 2007, T.B. Croat & F. Cardona 97960 (MO); Abejorral, A. Gil et al. 434 (JAUM); Vereda Santa Ines, vicinity of Alto Guayaquil, along trail to Río Santa Ines, affluent of Río Santo Domingo, 05°51'N 75°17'W, 2420–2500 m, 24 July 2021, T.B. Croat & J. Cano 108208 (MO); Angostura, Finca El Cordal, quebrada El Pajarito, bosques de robles plantados, 2 km NE del peaje de Santa Rosa de Osos, sobre la via Medellin - Costa Atlántica, 06°53'19"N 75°21'20"W, 1800 m, 6 November 2003, R. Callejas et al. 13356, 13360 (HUA, MO); Guatapé, Vereda Santa Rita, 05°37'00"N 75°54'55"W, 1850 m, 11 October 1985, L.K. Albert de Escobar et al. 5901 (HUA, MO); Jardín, Vereda La Mesenia, Las Brisas, Mesenia-Paramillo Nature Reserve; trail El Alto to San Antonio de



Figure 41: *Anthurium pulchellum* (Gentry 47762). Herbarium specimen showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 42: *Anthurium pulchellum*(Croat 97960). Live plant showing stem, petioles and leaf blades (abaxial surface) (photo T.B. Croat).



Figure 43: *Anthurium pulchellum*(Croat 97960). Live plant showing inflorescence (photo T.B. Croat).

Chami, 05°30'06»N 75°52'26»W - 05°29'51»N - 75°52'24»W, 2300–2500 m, 12 November 2021, *T.B. Croat et al. 108428* (MO); La Ceja, December 1947, *Hno. Daniel 4058* (US); Vereda El Guaico via entre La Ceja y Abejorral, Río Piedras, 05°56'N 75°25'W, 2300–2500 m, 16 November 1996, *F. Cardona 116* (HUA, MO); La Unión, Km 23.5 of road La Unión-Sonsón (32.5 km before Sonsón), 05°52'N 75°18'W, 2300 m, 9 November 1988, *J.L. Zarucchi & F.J. Roldán 7276* (MO); Medellín, vereda Santa Elena, 12 km E of Medellín, 2400 m, 18 December 1980, *G.A. Galeano 318* (COL); *G.A. Galeano et al. 322* (COL). Rionegro, 2300 m, November 1982, *W.G. Vargas 740* (MO); Along road from La Mesina to Rerserva Natural Mesenia-Paramillo, Cristalina Trail, 05°31'18»N 75°53'53»W, 1900–2000 m, 2 July 2021, *T.B. Croat et al. 108027* (B, MO, US). **Cauca:** La Cumbre, cordillera occidental vertiente oriental, corregimiento Bitaco, serve forestal regional Bitaco, via Montebello, 04°35'56»N 77°04'51»W, 1900 m, 17 September 2014, *M. Llano & Orjuela, S 273* (CUVC); Cuchilla Naranjal, Argelia, robledal subandino, 2350 m, 3 August 1984, *M.L. Becking MB1623* (COL). **Huila:** Finca Merenberg, border with Cauca E of Leticia, 02°16'N 76°12'W, 2300 m, 8 July 1984, *A.H. Gentry et al. 47762* (CUVC, MO); San Augustin, Macizo Colombiano, Hoya del Magdalena, km 17 on road to Santa Rosa, “La Candela”, 2420 m, 27 August 1958, *J.M. Idrobo et al. 2892* (COL, IBE, MO, P). **Valle del Cauca:** Along Highway 19 from Cali to Buenaventura, eastern slopes of western Cordillera, ca. 4 km W of Salaito, vicinity of Km 18, 03°30'36»N 76°37'00»W, 17 July 1997, *T.B. Croat & J.F. Gaskin 79968* (CUVC, MO); Cordillera Occidental, vertiente occidental: monte La Guarida, filo de la cordillera sobre La Carbonera (entre Las Brisas y Albán), 1950–2000 m, 16–24 October 1946, *J. Cuatrecasas 22222* (F, US); Cali, Finca Zingara, Km. 18 de la carretera Cali-Buenaventura, Km 4 via a Dapa, corregimineto de la Elvira, cordillera Occidental, 03°30'N 76°34'W, 1900 m, 12 March 1995, *J. Giraldo G. & L.O. Agredo 623* (MO); Finca Zingara, Km. 18 de la carretera Cali-Buenaventura, Km 4 via a Dapa, corregimineto de la Elvira, cordillera Occidental, 03°30'N 76°34'W, 1900 m, 15 May 1994, *J. Giraldo G. 334* (MO).

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Anthurium rioverdense Delannay & Croat, **sp. nov.** — Type: ECUADOR. Carchi: Mountain E & NE. Forest area along slope of mountain ENE of Rafael Quindí's mountain finca and above Río Verde including top of mountain which is similar in geologic format to Golondrinas Mountains, 00°52'N 78°07'W, 1870–2400 m, *W.S. Hoover 2291* (holotype, MO-3624215).

Diagnosis: *Anthurium rioverdense* is characterized by its long, arching, pendent stems with the cataphylls persisting as short pale fibers, its lanceolate blades 4.5–6.8 times longer than wide and drying medium to light brown, its widely spaced primary lateral veins, and its infructescence with purple tepals and red berries.

Epiphyte with long, arching-pendent stems erect at the apex; internodes 1.5–4.0 cm long, 4–5 mm diam., drying medium brown; cataphylls 4.0–9.5 cm long, persisting as short pale fibers. **LEAVES** with **petioles** 3.5–8.0 cm long, drying medium brown; **blades** subcoriaceous, lanceolate, 17–29 cm long, 2.5–6.5 cm wide, 4.5–6.8 times longer than wide, obtuse and long-acuminate at apex, acute or obtuse at base, drying medium brown or light grayish brown above, slightly paler below; midrib sharply raised above, round raised below; primary **lateral veins**

8–10 per side, widely spaced (1.2–2.5 cm), departing midrib at 70–80° and curving towards the apex; interprimary veins prominent; tertiary veins prominent, reticulated; collective veins arising from the first primary lateral veins, 2–7 mm from margin. **INFLORESCENCE** erect; peduncle 10 cm long; **spathe** reflexed, 4.5 cm long, 1.1 cm wide, pale green; **spadix** 7.3 cm long, drying medium brown, sessile. **INFRUDESCENCE** pendent; spadix 11.5 cm long, 1 cm diam.; tepals purple; berries red. **Figure 44.**

Distribution and ecology — *Anthurium rioverdense* is endemic to Ecuador, found only in Carchi Province at 1620–2400 m in a *Tropical dry forest* life zone.

Etymology — The species is named for the Río Verde near which the type was found.

Comments — *Anthurium rioverdense* is unusual due to its drying color which is much paler than for most species of Sect. *Stipitata*. It is also very distinct due to its elongated blades with widely spaced primary lateral veins.

Paratype: **ECUADOR. Carchi**: Vicinity of Maldonado, wet forest, 00°54'00"N 78°06'00"W, *M. T. Madison* 3990 (SEL).

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Anthurium roblesii Croat & N.Köster, **sp. nov.** — Type: ECUADOR. Esmeraldas: Quinindé Cantón, Montañas de Mache-Chindul, Bilsa Biological Station, 00°21'00"N 79°42'00"W, 450–650 m, October 2006, *N. Köster & A.-M. Schnell* 1858 (holotype, MO-6194921; isotypes, QCA, QCNE).

Diagnosis: *Anthurium roblesii* is characterized by its elongate, slender internodes, cataphylls intact at upper nodes only, moderately short, subterete and adaxially sulcate petioles, the oblong-elliptic, long and narrowly acuminate, greenish-brown to dark yellow-brown drying leaves as well as the slender, long-pedunculate inflorescence with a green, oblong-lanceolate, reflexed spathe, and slender, long-tapered, dark purple to maroon spadix.

Epiphytic or terrestrial; stem long-climbing, epidermis matte, pale yellow-brown to medium tan; internodes much longer than wide, (2)3.5–8.0 cm long (–13 cm at base), (2.5)3.0–4.0(5.0) mm diam. (upon drying); cataphylls 4.2–6.5 cm long, very thin, light brown, persisting intact at upper nodes, eventually breaking up, only basal fibers persisting at lower nodes. **LEAVES** spreading to semi-erect, scattered along the stem; **petioles** slender, 2.4–4.6 cm long, 1.0–1.5 mm diam., drying subterete, sulcate adaxially with acute margins, matte, medium yellow-brown; geniculum 5–9 mm long, drying slightly darker than petiole; **blades** coriaceous, mostly elliptic to ovate-elliptic or oblong-elliptic, 11.9–18.4 cm long, 3.8–5.4 cm wide 2.3–4.2 times longer than wide, 2.8–5.4 longer than petiole, acute to subrounded at base, acuminate to long and narrowly acuminate (1.5–2.7 mm) at apex, medium green and weakly glossy above, paler and weakly glossy below, drying matte, greenish-brown to dark yellow-brown above, weakly glossy, pale greenish-brown to medium yellow-brown below; both surfaces moderately smooth upon magnification; midrib narrowly acute and concolorous to slightly paler above, strongly



Figure 44: *Anthurium rioverdense* (Hoover 2291, MO-3624215). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

round-raised below, drying irregularly ribbed, medium to dark-yellow-brown below; primary **lateral veins** 8 or 9 per side, departing midrib at 55–65°, drying weakly and narrowly raised, concolorous above, narrowly raised, concolorous to slightly paler below; interprimary veins few, only slightly weaker than primary lateral veins; tertiary veins present; collective veins arising at the 1st primary lateral veins, 2.5–4.0 mm from the margins, similar to primary lateral veins. **INFLORESCENCE** erect, shorter to slightly longer than leaves; peduncle longer than petioles, very slender, 5.0–9.7 cm long, 0.8–1.2 mm diam., drying dark yellow-brown; **spathe** oblong-lanceolate, flat, reflexed, not decurrent at petiole, 3.9–5.9 cm long, 5.0–9.5 mm wide, light green tinged violet-purple at margin, drying pale greyish-green to yellow-brown; **spadix** short-stipitate (2 mm), slender, (2.7)4.5–6.4 cm long, 2.0–2.5 mm diam. (at anthesis, upon drying), cylindroid to gradually long-tapered, dark purple to maroon; **flowers** 3(4) visible per spiral, deltoid in outline, 2.4–3.0 mm long, 1.8–2.1 mm wide; tepals drying smooth on magnification, dark purple to dark maroon; lateral tepals 0.7–0.9 mm wide, inner margin straight, outer margins 2-sided; pistils orange. **Figure 45.**

Distribution and ecology — *Anthurium robesii* is endemic to Ecuador, found only in Esmeraldas and Manabí Provinces at 400–700 m in *Tropical moist forest* and *Tropical wet forest* life zones.

Etymology — The species is named in honor of Carlos Agdul Robles Macias, a dedicated conservationist who has devoted his life to promoting and preserving the forests of western Ecuador. Beginning his career as a park guard with the Ecuadorian foundation Tercer Mundo, Carlos played a crucial role in early botanical expeditions with John L. Clark, documenting plant diversity in the Cordillera Mache-Chindul. In recent years, Carlos has continued his tireless conservation efforts with the Third Millennium Alliance (TMA), significantly contributing to the protection of the forests of Cerró Pata de Pájaro in the southern Cordillera Mache-Chindul. His work has been instrumental in safeguarding these vital ecosystems. He is married to Erika Georgette Revelli Velasco and they have a daughter, Paula, who often joins him in the field, continuing the legacy of forest guardianship.

Comments — *Anthurium robesii* is similar to *A. stipitatum* Benth. from Colombia but that species has much longer petioles (15–17 cm), a long-stipitate spadix (2 cm), and dries dark brown. The species is also similar to the common Andean *A. mindense* Sodiro which differs in a more robust habit with distinctly thicker stems (8–10 mm) drying glossy yellow-brown. It also has 9–14 primary lateral veins per side (versus 8 or 9 per side in *A. robesii*), a spadix with a stipe 6–8 mm long, and a clearly decurrent spathe. *A. mindense* also grows at high elevations on both sides of the Cordillera Central rather than at low elevations near the Pacific coast in the case of *A. robesii*.

Paratypes: **ECUADOR.** **Esmeraldas**, Quinindé Cantón, Montañas de Mache-Chindul, Bilsa Biological Station, 35 km W of Quinindé, 00°21'N 79°44'W, 500 m, January 1997, *J.L. Clark et al.* 3724 (MO-05101001); **Manabí**, Pedernales Cantón, Cerro Pata de Pájaro, 10 km east of Pedernales, 00°01'N 79°58'W, 400–700 m, September 1998, *T. Delinks & C. Robles* 65 (MO-5342625); 300–700 m, 20 June 1996, *J.L. Clark et al.* 2673 (MO-05031420).

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Figure 45: *Anthurium robeslii* (Köster & Schnell 1858, MO-6194921). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

Anthurium rodvasquezii Croat, *Aroideana* 35: 75, f. 1. 2012. — Type: PERU. Pasco: Oxapampa, Distrito Huancabamba, Localidad Grapanazu, sector San Daniel, zona de amortiguamiento del P. N. Yanachaga Chemillen, bosque primario, 10°26'36»S 75°26'21»W, 2236 m., 10 July 2004, *J. Perea, R. Francis, H. Cristobal & E. Camavilca 1464* (holotype, MO-6285452; isotypes, AMAZ, F, HUT, K, MO, US, USM).

Terrestrial 1 m high; internodes 2.5–6.0 cm long, 0.5–1.0 cm diam.; cataphylls green, persisting, medium brown 2.5–14.0 cm long. **LEAVES** 32–36 cm long with **petioles** subterete, adaxially C-shaped with marginal ribs, 11.8–19.3 cm long, 0.3–0.4 cm diam.; geniculum 1.0–1.5 cm long, darker brown with fine wrinkles; **blades** ovate-elliptic, 16.4–23.4 cm long, 5.4–7.8 cm wide, 2.6–3.3 times longer than wide, 1.0–1.5 times longer than petiole, abruptly acuminate at apex with 0.5–1.0 cm long acumen terminated with a 1–2 mm apiculum, cuneate at the base; midrib finely raised, concolorous above, broadly rounded, reddish brown below; primary **lateral veins** 10–14 per side, departing midrib at 70–80° curving upward near the margin, very fine, concolorous and inconspicuous above, finely raised, acutely raised, reddish below, basal veins 1 pair becoming collective veins and loop connecting to primary lateral veins 3–5 mm from the margin, inconspicuous above and finely raised below; upper surface drying microgranular, dark brown, semi-glossy with white rod-shaped inclusions; lower surface drying microgranular, semi-glossy, lighter brown, often with scattered light colored pustules. **INFLORESCENCE** 14–20 cm long with peduncle 9.8–18.0 cm long, 2 mm diam., with stipe 3–8 mm long; **spathe** green, lanceolate, reflexed, 3–5 cm long, 0.5–1.6 cm wide; **spadix** yellow, 3–5 cm long, 0.4–0.7 cm diam., usually cylindroid or slightly tapered; **flowers** 3–4 visible per spiral, 3.0 mm long, 2.5 mm wide, lateral tepals 1.8 mm long, outer margins 2-sided, inner margins broadly rounded. **Figure 46.**

Distribution and ecology — *Anthurium rodvasquezii* is endemic to Peru, known only from the type locality in Pasco Department, Province of Oxapampa, Distrito Huancabamba, Parque Nacional Yanachaga-Chemillén at 2000–2430 m in a *Premontane tropical rain forest* life zone.

Comments — *Anthurium rodvasquezii* is perhaps most closely related to *A. flavescens* Poepp. which also occurs in the Pasco Department and Oxapampa Province, and also has a few large flowers per spiral. However, that species occurs at lower elevations (235–700 m) and differs in having typically shorter internodes, typically shorter, more nearly elliptic to oblanceolate-elliptic grayish drying blades. *A. rodvasquezii* also resembles *A. mindense* Sodiro but the blades of *A. mindense* are larger and longer with more primary lateral veins and collective veins that run up to 1 cm from the margin. Also, the spadices of *A. mindense* are larger and usually red to violet in color.

Other specimens seen: **PERU. Pasco:** Oxapampa, Distrito Huancabamba, Parque Nacional Yanachaga-Chemillén, Sector Tunqui, camino al valle del Palcazú bosque montano maduro, 10°16'24»S, 75°30'37»W, 15 September 2006, *G. A. Castillo et al. 996* (MO); Distrito Oxapampa. PN Yanachaga - Chemillen. Sector San Alberto. Refugio el Cedro, 10°32'S 75°21»W, 2350 m, 19 March 2003, *J. Lingán 351* (MO, USM); Sector Grapanazu, San Daniel, 10°25'S 75°27»W, 2410 m, 10 October 2003, *J. Lingán et al. 697* (MO); Distrito Huancabamba. Sector Grapanazu, San Daniel, trocha a la laguna, 10°25'S 75°27»W, 2410 m, 12 October 2003, *J. Lingán et al. 710* (MO); Distrito Huancabamba. Sector Grapanazu,



Figure 46: *Anthurium rodvasquezii* (Perea et al. 1464, MO-6285452). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.

San Daniel, 10°26' S 75°26'W, 2275 m, 15 October 2003 *J. Lingán et al.* 718 (MO); Dist. Huancabamba. Localidad Dist. Huancabamba. Localidad Grapanazu, sector San Daniel, inmediaciones de la laguna San Daniel, 10°26'S 75°27'W, 1221 m, 6 July 2004, *J. Perea et al.* 1347 (MO); Dist.. Parque Nacional Yanachaga-Chemillén, la Colmena, 10°26'24»S 75°25'52»W, 2330 m, 24 August 2008, *L. Valenzuela G. et al.* 11686 (HOXA, HUT, MO, MOL, USM); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén, la Colmena, 10°26'32»S 75°26'17»W, 2429 m, 25 August 2008, *L. Valenzuela G. et al.* 11747 (HOXA, HUT, MO, MOL, USM); Distr. Oxapampa. La Suiza Nueva, 10°33'44»S 75°27'22»W, 2200 m, 7 May 2005, *H. van der Werff et al.* 19885 (MO); Dist. Huancabamba. Sector Grapanazú. San Daniel. Parque Nacional Yanachaga Chemillen, Trocha Erica, 10°26'30»S 75°26'18»W, 2429 m, 19 May 2012, *L. Valenzuela G. et al.* 21040 (HOXA); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén, sector San Daniel, 10°26'15»S 75°27'11»W, 2192 m, 29 February 2008, *R. Vásquez et al.* 33655 (HOXA, MO, USM).

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Anthurium stipitatum Benth., Plantas Hartwegianas imprimis Mexicanas 255. 1846. — Type: COLOMBIA. Juxta fluvium Palace, prov. Popayan, 1846, *Hartweg 1403* (K).

Anthurium popayanense Engl., Bot. Jahrb. Syst. 6: 274. 1885. — Type: COLOMBIA. Cauca: In silvis humidis densis ad declivia orientalia montis Munchique pr. Popayan, 02°32'00»N 76°57'00»W, 2000–2300 m, *Lehmann 2821* (B).

Climbing epiphyte; internodes 4–13 cm long, 0.5–1.7 cm diam.; cataphylls 6 cm long, at first persisting on top then decaying into fragments. LEAVES with **petioles** subterete, 11.0–14.5 cm long; **blades** oblong-lanceolate, 21–26 cm long, 4.5–5.5 cm wide, 3.8–5.3 times longer than wide, widest in lower half, acuminate at apex (acumen to 2 cm long), obtuse at base, drying reddish brown on both surfaces; midrib slightly raised and concolorous above, round-raised and darker below; primary **lateral veins** 12 or 13 per side, departing midrib at 55–75°, concolorous, prominent below; tertiary veins reticulate, prominent below; collective veins arising from the lowermost primary lateral veins, 2–4 mm from margin. INFLORESCENCE about as long as leaves; peduncle 25–30 cm long; **spathe** linear-lanceolate, 4–6 cm long, 6–8 mm wide, green to dark maroon; **spadix** slender, cylindrical, 4.0–7.3 cm long, 3 mm diam., green to dark purple, stipitate 2–6 mm long; **flowers** 3 mm wide; berries subglobose. **Figure 47.**

Distribution and ecology — *Anthurium stipitatum* is endemic to Colombia (Antioquia, Bocayá, Caquetá, Cauca, Huila, Putumayo, Santander, Valle del Cauca) at 1400–2800 m in multiple life zones.

Comments — Due to its elongated blades 3.8–5.3 times longer than wide and its reddish-brown drying coloration, *Anthurium stipitatum* cannot easily be confused with other species of Sect. *Stipitata*.



Figure 47: *Anthurium stipitatum* (Betancur & Churchill 2525). Herbarium specimen showing stem, petioles, blades (adaxial and abaxial surfaces) and inflorescence.

Other specimens seen: **COLOMBIA.** Nonov-Granatov, ad Jopayaon, *H.G.A. Engler* 68 (MO); La Capilla, Highlands of Papayan, *F.C. Lehmann* 5988 (GH, MO); Highlands of Popayan, 03°16'39"N 75°37'17"W, 1600–2000 m, *F.C. Lehmann* 8636 (GH, MO, PH, US). **Antioquia:** Urrao, on trail to Finca La Quince, above Urrao, 06°30'N 76°10'W, 2500–2800 m, 21 November 1988, *G. McPherson* 13233 (HUA, MO); Envigado, Vereda Pantanillo, límites con Mpio El Retiro, sobre la vía La Ceja-Aeropuerto, 4 kms NE de la vía Medellín-Las Palmas, bosque montano, 06°12'N 75°40'W, 2200–2420 m, 6 September 1991, *R. Callejas et al.* 10326 (HUA, MO); Caldas, 2 February 1984, *L.K. Albert de Escobar et al.* 3738 (HUA); vereda La Clara, Finca La Oculta, 06°03'59"N 75°38'35"W, 15 March 1984, *L.K. Albert de Escobar et al.* 3926 (HUA); vereda La Corrala, 31 May 1984, *L.K. Albert de Escobar et al.* 4512 (HUA); Retiro, vereda Piedras Blancas, 06°15'00"N 75°30'00"W, 2000 m, 31 March 1973, *L.K. Albert de Escobar* 105 (HUA); 20 February 1974, *L. Jacobs* 137 (HUA); Medellín, corregimiento Santa Elena, vereda El Tambo, 3 km sobre la antigua vía a Laguna de Guarne, 2300 m, 25 July 1995, *R. Callejas & D.L. Echeverri* 11577 (HUA); corregimiento Santa Elena, alto de Santa Elena, 16.5 km SE de Medellín, 2200 m, 1 September 1995, *R. Callejas & D.L. Echeverri* 11697 (HUA); Guarne, road to Piedras Blancas, 06°15'N 75°30'W, 2290 m, 11 February 1984, *F.J. Roldán & J. Brand* 78 (HUA, MO). **Boyacá,** Duitama, Vereda El Carmen en la vía a Virolín (antes de la comunidad Tao), a lo largo de una quebrada pedregosa, 05°49'32"N 73°02'14"W, 2320 m, November 1994, *J.L. Fernández-Alonso* 12224 (COL, MO). **Caquetá:** Along new road between Florencia and Neiva, 7.8 km E of summit of Cordillera Oriental and department limit of Huila Department, between 3rd and 4th tunnel from Florencia, 01°45'11"N 75°44'43"W, 2048 m, 9 November 2008, *T. B. Croat et al.* 100498 (MO). **Cauca:** Mercaderes, Munchique, 2100 m, 22 April 1939, *A.H.G. Alston* 8200 (BM); January–March 1989, *F.C. Lehmann* BT459 (GH, K, L, MO, NY); Chisquío, forest, 1600 m, 7 February 1940, *E. Asplund* 106 (MO, S). Parque Nacional Munchique, 1–12 km into park beyond its entrance, 02°40'N 76°50'W, 2100–2440 m, 7 May 1984, *J.L. Luteyn et al.* 10215 (NY); 13 km de El Tambo a Munchique, bosque primario intervenido a la orilla de una quebrada, Cordillera Occidental, 02°27'34"N 76°52'59"W, 2300 m, 13 May 1991, *J.C. Betancur B. & S.P. Churchill* 2525 (MO, US), Popayán, Hacienda La Lomita, km 9 de la variante, 1750 m, 4 May 2000, *Alcazar* 76 (COL). **Huila:** Pitalito, ridge between drainages of Río Guarapas and Río Guachicas, just below main ridge of Cordillera Oriental, above Palestina, SW of Pitalito, open woods, wet forest on top of ridge, 01°35'N 76°16'W, 1800–1900 m, 6–7 February 1943, *F.R. Fosberg* 19990 (MO, US). **Putumayo:** Mocoa, Corregimiento de San Antonio, vereda Alto Campucana, bosque situado a 1 Km. de la Finca La Mariposa, 01°12'N 76°38'W, 1400 m, 26 April 1994, *J.L. Fernández-Alonso et al.* 11053 (COL, MO). **Santander:** Encino, *M. Reina et al.* 393 UDBC); Municipio de Suaita Corregimiento el Olivar Vereda Corbaraque Via El Reloj, cuenca de la quebrada oibito, en la Cuchilla conocida como costilla de fara, zona de reserva, 06°06'26"N 73°13'34"W, 1730 m, 9 January 2008, *R. López C. et al.* 12749 (COL, MO). **Valle del Cauca:** Zarzal, *W.G. Vargus* 19619 (ICESI).

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Anthurium subandinum Engl., Bot. Jahrb. Syst. 25: 377. 1898. — Type: ECUADOR. Pichincha: Mindo, August 1871, *Sodi*ro s.n (holotype, B).

Anthurium aristatum Sodiro, Anales Univ. Centr. Ecuador 15(108): 8. 1901. — Type: ECUADOR. In subtropical forest, Nanegal, January 1901, *Sodi*ro s.n. (designated here, lectotype, Q; photo, F).

Epiphyte; internodes 5–21 cm long, 5–8 mm diam.; cataphylls 11 cm long, 1.5 cm wide, persisting intact, drying reddish brown. LEAVES with **petioles** 12–16 cm long, U-shaped or thicker than broad, flattened adaxially, rounded abaxially, drying brown; geniculum 0.3–1 cm long; **blades** subcoriaceous, oblong, elliptic or ovate, 20–40 cm long, 8.5–16.0 cm wide, 2.0–2.5 times longer than wide, abruptly long-acuminate at apex, obtuse or rounded at base, widest below the middle, drying greenish brown or reddish brown above and below, midrib round-raised and concolorous below; primary **lateral veins** 8–15 per side, departing midrib at 60–80°; collective vein arising from the lowest primary lateral veins, 5–10 mm from margin. INFLORESCENCE erect; peduncle 8–20 cm long; **spathe** 4–10 cm long, 0.5–1.5 cm wide, linear to lanceolate; **spadix** cylindroid, 8–22 long, 1–6 mm diam., magenta to purplish to maroon. **Figures 48–50.**

Distribution and ecology — *Anthurium subandinum* is endemic to western Ecuador (Bolívar, Cotopaxi, El Oro, Esmeraldas, Imbabura, Pichincha) at 980–3000 m in multiple life zones ranging from *Premontane rain forest* to *Tropical moist forest*

Comments — *Anthurium subandinum* resembles *Anthurium incomptum* Madison which also grows in that area of Ecuador, but the latter differs by its more elongated blades (to 5 times longer than wide) that are acute at the base, rather than being obtuse or rounded as is the case for *A. subandinum*.

Other specimens seen: **ECUADOR.** In silv. subtrop. vall. Mim, Aug 1871, *L. Sodi*ro s.n. (MO); **Bolívar:** Foothills of western cordillera near the village of Bucay, 02°41'00"S 79°40'00"W, 1000 - 1250 f, 8–15 June 1945, *Wendell H. Camp E-3811* (MO, NY). **Cotopaxi:** Road between Quevedo & El Corozon, 1.9 km NW of El Corozon, 67.5 km SE of Quevedo, disturbed primary forest on steep slopes, 01°7'S 79°06'W, 1225 m, 5 April 1983, *T.B. Croat 55816* (CM, MO, NY, QCA); Pujilí, Reserva Ecológica Los Ilinizas, Sector II (Sector Sur), sector Chuspitambo, al occidente de Choasillí, Cordillera Occidental, vertiente occidental, 00°58'45"S 79°06'53"W, 1725 m, 8 August 2003, *P.A. Silverstone-Sopkin, N. Paz Z, A. Giraldo, M. Cerna, N. Salto*s et al. 9982 (QCNE); Along road between El Corazón and Quevedo via Moraspungo, 0.8 km below El Corazón, 01°09'S 79°7'W, 1420 m, 8 April 1992, *T.B. Croat 73724* (MO). **El Oro:** Road Piñas - Santa Roa, track to Zambotambo, km 4, 03°37'S 79°48'W, 1170 m, *G.P. Lewis, B. Merino, P. Lozano & Olgaard 2817* (MO, NY). **Esmeraldas:** Along road from Lita to San Lorenzo, 23 km N of bridge over Río Lita, 2 km N of Alto Tambo, 00°56'16"N 78°33'27"W, 713 m, 9 October 2012, *T.B. Croat, G. Ferry, D. Scherberich & C.L. Henríquez R. 104098* (MO). **Imbabura:** Loc. "Azabí", Cord. Occ., 2800 m, 28 November 1949, *M. Acosta-Solis 14723* (F); Carretera Otavalo-Selva Alegre, in cloud forest and secondary scrub, 00°15'N 78°20'W, 2800–3200 m, 13 February 1989, *H. van der Werff & W.A. Palacios 10554* (MO, QCNE). **Pichincha:** Along old road from Tandayapa to Mindo, 16 km from turnoff of main Calicali - Tandayapa Road, 00°02'04"S 78°41'56"W, 2303 m, 27 October

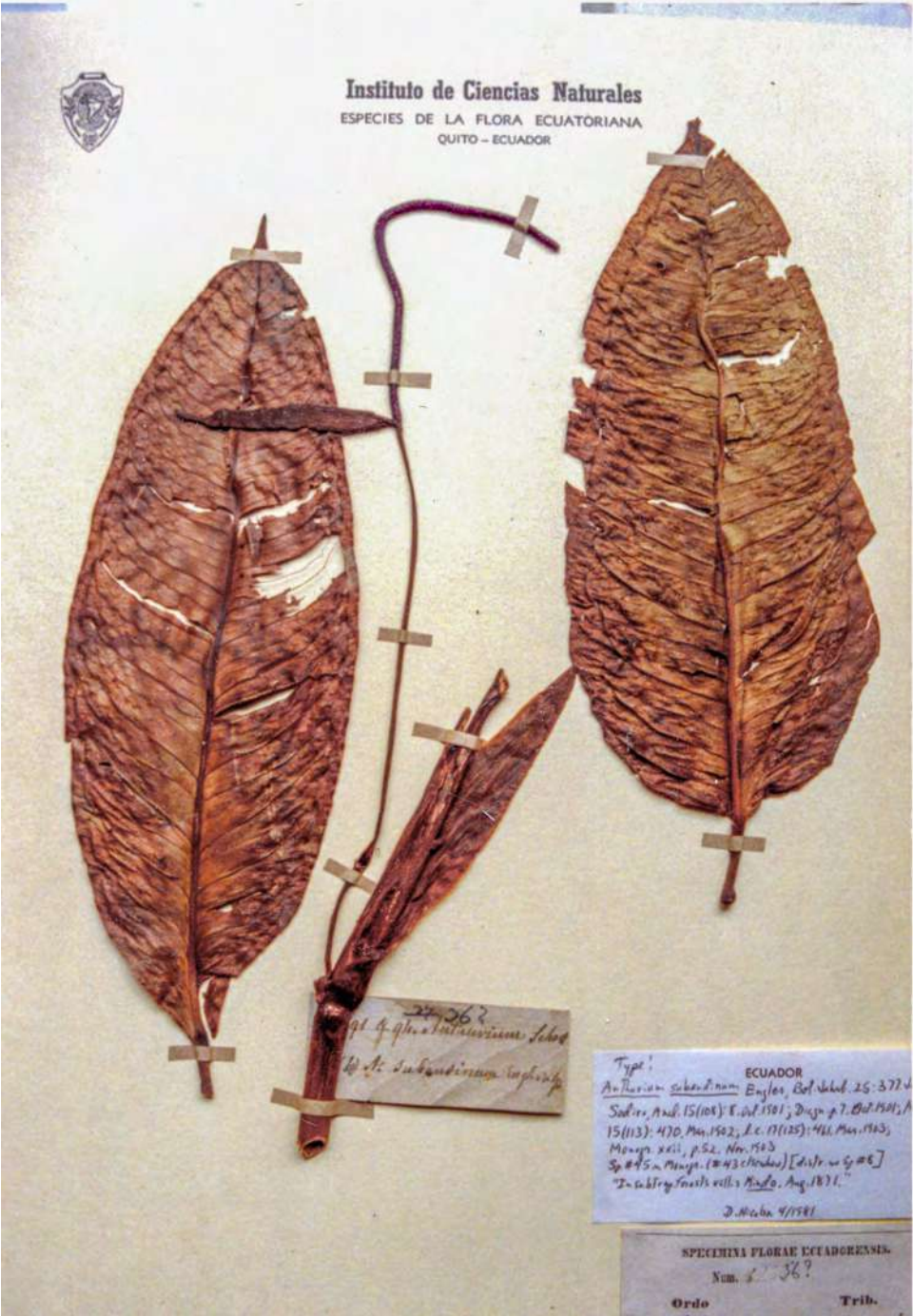


Figure 48: *Anthurium subandinum* (Sodirol s.n.). Holotype showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescence.



Figure 49: *Anthurium subandinum* (Croat 100009). Herbarium specimen showing stem, petioles, leaf blades (adaxial and abaxial surfaces) and inflorescences.



Figure 50: *Anthurium subandinum* (Croat et al. 95962). Live plant showing stem, cataphylls, petioles, leaf blades (adaxial surface) and inflorescence with purple spadix. (photo T.B. Croat).

2012, T.B. Croat, G. Ferry, D. Sherberich & E. Levy 104644 (MO); Carretera Quito-Aloag-Sto. Domingo de los Colorados, km 94, a 10 km al S de la carretera en la loma de San Nicolas. Estribaciones occidentales del Volcán El Corazón. Colecciones en bosque nublado, poco intervenido., 00°21'30"S 78°51'15"W, 1300–1500 m, 15 December 1986, V. Zak 1547 (MO, QCA); Colecciones a lo largo de la Ecoruta El Quinde, entre San Tadeo-Tandayapa, 00°00'08"N 78°40'23"W, 1600–1800 m, 13 February 2011, Á.J. Pérez C. 5006 (MO, QCA); Loma Cachillacta, 6–6.5 km airline SE of Nanegal, 00°05'N 78°38'W, 1500–1600 m, 7 September 1993, G.L. Webster & S. Elsas 30413 (DAV); 19–28 January 1987, M.A. Baker & N. Trushell 7464 (MO); Km 55, 1800 m, 25 Feb 1995, M. Schwerdtfeger 22518 (MO); Reserva Natural Río Guajalito; along main entrance from Quito-Chiriboga-Santo Domingo Road, 3.5 km from highway, departing highway at km 59, 00°13'53"S 78°48'10"W, 1800 m, 9 February 1992, T.B. Croat 72047 (B, MO, NY, US); Along route between Quito and Santo Domingo de los Colorados, between San Juan and La Palma via Chiriboga 9 km NE of La Palma, 36 km SW of Chiriboga, 00°14'58"S 78°52'20"W, 1270 m, 2 September 1976, T.B. Croat 38765 (MO); Along road from La Unión de Toachi to Quito via Chiriboga, 2.2 km up road to Chiriboga from the bridge over Río Toachi, 10.9 km W of Allurguin, 00°18'57"S 78°55'29"W, 984 m, 24 February 2005, T.B. Croat, C. Davidson & S.R. Christoph 95280 (MO, UB); Along

road and trail from Maquipucuna Lodge to Ecolodge Santa Lucia, 2 km N of Maquipucuna Entrance, 00°7'19"N 78°37'06"W, 1400 m, 15 March 2006, *T.B. Croat, C. Davidson & S.R. Christoph* 95962 (MO); Along old road from Mindo to Tandayapa departing main asphalt road from Nanegalito to Puerto Quito, just east of turn-off to Mindo, 1.1 km from main road, 00°01'47"S 78°44'50"W, 1825 m, 16 Oct 2007, *T.B. Croat, M. Carlsen & D. Levin* 100009 (B, K, MO, NY, US); Maquipucuna Reserve, vicinity of Nanegal 6.7 km NE of Nanegalito-Nanegal Road (turnoff ca. 3 km S of Nanegal), 19 km N of Nanegalito, along main trail to the summit, 00°7'12"N 78°37'56"W - 00°06'42"N 78°37'49"W, 1331–1431 m, 11 March 2006, *T.B. Croat, S.R. Christoph & C. Davidson* 95761 (MO); Quito, Reserva Geobotánica del Pululahua, Cerro Los Reales, 00°05'N 78°30'W, 2200 m, 19 March 1992, *C.E. Cerón* 18623 (AAU, MO); Parroquia San José de Minas. Camino entre la loma San Lorenzo y el sendero a las palmas, 00°10'N 78°27'W, 2750–3000 m, 31 July 1998, *C.E. Cerón & E. Jiménez* 36411 (ECUAMZ, QAP); Reserva Orquideológica El Pahuma, carretera Calacalí-Los Bancos, km 22. bosque muy húmedo montano bajo, 00°01'42"N 78°37'50"W, 2000 m, 8 November 1999, *C. Espinoza et al.* 41 (MO, QCNE); Bosque Protector Maquipucuna, above Río Pichan, 7.5 km airline SE of Nanegalito, 00°02'N 78°37'W, 1980 m, 1 September 1993, *G.L. Webster* 30161 (DAV); Parroquia Nanegal, montane rain forest along trail from Río Umachaca to Loma Sta. Lucia, c. 6 km airline SE of Nanegal, 00°07'N 78°37'W, 1600 m, 6 September 1993, *G.L. Webster* 30351 (MO); slopes of Gregoire's Hill (W ridge of Cerro Campana), 5 km airline SE of Nanegal, 00°08'N 78°38'W, 1300–1500 m, 3 July 1991, *G.L. Webster* 28748 (MO); Parroquia Nanegal, along Río Saguanal, 1.5 km W of Marianitas, 00°08'N 78°39'W, 1175 m, 6–7 July 1991, *G.L. Webster* 28813 (DAV, MO, QCNE); Parroquia Nanegal, trail to Cerro Sosa, 5–6 km airline SE of Nanegal, 00°07'N 78°38'W, 1500 m, 8 July 1990, *G.L. Webster & D.G. Kelch* 27830 (DAV); Parroquia Nanegal, near Base Camp I, Cerro Sosa, 00°07'N 78°38'W, 1700 m, 8 July 1990, *G.L. Webster & D.G. Kelch* 27825 (DAV); 1200–1250 m, 2 September 1989, *G.L. Webster & D. Russell* 27306 (DAV); Cerro Campana, ca. 6 km airline E of Nanegal, 1300–1500 m, 15 July 1990, *G.L. Webster et al.* 28269 (DAV); 4–5 km airline SE of Nanegal, 00°07'N 78°38'W, 1300–1400 m, 11 September 1989, *G.L. Webster et al.* 27393 (DAV); Parroquia nanegalito, N peak of Cerro de Sosa, ca. 6 km airline SE of Nanegal, 00°07'N 78°38'W, 1750–1800 m, 10 July 1990, *G.L. Webster et al.* 2876 (DAV); Parroquia Nanegal, Cerro Sosa, 00°04'N 78°36'W, 2375 m, 16 July 1992, *G.L. Webster et al.* 29465 (DAV); Hacienda El Carmen, trail up Gregoire's Hill, ca. 6 km airline SE of Nanegal, 00°07'05"N 78°38'00"W, 1400–1600 m, 30 August 1989, *G.L. Webster et al.* 27171 (MO); Reserva Maquipucuna, trail to Hacienda El Carmen to Hacienda Esparragos, secondary rain forest, c. 6 km airline SE of Nanegal, 00°7'30"N 78°38'00"W, 1300–1400 m, 30 August 1989, *G.L. Webster & P.G. Delprete* 27233 (MO); Reserva Maquipucuna, trail to Hacienda Esparragos, secondary rain forest, 00°7'N 78°38'W, 1300 - 1400 m, 29 Aug 1989, *G.L. Webster & P.G. Delprete* 27317 (MO); Transect 5, 00°06'N 78°37'W, 1650 m, 13 Jul 1992, *G.L. Webster & R. Rhode* 29347 (DAV, MO); Parroquia Nanegal, Reserva Maquipucuna, secondary rain forest, El Pacchal, S slopes of Cerro Campana, ca. 4–5 km airline SE of Nanegal, 00°08'N 78°38'W, 1300–1500 m, 9 July 1990, *G.L. Webster* 27915 (MO, U); Road Alluriquin-Chiriboga, wet forest, 1200–1400 m, 20 April 1977, *M.T. Madison* 4078a (SEL).

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Anthurium terracola Croat & J.Rodr., Aroideana 32E: 109. 2009 ('*terracolum*'). — Type: COLOMBIA. Nariño: La Planada, 7 km above Chucunés, on road between Tuquerres and Ricaurte, along the trail above the "La Posada" building, 01°05'N 78°01'W, 1780 m, 26 July 1988, T.B. Croat 69585 (holotype, MO-3635126–7; isotypes, AAU, B, BR, C, CAS, COL, CUV, DUKE, F, G, GB, GH, GOET, HUA, IMB, INPA, K, L, LE, M, MEXU, MICH, NY, P, PMA, PSO, QCNE, RSA, RJ, S, SEL, TEFH, TEX, UB, US, VEN, W).

Terrestrial; internodes 1.5–5.5 cm long, 4–5 mm diam.; cataphylls persisting as fibers, intact at upper nodes, 3–4 cm long, drying tan. BLADES with **petioles** 3.0–8.5 cm long, 1–2 mm diam., erect-spreading, sharply C-shaped, sulcate; **blades** ovate-elliptic, acuminate at apex, rounded at base, 7–16 cm long, 3.0–6.5 cm wide, 1.9–2.5 times longer than broad, 1.5–3.5 times longer than the petioles, widest at or somewhat below middle, thinly coriaceous; upper surface dark green and matte; lower surface moderately paler and weakly glossy, drying dark brown above, medium brown below; midrib narrow, convex, and moderately paler above, acute and slightly paler below; primary **lateral veins** 9–11 per side, departing midrib at 60°–75°, etched above, weakly raised below; collective vein arising from near base, 3–6 mm from margin; **INFLORESCENCE** erect; peduncle 7–12 cm long, 1.5 mm diam.; **spathe** erect, green to cream, clasping elongated peduncle/stipe; **spadix** green, becoming weakly tinged purple, cylindroid, 2–4 cm long, 2–3 mm diam.; stipe to ca. 3.5 cm long; **flowers** 2–3 visible per primary spiral, 1.1–1.3 mm long, 1.0–1.2 mm wide. **INFRUCTESCENCES** with berries pale green at base, dark green at apex, longer in one dimension (4–5 mm wide, 3.5 mm high), depressed apically; seeds 2 per berry, oblong-elliptic, 3 mm long, 2 mm diam., tan. **Figures 51 & 52.**

Distribution and ecology — *Anthurium terracola* is known from Colombia (Cauca, Nariño, Risaralda, Tolima, Valle del Cauca) to Ecuador (Carchi), at 1750–2600 m in *Lower montane rain forest*, *Lower montane wet forest* and *Premontane wet forest* life zones.

Comments — *Anthurium terracola* is similar to *A. gracilistipum* Croat which also has long-stipitate spadices. *A. gracilistipum* differs in being usually epiphytic and having longer internodes, intact cataphylls on upper nodes and more nearly ovate blades, while *A. terracola* is almost exclusively terrestrial and has short internodes, fibrous cataphylls and more nearly elliptic blades.

Other specimens seen: **COLOMBIA. Cauca:** Along road between Popayan and Munchique; Parque Nacional Munchique, 7 km W of Summit, 02°31'50"N 77°00'23"W, 2090 m, 19 July 1997, T.B. Croat & J.F. Gaskin 80063 (AFP, CAUP, MO); Moscopan, forest, 2600 m, 7 March 1943, K. von Sneidern 4315 (A, NY). **Nariño:** Ricaurte, La Planada, S of Ricaurte, 7 km from Tumaco-Pasto road, cloud forest, 01°10'N 77°58'W, 1800 m, 24 July 1987, A.H. Gentry et al. 55084 (MO); Trail to El Hondón, 5–12 km SW of La Planada, 01°04'N 78°02'W, 1750 m, 16 January 1988, A.H. Gentry et al. 60508 (MO); La Planada, 01°10'N 77°58'W, 16 January 1990, O. de Benavides 11167 (MO); La Planada, Salazar Finca 7 km above Ricaurte, 01°08'N 77°58'W, 1750 m, 29 November 1981, A.H. Gentry 35193 (COL, MO); La Planada Biological Reserve, ca. 7 km S of Chucunés, along trail to Pialapi, 01°10'N, 77°55'W, 1800–



Figure 51: *Anthurium terracolum* (Croat 69585, MO-3635126). Holotype showing stem, petioles and blades (adaxial and abaxial surfaces).



Figure 52: *Anthurium terracolum* (Luteyn 12316). Herbarium specimen showing stem, petioles, blades (adaxial and abaxial surfaces) and inflorescence.

1900 m, 6 August 1990, *Luteyn & D. Stella Sylva S. 13879* (MO, NY, US); La Planada Reserve, 01°09'37"N 77°59'13"W, *G. Herrera 9652* (PSO); La Planada Reserve, 7 km from Chucunés, 01°05'N 78°01'W, 1800 m, 22 Dec 1987, *Gentry & P. Keating 59718* (MO). **Risaralda:** Mistrato, 12 km NE de la cabecera municipal, 05°17'58"N 75°53'15"W, 1800–1900 m, 19 March 1991, *Gloria A. Galeano et al. 2529* (COL, MO); 7 March 1991, *Gloria A. Galeano et al. 2595* (COL, MO); Corregimiento Jeguadas, entre Puerto de Oro y Jaguedas, 05°54'N 75°54'W, 900–1400, 19–21 September 1991, *J.C. Betancur et al. 2890* (COL). **Tolima:** Santa Isabel, Cerro Purima, Cordillera Central, vertiente oriental, 05°45'00"N 75°26'00"W, 2540 m, 1 August 1980, *J.M. Idrobo et al. 10356* (COL, MO). **Valle del Cauca:** Cerro del Inglés (Cordillera Occidental, Serranía de los Paraguas, a 1 hora en jeep de El Cairo, Valle), Vertiente sur del cerro, 04°40'00"N 76°20'00"W, 2300 m, 1 January 1987, *P.A. Silverstone-Sopkin et al. 2862* (MO); El Cairo, Cerro del Inglés (Cordillera Occidental, Serranía de los Paraguas, a 1 hora en jeep de El Cairo, Valle), bosque nublado primario, 04°40'00"N 76°20'00"W, 2400 m, 26 December 1986, *Philip A. Silverstone-Sopkin et al. 2721* (CUVC, MO); Correg. Boquerón, Vereda Las Amarillas, Serranía de los Paraguas. Cerro del Inglés, forest below summit dominated by Tibouchina, 04°45'N 76°20'W, 2000–2200 m, 14 May 1988, *J.L. Luteyn et al. 12316* (CUVC, MO, NY, US). **ECUADOR. Carchi:** Espejo, El Gualtal, Faldas de Cerro Golondrina Hembra, 00°51'N 78°07'W, 2450 m, 21 Aug 1994, *W. Palacios & J. Clark 12671* (CAS, COL, K, MEXU, MO, QCNE, SEL).

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Anthurium tulcanense Delannay & Croat, **sp. nov.** — Type: ECUADOR. Carchi: Tulcán, Reserva Etnica Awá, Parroquia Chical, Centro Gualpi Medio, Bosque muy húmedo Premontano, 01°02'N 78°16'W, 900 m, 18 February 1993, *C. Aulestia & A. Grijalva 1160* (holotype, MO-4385451; isotype, QCNE).

Diagnosis: *Anthurium tulcanense* is characterized by its epiphytic habit, its internodes longer than broad and slender, short, black-drying, its moderately dark reddish-brown-drying, narrowly ovate, acuminate blades with primary lateral veins prominent below and tertiary veins weak but densely reticulated as well as its yellowish green, lanceolate spathe and yellowish green, moderately cylindroid spadix.

Epiphytic at 10 m; internodes ca. 3 cm long, 5 mm diam., drying black, matte, smooth, not at all ribbed; cataphylls 16 cm long, drying dark red-brown, deciduous. **LEAVES** with **petioles** 9 cm long, 2 mm diam., drying dark brown, sharply flattened adaxially with narrowly winged margins; **blades** subcoriaceous, ovate, 26 cm long, 10 cm wide, 2.6 times longer than wide, widest below the middle, acute and long-acuminate at apex, obtuse at base, drying dark reddish brown below (upper surface not seen); midrib round-raised and darker, 5-ribbed

and densely warty below; primary **lateral veins** ca. 18 per side, departing midrib at 70–80°, prominent below; interprimary veins distinctly visible; tertiary veins prominent, densely reticulated; collective vein arising from the 3rd primary lateral veins, 4–5 mm from margin. **INFLORESCENCE** immature; peduncle 3.5 cm long, 2 mm diam., drying black; **spathe** unopened, 9.8 cm long, drying reddish brown; **spadix** cylindroid, 5.3 cm long, 5 mm diam., purplish on reconstitution; **flowers** 5 visible per spiral, 1.8 mm long and wide; lateral tepals 1 mm long, inner margin rounded, outer margins 2-sided; stamens not seen. **Figure 53.**

Distribution and ecology — *Anthurium tulcanense* is endemic to Ecuador, found only in Carchi Province at 900 m in a *Premontane wet forest* life zone.

Etymology — The species is named for the type locality and only known locality in Cantón Tulcán district of Carchi Province in Ecuador.

Comments — With its black-drying internodes and broadly ovate blades with prominent primary lateral veins and reticulated tertiary veins, *Anthurium tulcanense* does not resemble any other species of Sect. *Stipitata*.

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Figure 53: *Anthurium tulcanense* (Aulestia & Grijalva 1160, MO-4385451). Holotype showing part of stem, petiole, blade (abaxial surface) and young inflorescence.

Anthurium valenzuelae Croat & N. Altam., *Aroideana* 35: 76. 2012. — Type: PERU. Cusco: Calca, Quebrada Yantile, camino a Lacco, in primary moist forest, 12°38'51"S, 72°15'13"W. 2425 m, 23 February 2004, L. Valenzuela, E. Sucelli, I. Huamantupa, A. Carazas 2866 (holotype, MO-4780142; isotype, NY, US, K).

Epiphytic vine to 1.5 m tall; internodes 1–3 cm long, 0.4–0.8 cm diam.; cataphylls persisting as fibers, 2–8 cm long, drying reddish brown. **LEAVES** with **petioles** terete, 3.5–23.0 cm long, 0.2–0.3 cm diam., weakly sheathed, shallowly and broadly sulcate; geniculum 0.5–1.0 cm long, drying darker than petiole; **blades** green, lanceolate to linear-lanceolate, acuminate at apex, obtuse at base, with straight margins, 9–35 cm long, 1.2–3.5 cm wide, 8.0–12.5 times longer than broad, 1.3–7.0 times longer than petiole, drying medium to dark greenish or reddish brown, semi-glossy above and below, glandular punctations are lacking on both surfaces but many specimens have white pustules on the lower surface; midrib red, drying sunken above, prominently raised, bluntly acute below; primary **lateral veins** 11–21 per side, departing midrib at 45–60°, drying finely raised, slightly rounded, more conspicuous on lower surface; collective veins arising from the base and running 2–3 mm from margin, conspicuous on both surfaces; tertiary veins conspicuous below, less conspicuous above. **INFLORESCENCE** erect; peduncle terete, 5–33 cm long, stipe 0.2–2.0(3.8) cm long; **spathe** green or reddish, spreading, lanceolate, 3–7 cm long, 0.3–1.2 cm wide, acuminate at apex, drying dark brown; **spadix** erect, red to violet, 2.4–15.0 cm long, 0.3–0.5 cm wide, cylindroid, tapered, drying dark brown, stipe 2 mm long; **flowers** 3–5 visible per spiral, 1.8–3.4 mm long, 1.5–2.4 mm wide, tepals with outer margins 2-sided, inner margin broadly rounded, lateral tepals 0.8–1.8 mm wide. **Figure 54.**

Distribution and ecology — *Anthurium valenzuelae* ranges from Ecuador (Morona-Santiago, Zamora-Chinchipec) to Peru (Cajamarca, Cusco, Pasco) at 900–2800 m in *Premontane wet forest* life zones.

Comments — *Anthurium valenzuelae* resembles *A. monteagudoii* Croat & N. Altam., but the latter is distinguished in having fewer primary lateral veins (8–12 versus 11–21), a distinctive collective vein pattern and a stipe that measures in cm rather than mm.

Other specimens seen: **ECUADOR. Morona-Santiago:** Cordillera de Cutucú, W slopes, along a trail from Logroño to Yaupi, 02°46'S 78°06'W, 1800 m, November 1976, *M.T. Madison* 3434 (NY); *M.T. Madison* 3476 (MO); Cordillera Cutucú. Ridge just south and west of río Itzintza, 02°40'S 78°00'W, 4500–5500 ft, 17 November 1944, *W.H. Camp* 1308 (MO, NY); Gualaquiza. Cordillera del Cóndor, Cuangos, 20 km east of Gualaquiza, near disputed Peru-Ecuador border, cloud forest, 03°29'S 79°14'W, 1500 m, 19 July 1993, *A.H. Gentry* 80237 (MO, QCNE); Limón Indanza. Cordillera del Cóndor. Wet cloud forest on sandstone ridge, south of Río Warints, east of main crest of Cordillera del Cóndor, 03°14'03"S 78°17'10"W, 1950 m, 14 December 2002, *D.A. Neill & et al.* 14134 (MO, QCNE); Cordillera de Huaracayo, east of Cordillera del Cóndor and Río Coangos. Forest on sandstone ridge, east of Shuar village of Tinkimints, 03°15'44"S 78°12'01"W, 1380 m, 25 March 2001, *D.A. Neill & J.M. Manzanares* 13202 (MO, QCNE); Morona. Cordillera del Cutucú. Asociación Shuar Sevilla. Junto al camino Angel Ruby/Transcutucu. Cerro Nashipe. Bosque Primario, 02°21'07"S 78°02'06"W, 1400 m, 16 May 2002, *L. Suin et al.* 1862 (MO, QCNE). **Zamora-Chinchipec:**



Figure 54: *Anthurium valenzuelae* (Valenzuela et al. 2866, MO-4780142). Holotype showing stem, petioles, blades (adaxial and abaxial surfaces) and inflorescence.

Above Valladolid on road to Yangana, montane rain forest, 2300 m, 1 February 1985, *G.W. Harling & Lennart Andersson 21437* (GB); Area of Estación Científica San Francisco, road Loja-Zamora, ca. 35 km from Loja; moist montane forest. Transect Q2, uncommon, 03°58'S 79°04'W, 2080 m, 8 January 2005, *Florian A. Werner 1424* (MO); 3 km E Paquisha, disturbed primary forest, 1100 m, 11 April 1985, *G.W. Harling 23984* (GB); Campamento Shaime, along Río Nangaritza. Forest on calcareous rock, 04°20'S 78°40'W, 900 m, 14 February 1994, *H. van der Werff et al. 12991* (MO); Pachicutza, área de transición entre el bosque tropical y subtropical. Localidad de colección sendero hacia el hito, 00°33'S 76°10'W, 1200–1350 m, 19 October 1991, *J.L. Jaramillo 14129* (QCA); Shaime. Sendero hacia el Hito, 04°22'S 78°42'W, 900–1200 m, 27 October 1991, *J.L. Jaramillo 14448* (QCA); Jamboe Bajo. Eastern border of Podocarpus National Park. Mature forest near cow pasture, 04°05'S 78°55'W, 1100 m, 5 November 1996, *J.L. Clark et al. 3261* (LOJA, MO, QCNE); Podocarpus National Park. Along trail T2, S of Estación Científica San Francisco, 30 km E of Loja near Sabanilla, 03°58'S 79°03'W, 2300 m, 12 December 2000, *R. Leimbeck 480* (AAU); Nangaritza. Shaimi. SE de Campamento Militar. Márgen derecha de Río Nangaritza. Bosque primario sobre pendientes 45%. Rocas calizas aflorando, 04°18'S 78°43'W, 930 m, 27 October 1991, *W.A. Palacios et al. 8765* (MO). **PERU. Cajamarca:** Cutervo. San Andrés de Cutervo. Parque Nacional de Cutervo; entrando por “Chorro Blanco” sobre invernias del Sr. Nicolás Navarro, 06°13'00»S 78°40'00»W, 2300–2400 m, 11 January 1990, *C. Díaz S. 3938* (MO); Jaén. Camino a aguas verdes y cerro el Paramillo. Formación arbustiva, 05°43'51»S 79°14'05»W, 2500 m, 9 November 1999, *Camilo Díaz S. 10925* (CAS, F, MO, NY, USM); Pomahuaca. Aguas verdes. Bosque húmedo, 2370 m, 6 November 1999, *C. Díaz S. & L. Campos 10868* (MO, QCNE, US, USM); *C. Díaz & et al. 10355* (MO); San José de Lourdes. “Base del Cerro Picorana, restos de bosque andino y arbóreo.” Cordillera del Condor, 04°59'25»S 78°54'05»W, 2050–2160 m, 3 December 1998, *Camilo Díaz S. 10208* (MO); Tabaconas. Santuario Nacional Tabaconas-Namballe. Camino al Cerro Coyona. Zona de amortiguamiento, sector pajonal, 05°17'29»S 79°16'02»W, 2500–2600 m, 20 November 1998, *C. Díaz S. et al. 10080* (AAU, K, MEXU, MO); Huarango. Nuevo Mundo-Caserio Gosen, márgen derecha de la Quebrada Las Juntas, afluente del Shimutas, 05°18'30»S 78°44'01»W, 1500–1600 m, 19 July 1997, *J. Campos de la Cruz & S. Nuñez 4194* (MO, NY); Dist. Huarango. Caserio Selva Andina, borde de trocha. Bosque achaparrado, 05°03'17»S 78°45'04»W, 1890 m, 17 August 2006, *J. Perea 2664* (HUT, MO); San José de Lourdes. Selva Andina, 04°59'22»S 78°53'03»W, 2020 m, 21 November 1999, *R. Vásquez & S.P. Flores Vásquez 26300* (MO); Distrito Huarango. Poblado Selva Andina, camino al tanque de agua de Selva Andina, 05°03'50»S 78°43'19»W, 2378 m, 27 August 2007, *J. Perea 3891* (HUT, M, MO, USM). **Cusco:** Calca. Road Quebrada-Alto Lacco. Selectively logged cloud forest, rich in ferns, 12°37'22»S 72°14'40»W, 2800 m, 30 April 2006, *H. van der Werff et al. 21192* (MO); La Convención. Dist. Santa Ana, Tunquimayo, Parque alta, rumbo a Puncuyoc, Bosque primario, 12°54'31»S 72°48'45»W, 2400 m, 21 November 2005, *E. Sucilli 2844* (CUZ, MO); Dist. Santa Ana, Madre Selva. Bosque Húmedo Primario, 12°53'49»S 72°45'02»W, 2300–3200 m, 20 March 2004, *L. Valenzuela G et al. 3075* (CUZ, MO, USM); Urubamba. Dist. Machu Picchu, Cerro Alcamayo, Bosque Montano Primario, 13°09'S 72°30'W, 2200 m, 19 November 2003, *I. Huamantupa et al. 3753* (CUZ, MO). **Pasco:** Oxapampa. Distrito Huancabamba, Parque Nacional Yanachaga-Chemillén, desde el hito de San Daniel hacia la trocha erica en la cordillera Yanachaga, 10°26'46»S 75°26'18»W, 2260 m, 21 April 2007, *A. Monteagudo et al. 13676* (MO, USM); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén, 10°19'05»S 75°36'28»W, 2567

m, 25 June 2008, *A. Monteagudo et al.* 16517 (HOXA, MO, USM); Distrito Huancabamba. Zona de amortiguamiento del Parque Nacional Yanachaga-Chemillén, Sector Oso-Playa, 10°19'39»S 75°34'58»W, 2410 m, 24 September 2007, *A. Monteagudo et al.* 15259 (AMAZ, COL, F, HUT, MO, MOL, QCNE, USM, S); Dist. Huancabamba, entre el Río cueva blanca y milpo, 10°22'33»S 75°36'48»W, 2720 m, 18 September 2004, *A. Monteagudo et al.* 7094 (MO, USM); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén. Sector-San Daniel. Bosque montano húmedo subtropical, 10°15'S 75°15'W, 2200–2350 m, 15 August 2005, *A. Monteagudo et al.* 9375 (AMAZ, HUT, MO, USM); Dist. Huancabamba. Parque Nacional Yanachaga-Chemillén. Sector-San Daniel, cerca al hito, 10°15'S 75°15'W, 2200–2350 m, 17 August 2005, *A. Monteagudo et al.* 9431 (HUT, MO, USM); Dist. Huancabamba. Zona de amortiguamiento del Parque Nacional Yanachaga-Chemillén, 10°19'20»S 75°36'06»W, 2400 m, 25 June 2006, *A. Monteagudo et al.* 12332 (MO, USM); Distrito Huancabamba. Sector Grapanazu, San Daniel, trocha a la laguna. Bosque Primario, 10°25'S 75°27'W, 2410 m, 12 October 2003, *J. Lingán* 706 (MO, USM); Distrito Huancabamba. Localidad de Lanturachi, sector Santa Barbara, camino a Milpo, 10°22'S 75°36'W, 2824 m, 10 October 2003, *J. Perea* 0668 (MO, USM); Distrito Huancabamba. Localidad de Lanturachi, sector Santa Barbara, camino a Cueva Blanca, 10°22'S 75°36'W, 2813 m, 18 October 2004, *J. Perea* 0731 (MO, USM); Distrito Huancabamba. Localidad de Lanturachi, sector Santa Barbara, camino a Cueva Blanca, 10°22'S 75°36'W, 2813m, 18 October 2004, *J. Perea* 0775 (MO, USM); Dist. Chontabamba. Cerro frente a Oxapampa, mirador, 10°34'29»S 75°25'27»W, 2620 m, 20 July 2009, *L. Valenzuela G. & J. Mateo M.* 13139 (HOXA, MO, USM); Dist. Huancabamba. Sector Oso Playa, 10°18'47»S 75°36'22»W, 2559 m, 13 October 2009, *L. Valenzuela G et al.* 13488 (HOXA, MO, USM); Dist. Huancabamba. Parcela Oso Playa, 10°18'47»S 75°36'22»W, 2559 m, 21 October 2009, *Luis Valenzuela G et al.* 13795 (HOXA, HUT, MO, USM); *M.A. Cueva & R. Rivera* 582 (MO); Dist. Huancabamba. P.N. Yanachaga-Chemillén, cabecera de la Quebrada Amistad, 10°17'58»S 75°36'56»W, 2220–2300 m, 30 June 2004, *R. Vásquez* 30318 (MO, USM).

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Anthurium vestitum Sodiro, Anturios Ecuatorianos Supl. I, Anales Univ. Centr. Ecuador 19(137): 312. 1905 & in Rev. Chilena Hist. Nat. 9: 243. 1905. Esmeraldas: 'Crece en los límites de las provincias de Imbabura y Esmeraldas, entre el Hojal y el río Lita', *Sodiro s.n.* (holotype presumed lost — see below).

Terrestrial, stem erect; internodes 2.5–4.0 cm long, 6.5 mm diam.; cataphylls cartilaginous, linear-lanceolate, aristate at apex, largely persistent and enveloping the internodes. **LEAVES** with **petioles** longer than the internodes, 1/3 as long as the blades, slender, erect, subterete, drying deeply striate with a short sheath at base, 4–5 mm long; geniculum sulcate; **blades** oblong to oblong-lanceolate, 2 times longer than wide, acuminate at apex with a glandular arista, obtuse at the base, pale green on lower surface, pinnately veined; midrib prominent on both surfaces, angular to convex above, convex below; primary **lateral veins** 8–15 per side, 4–6 mm apart, clearly more distinct than the secondary veins, sunken above, raised

below, the lowermost pair merging with the margin, the remainder forming a collective vein; collective veins about as thick as the primary lateral veins and 4–5 mm from margin. **INFLORESCENCE** erect; peduncle 4–5 cm long; **spathe** linear-lanceolate, 4.5 cm long, 5 mm wide, densely cartilaginous, reddish, acuminate at apex, clasping at base; **spadix** sessile, straight or slightly curved, 4.5 cm long, 5 mm diam. **No figures.**

Distribution and ecology — The species is seemingly endemic to Ecuador, known only from a single collection made near the borders of Imbabura and Esmeraldas between Hojal and Río Lita at ca, 1000 m.

Comments — The species has not been recollected since its publication in 1905 and it was not illustrated by Sodiro, and therefore there is at present nothing which can be designated as a neotype.

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Anthurium villagarzonense Delannay & Croat, **sp. nov.** — Type: COLOMBIA. Putumayo: Villagarzón, Vereda Champagnat, bosque detrás de la casa de Rafael Ruales, 00°56'06"N 76°32'56"W, 300 m, 25 June 2011, *J. Velandia-Perilla* 92 (holotype, CUV-48128).

Diagnosis: *Anthurium villagarzonense* is characterized by its epiphytic habit; its reddish-brown-drying, spatulate blades 2.7–2.9 times longer than wide, rounded at the apex and cuneate at the base, and by its inflorescence with a yellowish green spathe and a spadix yellowish green with reddish punctations.

Epiphytic, growing at 1.7 m from ground; internodes 2–4 cm long, 5–7 mm diam., drying dark grayish brown; cataphylls 10.3–12.0 cm long, slender, reddish brown, deciduous. **LEAVES** with **petioles** 10–12 cm long, 2 mm diam., drying medium brown; **blades** subcoriaceous, spatulate, 13.5–27.0 cm long; 7.3–9.7 cm wide, 2.7–2.9 times longer than wide, widest in upper third, rounded and abruptly short-acuminate at apex, cuneate at base, drying dark reddish brown and semiglossy above, medium reddish brown and glossy below; midrib slightly raised and concolorous above, round-raised and concolorous below; primary **lateral veins** ca. 17 per side, departing midrib at 70–80°, not prominent; interprimary veins and tertiary veins obscure; collective vein arising from the base, 3–7 mm from margin; upper and lower surfaces densely granular. **INFLORESCENCE** erect; peduncle 11.5 cm long, 1 mm diam.; **spathe** lanceolate, reflexed, 4.5 cm long, 8 mm wide, yellowish green, drying dark brown, narrowly acuminate at apex; **spadix** sessile, tapering, 5.2 cm long, 5 mm diam. near the base, 3 mm at the tip, yellowish green with reddish punctations, drying blackish; **flowers** 3–4 visible per spiral, 1.6–2.0 mm long and wide; tepals 1 mm wide, inner margin broadly rounded, outer margin 2-sided; stamens held at level of tepals; anthers 5 mm and wide; thecae barely divaricate; berries subglobose, orange-red, the persisting style oval, 6 mm long, 4 mm wide. **Figure 55.**



Figure 55: *Anthurium villagarzonense* (Velandia-Perilla 92, CUVC-48128). Herbarium specimen showing stem, petioles, blades (adaxial and abaxial surfaces) and inflorescence.

Distribution and ecology — *Anthurium villagarzonense* is endemic to Colombia, found only in Putumayo Department at 300 m in a *Tropical wet forest* life zone.

Etymology — The species is named for the Municipio of Villagarzón near which it was found.

Comments — With its spatulate blades, *Anthurium villagarzonense* resembles *A. sobeliae* Delannay & Croat of Sect. *Interrupta*, which has blades of similar shape and size, but the latter has the blades drying blackish rather than medium brown for *A. villagarzonense*. *A. sobeliae* also grows much farther south in Napo Province of Ecuador, rather than in Putumayo Department of Colombia for *A. villagarzonense*.

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