

# New Taxa of Araceae from Cabo Corrientes in Chocó Department of Colombia

Thomas B. Croat  
Missouri Botanical Garden  
Box 299, St. Louis, MO 63166

M. Marcela Mora  
Instituto de Ciencias Naturales  
Universidad Nacional de Colombia  
Apartado 7495, Bogotá, Colombia

## ABSTRACT

New species of Araceae are described from the Estación Biológica El Amargal and vicinity on Cabo Corrientes in Chocó Department of Colombia. These are *Anthurium acutibacca* Croat & M. Mora, *A. amargalense* Croat & M. Mora, *A. arusiense* Croat & M. Mora, *A. debilis* Croat & Bay, *A. eminens* Schott, ssp. *longispadix*, Croat & M. Mora, *A. galeanoae* Croat & M. Mora, *A. grandicataphyllum* Croat & M. Mora, *A. morae* Croat, *A. pallidicaudex* Croat & M. Mora, *A. promininerve* Croat & M. Mora, *A. varilobum* Croat & M. Mora, *Monstera amargalensis* Croat & M. Mora, *Philodendron amargalense* Croat & M. Mora, *P. laticiferum* Croat & M. Mora, *P. longipedunculatum*, Croat & M. Mora, *P. roseocataphyllum* Croat & M. Mora, *Rhodospatha monsalvae* Croat & Bay and *Xanthosoma daguense* Engl. var. *amargalense* Croat & M. Mora.

## INTRODUCTION

The species described here are the result of a study made by the junior author in Colombia in a region along the Pacific coast in Central Chocó Department centered at El Amargal Biological Station, located 11 km north of Cabo Corrientes, (ca. 5°34'N, 7°31'W). The Cabo Corrientes area is adjacent to, and part of, a small peninsula at the southern end of the coastal Serranía del Baudó. The peninsula is 15 km long and ca. 6 km wide, and it ranges in elevation from sea level to about 120 m; its terrain is deeply dissected by numerous

creeks and small rivers, resulting in an abrupt topography of hills and ravines covered by scarcely disturbed *Tropical wet forest* (bmh-T). Annual precipitation was about 7,924 mm for the period between 1993 and 2001.

*Anthurium acutibacca* Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí. Corregimiento Arusí. Estación Biológica El Amargal, 0–60 m, 5°34'N, 77°30'W, July–Sep. 1998, *M. Mora* 39 (holotype, COL; isotypes, B, CUVC, HUA, K, MO, US). Figures 1–2.

Planta epiphytica vel epipetrica; internodia brevia, 0.9–3 cm diam.; cataphylla 3–13 cm longa; petiolus 9–46 cm longus; lamina elliptica-lanceolata, 31–58 cm longa, 6.5–13 cm lata; nervis primariis lateralibus 5–9 utroque; pedunculus 29–63 cm longus; spatha 5–7 cm longa, 7–10 mm lata, pallide viridis; spadix stipitatus 2 cm longus, 6–7.5 cm, 1–1.2 cm diam. ad basim, 7–8 mm ad apex; bacca 9 mm longa, rostrata.

Epiphyte or epipetric, stems with conspicuous indented petiole scars, 7–10 cm long, 0.9–3 cm diam.; **internodes** very short (1–3 mm), very light reddish to medium green, semiglossy, covered with a dense mass of greenish roots; **cataphylls** 3–13 cm long, semiglossy, obtusely 1-ribbed, becoming bluntly acute toward apex, persisting semi-intact as a reticulum of mostly longitudinal fibers, retained at upper nodes then deciduous. LEAVES

spreading; **petioles** (9) 17–46 cm long, 4–6 × 5–8 mm, subterete or U-shaped in cross-section, thicker than broad and narrow and obtusely sulcate adaxially (sometimes broadly and obtusely sulcate with obtuse margins, these more acute toward the apex), medium green, pale-speckled or dark short-lineate, semiglossy to matte; geniculum 1.1–3.2 cm long, yellow-green, sometimes tinged with red, sulcate like the petiole; **blades** elliptic-lanceolate to narrowly elliptic, gradually and weakly acuminate at apex, acute to weakly attenuate at base, 31–58 × 6.5–13 cm, broadest at or above the middle, subcoriaceous, dark green and weakly glossy to semiglossy above, paler and purplish brown glandular-punctate below, weakly glossy to matte below (in juvenile leaves the blade is glossy above), drying greenish to yellow-green; **midrib** narrowly rounded on both surfaces (in broad valley above), ca. 2 mm wide at base and slightly paler than surface to concolorous above, moderately to conspicuously paler below; **primary lateral veins** 5–13 pairs, departing midrib at 30–40° (–58°) angle, straight to weakly arcuate, etched-sunken and concolorous above, weakly raised and concolorous below; collective vein prominently raised below, 5–15 mm from margin, weakly loop-connecting primary lateral veins; minor veins obscure. INFLORESCENCE spreading to erect-spreading; **peduncle** terete, 26–63 cm long, 4–6 mm diam., ca. 2 times longer than petioles, green to pinkish, pale-speckled to pale-lineate; **spathe** 5–7 cm long, 7–10 mm wide, cuspidate at apex, spreading at anthesis and slightly twisted, with margins prominently rolled under, subcoriaceous at anthesis, pale green, semiglossy outside, matte inside, deciduous; stipe 3.5–3.8 cm long in front and 2–2.2 cm in back, semiglossy, medium green; **spadix** erect, more or less cylindrical, weakly tapered to apex, 6–7.5 cm long, (0.7)1–1.2 cm diam. at base, 6–8 mm at 1 cm from apex, bluntly rounded at apex, dull medium pink to lavender; flowers 2 × 3 mm, ca. 7 visible in the principal spiral, with glossy tepals. INFRUCTESCENCE pendent; spadix 11.5–15 cm long,

2–2.5 cm diam., tepals dark brown; **berries** ellipsoid, with a narrow conical beak at apex, 9 mm long (including the beak that is 3 mm long), 4 mm diam., bright red, translucent, with seeds visible; seeds 2.

*Anthurium acutibacca* is known only from Chocó Department of Colombia in the Cabo Corrientes region in *Tropical moist forest* (bh-T) where it is sparse to moderately common, almost always found growing on trees at 1.5–15 m above the ground, but occasionally found on rocks.

The species is a member of *Anthurium* sect. *Porphyrochitonium* and is recognized by its elliptic-lanceolate and glandular-punctate blades that are acuminate at apex and attenuated at base, and also by its spreading inflorescence with promptly deciduous spathe and stipitate, and pinkish spadix with glossy tepals.

Its ellipsoid and narrowly conical, bright red berries are acute before maturity (hence the epithet *acutibacca*) distinguishing this species from the other members of *A.* sect. *Porphyrochitonium* in the Cabo Corrientes region.

Paratypes—COLOMBIA. **Chocó:** Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, Jacome 384 (MO), June 2000, *M. Mora & Croat* 363 [*Croat & Mora* 83746] (COL, MO), Mar.–Apr. 1995, *Suárez et al.* 65 (COL), 483 (COL), 779 (COL), 896 (COL); *Galeano* 3185 (COL); Quebrada Chaquí, 5°40'N, 77°16'W, ca. 200 m, Feb.–Mar. 1994, *Galeano et al.* 4365 (COL).

*Anthurium amargalense* Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica. El Amargal, along Río Arucisito, less than 10 m, 5°34'N, 77°30'W, 0–60 m, 26 June 2000, *M. Mora & Croat* 385 (holotype, COL; isotypes, B, K, MO, US). Figures 3–4.

Planta epiphytica; internodia brevia, 2.5 cm diam.; petiolus 14–20 cm longus, 12 mm diam.; lamina oblongo-obovata, 45–57 cm longa, 19–23 cm lata; nervis primariis lateralibus 14–17 utroque; pedun-



Figs. 1–4. —1, —2, (top L & R). *Anthurium acutibacca* Croat & M. Mora (*M. Mora & Croat 363*). —1 (top L). Habit of flowering plant. —2 (top R). Inflorescence showing

culus 52 cm longus; spatha viridis, 24 cm longis, 1 cm latis; spadix stipitatus ca. 85 cm longus, 2 cm diam.; bacca magenta, globosa, 6 mm longa, 5 × 7 mm diam.

Epiphyte; stem short; **internodes** short, 2.5 cm diam.; **cataphyll** fibers not collected; root mass more than 30 cm diam. LEAVES with **petioles** subterete, obtusely and deeply sulcate, 14–20 cm long, 12 mm diam., medium green, weakly glossy; geniculum 4 cm long, 1.3 × 1.7 cm, slightly thicker than broad; **blades** 45–57 cm long, 19–23 cm wide, 2.2–2.6 times longer than wide, narrowly oblong-obovate, short-acuminate at apex, acute at base, moderately coriaceous, slightly bicolorous, dark green above, moderately glossy, dark glandular-punctate below, drying dark brown to grayish brown medium-dark brown below; margins convex toward apex, concave toward base, slightly undulate; **midrib** convex above, thicker than broad, narrowly rounded toward base and convex toward apex below, slightly paler than surface above and below; **primary lateral veins** 14–17 pairs, departing midrib at 50–55° angle, quilted-sunken above, convex pleated-raised and paler than surface (yellow green) below; interprimary veins moderately conspicuous below; collective veins arising from the lowermost primary lateral veins near the base, 3–4 mm from the margins; INFLORESCENCE unknown. INFRUCTESCENCE pendent-spreading; **peduncle** erect, 52 cm long, 1 cm diam.; **spathe** green, reflexed, 15 × 1.2 cm, the margins turned upward; **spadix** pendent-spreading, 70 cm long, 2 cm diam. (drying 1 cm diam.), **berries** magenta, in part early-emergent, globose, 6 mm long, 5 × 7 mm diam., with a medial apical depression.

*Anthurium amargalense* is known only from the type locality in a *Tropical wet forest* (bmh-T) life zone. The only collection

was found on the branches of a fallen tree and had been growing at about 20 m above the ground. Owing to the difficulty of accessing the canopy, there is no way to make an estimate of the abundance of the species in the study area.

The species is a member of *A.* sect. *Porphyrochitonium*, characterized by its robust size, rosulate habit, massive root system, short stem, persisting cataphyll fibers, narrowly oblong-obovate, coriaceous, dark brown-drying blades with the collective veins arising from the base and by the glandular-punctate lower surface. Also characteristic is the pale magenta berries as well as the proportionately long inflorescence with the peduncle about twice as long as the blades.

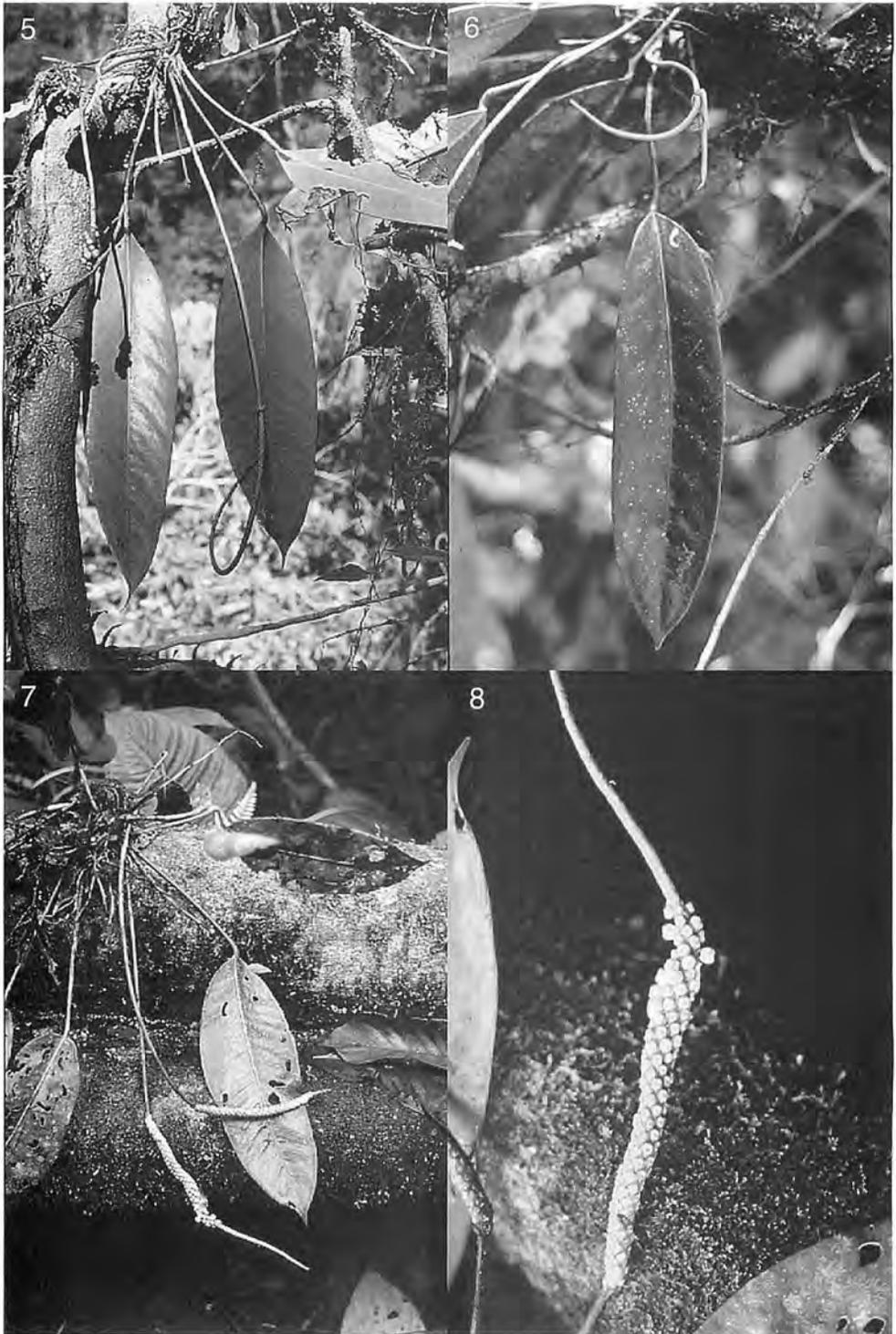
The species is similar to *A. ramonense* Engl. from Central America, but differs from that species in having a much shorter inflorescence and blades which typically dry paler, usually gray brown.

***Anthurium arusiense*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó. Municipio Nuquí, Corregimiento Arusí, along the trail to Arusí from Estación Biológica El Amargal, near Río Arusí, 5°35'47"N, 77°28'31"W, 0–20 m, June 2000, *M. Mora & Croat* 352 [*Croat & Mora* 83734] (holotype, COL; isotypes, B, CHOCO, HUA, K, MO–5344066, NY, US). Figures 5–8.

Planta epiphytica; internodia brevia, 13–15 mm diam.; cataphylla 2.5–4.5 cm longa; petiolus subteres, 7–19 cm longus, 4–6 mm diam.; lamina oblongo-elliptica vel lanceolata, 17–33 cm longa, 3.3–7.3 cm lata; nervis primariis lateralibus 10–12 utroque; pedunculus 21–28 cm longus; spatha viridis, oblongo-lanceolata, 6–7 cm longa, 4–5 mm diam.; spadix 7–15 cm longus, 7 mm diam.; bacca subglobosa vel obovoidea, albus, lavandulus ad apex.

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exserted berries and peduncle with spathe scar. —3, —4 (bottom L, bottom R). *Anthurium amargalense* Croat & M. Mora (*M. Mora & Croat* 385). —3 (bottom L). Dislodged plant in tree fall with infructescence. —4 (bottom R). Close-up of infructescence.



Figs. 5-8. *Anthurium arusiense* Croat & M. Mora (M. Mora & Croat 352) —5 (top L). Habit showing both adaxial and abaxial blade surfaces and a pendent inflorescence. —

Epiphyte; stems less than 15 cm long; **internodes** short, 13–15 mm diam.; **cataphylls** 2.5–4.5 cm long, glossy, medium green, deeply rose-tinged on outer surface, abruptly acuminate at apex, obtusely 1-ribbed abaxially, acutely so toward the apex, persisting as medium brown mostly longitudinal fibers, eventually forming a net-like reticulum **LEAVES** with **petioles** terete, lacking any sulcus, 7–19 cm long, 4 × 6 mm diam., medium green, pale-speckled to pale-lineate, semiglossy, drying dark yellow-brown, eventually medium yellow-brown, flattened; geniculum U-shaped, to 3 cm long, shallowly and obtusely sulcate; **blades** oblong-elliptic to lanceolate, acute and narrowly long-acuminate at apex, acute to weakly attenuate at base, 17–33 × 3.3–7.3 cm, subcoriaceous, dark green and semiglossy above, moderately paler, semiglossy or weakly glossy, glandular-punctate below; drying dark medium gray-brown to dark brown above, slightly paler and dark to medium yellowish brown below; **midrib** convex and more or less concolorous above, slightly thicker than broad, prominently paler and weakly pale-speckled below; **primary lateral veins** 10–12 pairs, departing midrib at 35–45° angle, concolorous, weakly raised and concolorous on both surfaces but with the surface weakly undulated along primary lateral veins; interprimary veins drying almost as conspicuous as primary lateral veins; collective vein arising at or very near the base, 3–5 mm from margin, scarcely or only weakly loop-connecting at primary lateral veins. **INFLORESCENCE** erect-spreading at anthesis, pendent-spreading in fruit; **peduncle** 21–28 cm long (to 45 cm long in fruit), 3.5–4 mm diam., pale medium green with darker lineations, semiglossy; **spathe** reflexed or spreading, oblong-lanceolate 6–7 cm long, 4–5 mm wide; pale-medium

green, very thin, rolled down along the margins, promptly deciduous; **spadix** short-stipitate (stipe 2–3 mm long), long-tapered and narrowly acute at apex, 7–15 cm long, 7 mm diam. at base, 4 mm diam. at apex (drying 2–3 mm diam.), medium green, slightly paler toward apex, becoming greenish cream to light grayish brown post-anthesis; flowers rhombic, ca. 3 × 4 mm long, 4–5 visible in the principal spiral; **pistils** more or less lavender; stigma oblong-elliptic, 0.4 mm long, 0.2 mm wide. **INFRUCTESCENCE** to 30 cm long, fruiting in basal  $\frac{2}{3}$ ; **berries** subglobose to obovoid, white except lavender toward the apex, medially depressed at apex; seeds (1–)3(–4) per berry, 2 mm long, 1 mm diam., 0.5 mm thick, whitish.

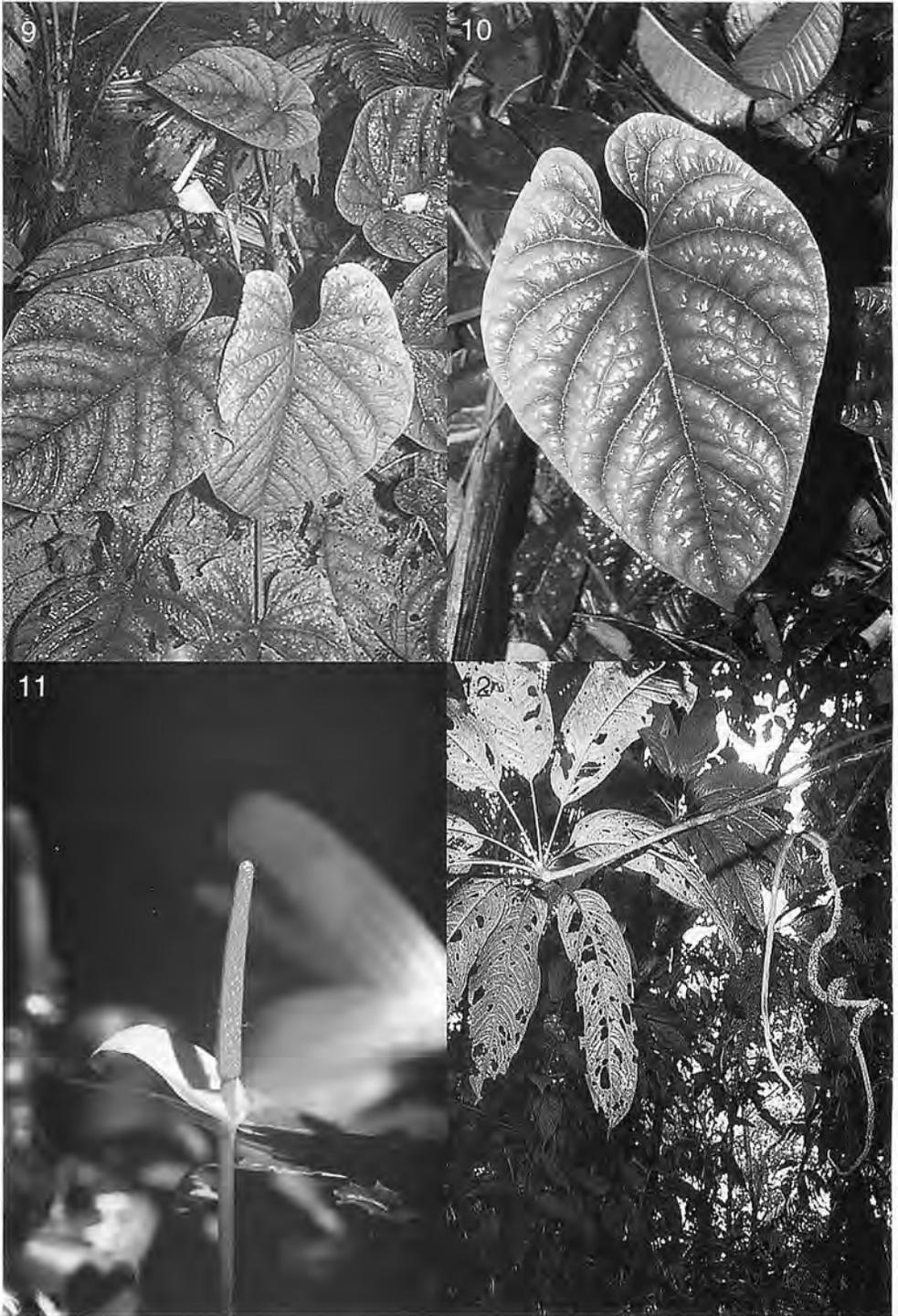
*Antburium arusiense* is endemic to Colombia known only from the vicinity of Cabo Corrientes, from near sea level to 200 m. The species is probably endemic to Chocó Department. At Cabo Corrientes the species is moderately common and almost always it has been found growing very high on trees.

The species is a member of *A.* sect. *Porphyrochitonium* and is recognized by its oblong-elliptic to lanceolate, subcoriaceous and glandular-punctate blades, which are long-acuminate at apex and acute at base, and also by its inflorescence with a greenish cream to light grayish brown long-tapered spadix and its subglobose, lavender berries that are depressed at apex.

Paratypes—COLOMBIA. **Chocó**: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, *J. Jacome 414* (COL); Corregimiento Coquí; Quebrada Trapiche al sureste de Coquí, ca. 5°32'N, 77°15'W, 100–160 m, Feb.–Mar. 1994, *Galeano et al. 5469* (COL); Quebrada Chaquí, 5°40'N,

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6 (top R). Habit with leaf and inflorescence at anthesis. —7 (bottom L). Habit showing infructescences. —8 (bottom R). Close-up of infructescence.



Figs. 9–12. —9, —10, —11 (top L, top R, bottom L). *Antburium debilis* Croat & Bay (M. Mora & Croat 274). —9 (top L). Habit of flowering plant. —10 (top R). Leaf blade

77°16'W, ca. 200 m, Feb.–Mar. 1994, *Galleano et al.* 4754 (COL).

***Anthurium debilis*** Croat & Bay, **sp. nov.**

Type: COLOMBIA. Valle: Bajo Calima Region, Buenaventura–Málaga at km 51.3; 4°09'N, 77°11'W, <100 m, 8 Feb. 1990, *Croat & Watt* 70362 (holotype, MO–3780752; isotypes, AAU, B, CAS, COL, CUV, EAP, F, G, GOET, GH, HUA, INB, JAUM, K, MEXU, M, NY, P, PMA, QAP, QCA, QCNE, RSA, S, TEX, UB, USM, US, VEN, WU). Figures 9–11.

Planta terrestris; caudex brevis; internodia brevia, 1.5–3 cm diam.; cataphylla decidua; petiolus 25–50 cm longus; lamina ovata, 20–64 cm longa, 38–46 cm lata, pagina superior matte, debiliter bullatus; spathe reflexa, ad 12.5 cm longa et 5.7 cm lata, lanceolata, alba; spadix viridis, luteus per anthesin, (5)7.5–13 cm longus; baccae obovoidea, 5–8 mm longae, atrorubrae vel purpureae.

Terrestrial to 50 cm tall; sap briefly whitish in stem; stem erect, short and stout; petioles scars conspicuous; roots few, light brown; **internodes** very short, 1.5–4 cm, reddish brown; **cataphylls** 2.6–4.5 cm long, narrowly rounded at apex, sometimes with the midrib extending beyond the end, persisting semi-intact and dark brown at apex then persisting as fibers, then deciduous or rotting off. LEAVES closely aggregated, erect to spreading; **petioles** more or less erect, (14)25–50 cm long, about as long as blades, to 5–10 mm diam., subterete to sharply C-shaped, dark green to brownish green or pinkish, matte, 5–10-ribbed or -winged circumferentially, becoming crisped on the geniculum (and to a lesser extent on the swollen sheathed portion), the ribs extending onto the lower surface of the blade; geniculum 9–15 mm long; **blades** ovate, (18)20–64 cm long, (16)20–46 cm wide, about as broad as

long to 1.5 times longer than wide, broadest usually well above the middle, obtusely short-acuminate at apex, prominently lobed at base, subcoriaceous, moderately smooth to weakly bullate, not rugose above, much paler and matte below; posterior lobes narrowly rounded, somewhat longer than wide, the outer margin nearly straight to the broadest point of the anterior lobe; sinus spatulate to narrowly V-shaped, sometimes closed with lobed overlapping, 2–12.5 cm deep, 2.5–7 cm wide; **basal veins** 5–7 per side, 1st & 2nd (3rd) free to the base, 3–4 pairs coalesced 7.5–15 cm, the larger basal veins wavy; major veins narrowly raised to acutely raised above, in valleys, acutely raised below; **midrib** acutely raised in valley above, much paler and matte, marginally ribbed (3-ribbed) on lower surface, 1-ribbed toward the apex; **primary lateral veins** 6–10 per side, acute and sunken in valleys above, acute below, departing midrib at 30°–45° angle, weakly curved toward the apex, smooth and glabrous, never scaly; collective veins arising from the 1st basal vein or one of the lower primary lateral veins; margins straight, revolute; upper surface medium green to dark olive green, semiglossy to matte or matte-subvelvety, quilted between the primary lateral veins, broadly bullate on the quilted portions especially in the lower half of the blade, mottled with gray-green on areas between the major veins above; lower surface much paler epunctate, matte, pleated-raised between the primary lateral veins, drying medium to dark gray or gray-green above, yellow-green to yellow gray-green below; tertiary veins dark green and mostly flat below. INFLORESCENCE erect, shorter than petioles; **peduncle** 6–26 cm long, 2–8 mm diam., ca. ½ as long to longer than the petiole, terete, striate-ridged circumferentially, the ribs brittle; **spathe**, lanceolate, (1.2)3–12.5 cm long and

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adaxial surface. —11 (bottom L). Close-up of inflorescence. —12 (bottom R). *Anthurium eminens* ssp. *longispadix* Croat & M. Mora. Habit showing leaf and infructescence.

(.03)1–5.7 cm wide reflexed, white to green, tinged pink to purplish with elevated green veins on lower surface, narrowly acuminate at apex, cordate at base, obliquely inserted on peduncle; stipe 3–7 mm long; **spadix** green, turning yellowish to bright golden-yellow and glossy at anthesis, (1.2)7.5–13 cm long, (4)6–15 mm wide; stamens held at level of tepals; pollen pale yellow; flowers ca. 4 per visible spiral, prominently 4-lobed, 1.0 mm long, 1.5 mm wide; lateral tepals shield-shaped; tepals 0.6 mm long, 0.6 mm wide, outer margins usually sharply 4-sided; inner margins broadly rounded or obtusely angular; exposed portion of stigmas 1 mm wide, 0.4 mm long. **Berries** dark purple, obovoid, 5–8 mm long, moderately glossy; mesocarp white; seeds 1 mm wide, greenish white.

*Anthurium debilis* is endemic to western Colombia at 40–350 m elevation in areas of *Tropical wet forest*, (bhm–T) *Tropical pluvial forest* (bp–T) and the transition zone between pluvial forest and *Premontane wet forest* (bp–PM). The species occurs along streams in shaded areas, usually in wet clay soil. It is distinguished by its terrestrial habit, ridged petioles, subvelvety, and the quilted blades that are only weakly bullate.

The species is related to *A. splendidum* Hort. Bull. and to an undescribed species long confused with the latter that is known only from cultivation. The cultivated material has long gone erroneously by the name *A. splendidum* Hort. ex W. Bull. That species will be described in an upcoming paper dealing with the *A. splendidum* complex. *Anthurium debilis* differs from the cultivated undescribed species in having subvelvety matte blades which are quilted and only weakly bullate (versus glossy and bullate to rugose for the cultivated imposter). *Anthurium debilis* differs from true *A. splendidum* in having subcoriaceous, rather smooth to weakly bullate blades rather than the thin, minutely rugose blades of the latter.

The epithet “debilis” (or weak) refers to the fact that this species is a weak grower in cultivation compared to its closely re-

lated cultivated relative long erroneously called *A. splendidum*.

A collection from the Municipio Pie de Pato, estribaciones de la Serranía del Baudó, 21 Aug. 1985, *J. Espina et al.* 1645 (CHOCO) may also be this species but has leaves dramatically larger and inflorescence with a long peduncle (to 50 cm long) and long tapered spadix (to 30.5 cm long). The collection also differs from collections of typical *A. debilis* in having the upper epidermis smooth and amorphous on magnification with prominent short linear cellular inclusions on the lower surface. In contrast *A. debilis* have greatly enlarged cells on the upper surface and lack the pale lineations on the lower surface.

Other specimens seen—COLOMBIA. **Chocó:** Andagoya, 70–100 m, 20–30 Apr. 1977, *Killip* 35366 (COL); Municipio de Istmina, alto Río San Juan, estribaciones de los Cerros La Mojarra, Quebrada El Saltado, 80–100 m, 26 June 1983, *J. Espina et al.* 1365 (CHOCO); along rd. from Bolívar to Quibó 44.8 mi. W of Bolívar, 5°40'N, 76°23', 350 m, 16 Dec. 1980, *Croat & Gogollo* 52116 (COL, MO); Serranía de Baudó, rd. from Las Animas to Pato on Río Pato, ca. 4 km SW of Pato, 5°30'N, 76°46'W, 150 m, 18 Apr. 1983, *Croat* 56132 (JAUM, MO); Río Condoto, vic. Condoto, 70 m, 23 Aug. 1955, *Idrobo* 1846 (COL); Nuquí, Corregimiento Terminales, Quebrada Piedra Piedra, 0–25 m, 6 Sep. 1994, *Acevedo-Rodríguez, et al.* 6618 (HUA); Pacific coast, Correg. Termalés, Quebrada “Piedra-piedra”, Hotel Pijibá, 1 hour by boat SW of Nuquí, 5°37'N, 77°15'W, 0–150 m, 6 Sep. 1994, *Callejas et al.*, 11193 (HUA); Quebrada Piedra Piedra, 0–25 m, 6 Sep. 1994, *P. Acevedo-Rodríguez* 6818 (HUA). Base of Cerro Torrá, trail along Río Surama, 200–300 m, 21 Feb. 1977, *Forero et al.* 3057 (COL). Valle, Queremal to Buenaventura, 28 km W of Queremal, 3 km W of Anchicaya, 3°37'00"N, 76°58'00"W, 12 July 1997, *Croat & Gaskin* 79745 (CUVC, MO); Buenaventura-Málaga, km 49, 4°02'N, 77°04'W, 150 m, 17 July 1993, *Croat & Bay* 75818 (CM, CUVC, MO); Bajo Calima Region, Along

rd. between Málaga and Buenaventura, vicinity of Málaga Naval Base at Río Bongito, 4°00'44"N, 77°20'04"W, 40 m, 29 July 1997, *Croat & Gaskin 80515* (CUVC, GUAT, GUAY, HUA, LPB, MO); along rd. between San José Palmar and Novita, vic. Santa Rosa, 4°57'N, 76°30'W, 350 m, 11 May 1983, *Croat 56614* (JAUM, MO).

*Anthurium eminens* Schott, ssp. *longispadix*, Croat & M. Mora, **ssp. nov.**

Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora 33* (holotype, COL; isotypes, HUA, K, MO, NY). Figures 12–15.

Planta epiphytica, internodia (2–)3–6 longa, 2–2.5 cm lata; cataphylla ca. 12 cm longa, persistentia ut fibrae, pallidae, tenuae decompositae; petiolus 65–98 cm longus, teres, costatus; folia 11–13-foliolatis; foliola oblonga rare ellipti; pedunculus 48–50 cm longus, 6 mm diam.; spatha olivacea, linear-lanceolata, 42–50 cm longa, 1.8–2.6 cm lata; spadix pendulus, griseo-viridis, 64–75 cm longus.

Hemiepiphyte; JUVENILE plants with the first leaves lanceolate, these are followed by bifoliolate or trifoliolate leaves, and with a subsequent increase of leaflets until the mature condition is reached. ADULT PLANTS appressed-climbing; stem 1–2 m long, green, mottled with small pale punctations in relief; **internodes** (2–)3–6 cm long, 2–2.5 cm diam.; **cataphylls** ca. 12 cm long, at first persisting pale brown with parallel fibers, soon as disorganized, fine, loose, pale fibers. LEAVES spreading; **petioles** 65–98 cm long, 6–14 mm diam. midway, terete, finely acute-ribbed throughout except adaxially, dark green, minutely short-pale-lineate, weakly glossy; sheath 16–23 cm long; geniculum ca. 1.5 cm long, forming a rounded nexus from which the leaflets radiate; LEAVES with petiolules pulvinate at base, 2.5–9 cm long, 3 mm wide, narrowly U-shaped in cross-section and sulcate adaxially; **blades** palmately 11–13 parted, subcoriaceous, dark green above, slightly paler below, se-

miglossy; leaflets narrowly oblong to oblong, rarely elliptic, long-acuminate at apex (acumen 1.5–3 cm long), truncate to acute and asymmetrical at base, 20–50 × 5–13 cm; middle leaflet 33–50 × 8.5–13 cm; **midrib** narrowly raised and concolorous above, thicker than broad, narrowly raised and slightly paler below; **primary lateral veins** 10–20 pairs, departing midrib at 45° angle, narrowly sunken above, narrowly raised and concolorous below; tertiary veins in part raised below. INFLORESCENCE pendent-spreading; **peduncle** terete, 48–50 cm long, 6 mm diam., circumferentially ribbed, dark olive-green, sometimes tinged purplish violet; **spathe** directed at a 180° angle from peduncle and spreading, linear-lanceolate and long-acuminate at apex, curled, 42–50 × 1.8–2.6 cm; coriaceous, dark olive green; **spadix** pendent, directed 90° angle from peduncle, 64–75 cm long, 0.8–1(–1.2) cm diam. at base, 4–5 mm at apex, grayish-green, matte; flowers 3 × 2.5 mm, 6–7 visible in the principal spiral. INFRUCTESCENCE with spadix twisted, 60–76 cm long, 9–15 mm diam.; **berries** promptly emergent, more or less globose, 3–5 mm diam., purplish violet to dark purple, glossy.

*Anthurium eminens* has not previously been reported for the Pacific slope of South America but the material occurring in the Cabo Corrientes region is subspecifically distinct from the species in the Amazon basin. The typical subspecies occurs only in the Amazon basin and ranges from Colombia to Bolivia east to Brazil and the Guianas from sea level to 900 (1400) m (Madison, 1987; Croat & Lambert, 1986). *Anthurium eminens* ssp. *longispadix* differs from the typical subspecies by having a long, grayish green spadix which is more slender and almost twice as long as that of the typical subspecies. For a more detailed description of *A. eminens* ssp. *eminens* see Madison (1987).

In the Cabo Corrientes region *A. eminens* ssp. *longispadix* is more or less uncommon in the forest and is found growing on trees usually up to 3.5 m above the ground.

The species is a member of *A.* sect. *Dac-*



Figs. 13–16. —13, —14, —15 (top L, top R, bottom L). *Anthurium eminens* ssp. *longispadix* Croat & M. Mora. (M. Mora & Croat 331) —13 (top L). Habit with inflorescence

*tylophyllum* and is characterized by having palmately compound leaves with 11–13 oblong leaflets, which are symmetrical at base. It is also distinguished from other species at Cabo Corrientes by its long petiolules.

In Cabo Corrientes, *A. eminens* could be confused only with *A. kunthii* Poepp. & Engl., but differs in having a higher number of leaflets and the leaflets are oblong, rather than ovate-elliptic or obovate as in *A. kunthii*. In addition the spadix in *A. kunthii* is much shorter than that of *A. eminens*.

Paratypes—COLOMBIA. **Chocó**: Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, *Mora & Croat* 331 [*Croat* 83713] (COL, MO); Mar.–Apr. 1995, *Suárez et al.* 722 (COL); Corregimiento Coquí, Quebrada Trapiche al Sureste de Coquí, ca. 5°32', 77°15'W, 100–160 m, Feb.–Mar. 1994, *Galeano et al.* 5557 (COL); Hoya del Río Atrato, Río Tagachí, afluente del Río Atrato, 40–50 m, 10 Apr. 1982, *Forero et al.* 9118 (COL).

***Anthurium galeanoae*** Croat & M. Mora **sp. nov.** Type: COLOMBIA. Chocó. Municipio Nuquí. Corregimiento Arusí. Estación Biológica El Amargal. Trail from station to Arusí, along side trail to Río Arusicito, 5°34'15"N, 77°30'01"W, 50–60 m, June 2000, *M. Mora & T. Croat* 329 [*Croat & M. Mora* 83704] (holotype, COL; isotype, MO, US). Figures 16–18.

Planta epiphytica; internodia brevia, 1–2 cm diam.; cataphylla 18 cm long a; petiolus 30–51 cm longus; lamina anguste ovata vel ovato-triangularis, 40–46 × 27–29 cm; nervis primariis lateralibus 7–8 utroque; pedunculus 21 cm longus, 7 mm diam.; spathe ca. 21 × 5 cm, pallide viride; spadix stipitatus 5 mm, 13 cm longus, 11 mm diam., atropurpureus.

Epiphyte; stem with **internodes** short, 1–2 cm diam.; **cataphylls** 18 cm long, medium green, weakly glossy, brittle, deciduous. **LEAVES** with **petioles** 39–51 cm long, 6 mm diam., subterete, narrowly and bluntly sulcate, medium green, matte, geniculum ca. 2 cm long, 6 × 6.5 mm diam.; **blades** narrowly ovate to ovate-triangular, abruptly acuminate at apex (acumen 1.5–2 cm long), deeply lobed at base, broadest at point of petiole attachment, 40–46 × 27–29 cm, subcoriaceous, dark green and matte-subvelvety above, moderately paler and weakly glossy below; margins undulate; anterior lobe 32–37 cm long, posterior lobes 15–16 × 10–12 cm, broadly rounded at apex; sinus spatulate to hippocrepiform, 10–15 cm deep; **midrib** and other major veins acutely raised above, broadly concave below, **primary lateral veins** 7–8 pairs, departing midrib at 45–55° angle; **basal veins** 7–8 pairs, 1<sup>st</sup> and sometimes 2<sup>nd</sup> free to base, the last four pairs coalesced 4 cm; posterior ribs naked 2.5–2.8 cm; collective vein originating from 1<sup>st</sup> basal vein, 3–6 mm from margin. **INFLORESCENCE** erect, **peduncle** 21 cm long, 7 mm diam., light green and matte; **spathe** erect, gradually acuminate at apex, ca. 21 × 5 cm, slightly coriaceous, light green, with ca. 10 veins; **spadix** stipitate 5 mm, 13 cm long, 11 mm diam. at base, 9.5 mm midway, 7 mm at apex, dark purple, weakly glossy; **flowers** 0.8–1 × 1.2–1.5 mm, ca. 5 visible in the principal spiral. **INFRUCTESCENCE** unknown.

*Anthurium galeanoae* is endemic to Colombia, known only from the Cabo Corrientes region in Chocó Department. It is rare in the forest and the only collection made was found growing on a tree 2 m above the ground.

The species is a member of *A.* sect. *Cardiolonchium* and is characterized by its narrowly ovate, deeply lobed, dark green

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and juvenile infructescence. —14 (top R). Leaf blade abaxial surface. —15 (bottom L). Leaf with pendent infructescence. —16 (bottom R). *Anthurium galeanoae* Croat & Mora. (*M. Mora & Croat* 329). Habit of flowering plant.



Figs. 17–20. —17, —18 (top L, top R). *Antburium galeanoae* Croat & M. Mora (M. Mora & Croat 329). —17 (top L). Leaf blades adaxial surface. —18 (top R). Close-up of inflo-

blades, drying gray-green, which are narrowly acuminate at apex, undulate along the margins and broadest at point of petiole attachment. It is also recognized by its subterete petioles, which are almost as long as the blades as well as by its erect inflorescence with erect, green spathe and slightly tapered, dark purple spadix. The species is similar to *A. rotundistigmatum* Croat, but that species has the collective veins arising from near the apex of the blade rather than from the first pair of basal veins.

The species is named in honor of Gloria Galeano, botanist from the Universidad Nacional de Colombia in Bogotá, who has been doing ecological studies in the portion of the Chocó Department near Cabo Corrientes and who has collected many of the same species described in this paper.

***Anthurium grandicataphyllum*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora* 66 (holotype, COL; isotypes, MO–5301194). Figures 19–22.

Planta epiphytica; internodia brevia, 1.3–2.5 cm diam.; cataphylla 8–26 cm longa, persistens in fibris pallidis; petiolus 24–49 cm longus, 3–5 mm diam.; lamina oblongo-lanceolata, 89–120 × 5.3–9.5 cm; nervis primariis lateralibus 10–12 utroque; pedunculus 17 cm longus, 6 mm diam.; spathe oblongo-lanceolata, 0.8–1 cm lata, viride; spadix 49 cm longus, 9 mm diam., brunneus, suffusus purpureus.

Epiphyte; stem to 35 cm long, 1.3–2.5 cm diam., medium green to reddish brown, semiglossy; **internodes** short, usually hidden by cataphyll fibers; **cataphylls** 8–26 cm long, persisting as pale fibers, soon laxly spreading, with fragments

of epidermis; roots numerous. LEAVES pendent; **petioles** terete, rigid, 24–49 cm long, 3–5 mm diam., green, minutely pale-speckled with purplish violet punctations, weakly glossy to matte; basal pulvinus 1.8–2 cm diam.; geniculum 0.8–1.4 cm long, thicker than broad, 4 × 5–6 mm diam., pale green to yellowish; sheath to 4 cm long; **blades** oblong-lanceolate, gradually long-acuminate at apex, acute at base; 89–120 × 5.3–9.5 cm, moderately coriaceous, weakly glossy, dark green above, concolorous, slightly paler below with yellowish glandular punctations; drying medium to dark brown on both surfaces or sometimes grayish yellow-brown below; **midrib** bluntly acute and concolorous to yellow-green above; broadly convex and slightly paler than surface below; **primary lateral veins** 10–12 pairs, obscure but weakly raised above, mostly apparent in apical ½, scarcely visible on lower surface, sometimes weakly raised on both surfaces; collective vein obscure. INFLORESCENCE erect-spreading; **peduncle** more or less rigid, terete, to 17 cm long, 6 mm diam., light green; **spathe** promptly withering, oblong-lanceolate, length unknown, 0.8–1 cm wide, greenish; **spadix** 49 cm long, 9 mm diam., brown tinged with purple, matte; flowers 2–3 × 3.5–4 mm, ca. 6 visible in the principal spiral; the **pistils** rectangular and green. INFRACTESCENCE unknown.

*Anthurium grandicataphyllum* is endemic to Colombia, known only from the Cabo Corrientes region, in Chocó department. It is rare, and it is generally found high on trees, up to 20 m above the ground.

The species is a member of *A.* sect. *Porphyrochitonium* and is characterized by its pendent leaves with oblong-lanceolate, moderately coriaceous and yellow glan-

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rescence. —19, —20 (bottom L, bottom R). *Anthurium grandicataphyllum* Croat & M. Mora. (*M. Mora & Croat* 376) —19 (bottom L). Habit showing pendent leaves and pendent inflorescence. —20 (bottom R). Habit.



Figs. 21–24. —21, —22 (top L, top R). *Anthurium grandicataphyllum* Croat & M. Mora (M. Mora & Croat 376) —21 (top L). Habit. —22 (top R). Close-up of stem showing

dular-punctate blades. Its long pale fibrous cataphylls gives the species its name.

Paratypes—COLOMBIA. **Chocó**: Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, June 2000, *M. Mora & Croat 376* [*Croat & M. Mora 83759*] (COL, MO); Corregimiento Coquí, Quebrada Trapiche al SW of Coquí, ca. 5°32'N, 77°15'W, 100–160 m, Feb.–Mar. 1994, *Galeano et al. 5033* (COL).

***Anthurium morae*** Croat, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora 31* (holotype, COL; isotypes, B, CHOCO, CUV, KEW, HUA, MO–5770991, NY, US). Figures 23–25.

Planta epiphytica; internodia 3–20 mm longa, 1–3 cm diam.; cataphylla 12–28 cm longa, persistens; petiolus 10–45 cm longus, U-formatus, 5–7 × 7–9 mm diam.; lamina elliptica, 14–45 × 7–24 cm; nervis primariis lateralibus 15–20 utroque; pedunculus 28–58 cm longus, 3–9 mm diam.; spatha lanceolata, 11–13 × 1.6–1.8 cm, pallide flavovirens; spadix stipitatus 0.8–1 cm, 10–19.5 cm longus, 4–13 mm diam., flavovirens.

Epiphyte; stem 10–90 cm long; **internodes** 3–20 mm long, 1–3 cm diam., yellow-green and weakly glossy; roots 2–3 mm diam., brown; **cataphylls** 12–28 cm long, with fibers reddish brown, persisting mostly as parallel fibers with some cross-fibers visible near apex. LEAVES spreading; **petioles** 10–45 cm long, 5–7 × 7–9 mm diam., sharply U-shaped in cross-section, broadly sulcate adaxially with blunt, erect margins, pale-speckled with purplish violet punctuations, weakly glossy, flexible; geniculum 2.5–3.5 cm long; **blades** elliptic, acuminate at apex, obtuse to cune-

ate at base, 14–45 × 7–24 cm, moderately coriaceous, dark green and semiglossy above, yellow-green and glossier below, purplish violet glandular-punctate on both surfaces, drying yellowish brown on upper surface, yellowish gray-green on the lower surface; **midrib** convex and concolorous above, thicker than broad, narrowly rounded and slightly paler below; **primary lateral veins** numerous, 15–20 pairs, closely parallel, extending between the basal veins, etched-sunken and concolorous above, more or less pleated-raised below; interprimary veins almost as distinct as primary lateral veins; **basal veins** 2–4 pairs extending toward the apex, 1–2 cm apart, deeply sunken and concolorous above, narrowly raised below; external basal vein 4 mm from margin; INFLORESCENCE erect-spreading; **peduncle** terete, smooth to slightly ribbed circumferentially, 28–58 cm long, 3–9 mm diam., mottled as petiole; **spathe** reflexed, lanceolate, 11–13 × 1.6–1.8 cm, light yellow-green, **spadix** stipitate, 2.4–3.2 cm in front and 0.8–1 cm in back, cylindrical, 10–19.5 cm long, 4–13 mm diam., yellow-green, semiglossy; flowers 2.5–3 × 3–3.5 cm, with more or less straight sides; ca. 5 visible in the principal spiral; pollen pale yellow. INFRUCTESCENCE with spathe to 16 × 2.7 cm; spadix to 26 cm long, 1.9 cm diam. at base; 1.5 cm at apex; **berries** to 6 mm long, 2 mm diam., narrowly ovoid-ellipsoid, more or less square at apex, red, mesocarp white; seeds 2, ellipsoid and flattened, 3 × 1.5 mm.

*Anthurium morae* is known only from Colombia in the vicinity of Cabo Corrientes, and is probably endemic to Chocó. In the Cabo Corrientes region it is abundant and is found growing on trees at 2–3 m above the ground, or on fallen trunks and sometimes accidentally growing on soil.

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petioles and persistent cataphylls. —23, —24 (bottom L, bottom R). *Anthurium morae* Croat & M. Mora (*M. Mora & Croat 331*) —23 (bottom L). Leaf blade adaxial surface. —24 (bottom R). Leaves with erect inflorescence.



Figs. 25–28. —25 (top L). *Anthurium morae* Croat (*M. Mora & Croat 331*). Leaf with young infructescence. —26, —27, —28 (top L, top R, bottom L). *Anthurium pallidicaule*

The species is a member of *A.* sect. *Digitinervium* and is characterized by its elliptic, moderately coriaceous, semiglossy and glandular-punctate blades with the basal veins extending toward the apex and with closely parallel primary lateral veins. There are not many species in *A.* sect. *Digitinervium* described from northern Colombia. The species can be compared with *A. lentii* Croat & Baker, a species from Costa Rica and Panama which may be found in Colombia. That species differs in having blade ovate and cordate to subcordate and dries dark brown. In addition the apex is more or less emarginate at apex. In contrast, *A. morae* has elliptic blades which are more or less acute at the base, acuminate at the apex and dry paler yellow-green. It differs from *A. ovatifolium* Engl., another species in *A.* sect. *Digitinervium* from Ecuador, by the same characteristics.

Paratypes—COLOMBIA. **Chocó:** Hoya del Río Atrato, Beté, 50–60 m, *Forero et al.* 8823 (COL); Hoya del Río Atrato, Quebrada Taparal, tributary of Río San Juan, vic. Waunaná de Taparalito (indigenous community), 5–10 m, 27 Mar. 1979, *Forero et al.* 4234 (COL); Bolívar-Quibdó, 7 km W of Tutunendo, 100 m, *Gentry & Fallen* 17605 (COL); Corcovado Region, upper Río San Juan, Yeracuí Valley, 200–275 m, *Killip* 35238 (US); Tutunendo, 20 km N of Quibdó, 19–20 May 1931, *W. Archer* 2164 (US); 11 km S of Quibdó on rd. to Yuto, 50 m, *Gentry & Renteria* 23746 (COL); Yuto-Lloró, 1 km E of Yuto, 16 Apr. 1983, *Croat* 55995 (JAUM), 2 km E of Yuto, 50 m, 18 Jan. 1979, *Gentry & Renteria* 24440 (COL. MO); Quibdó-Istmina, km 14 S of Quibdó, 5°32'N, 67°27'W, <100 m, 17 Dec. 1980, *Croat* 52199 (COL); Quibdó-Las Animas, ca. 1 km N of Las Animas, 5°14'N, 76°40'W, 100 m, 15 Apr. 1983, *Croat* 55973 (JAUM, MO); Las Animas-Pató, Río Pató, 16 km NW of main Quib-

dó-Istmina rd. near Las Animas, 5°20'N, 76°42'W, 100 m, 18 Apr. 1983, *Croat* 56171 (COL, HUA, JAUM, MO); Las Animas-Pató, ca. 4 km SW of Pató, 5°30'N, 76°46'W, 150 m, 18 Apr. 1983, *Croat* 56113 (COL, CUVC, HUA, MO, UB); Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, June 2000, *M. Mora & Croat* 343 [*Croat & M. Mora* 83725] (COL); Corregimiento Termales, Jobi-Arusí, near Cabañas Pijibá, 5°37'24"N, 77°25'03"W, 5–50 m, 31 Jan. 1995, *Betancur et al.* 6020 (COL); Jan.–Apr. 1999, *Jácome* 205 (COL); Mar.–Apr. 1995, *Suárez et al.* 889 (COL); Quebrada Chaquí, 5°40'N, 77°16'W, ca. 200 m, Feb.–Mar. 1994, *Galeano et al.* 4640 (COL); Spurs of Alto del Buey and Río Mutatá, 300–1,000 m, 1 Jan. 1973, *Forero & Gentry* 793 (COL).

***Antburium pallidicaudex*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora* 43 (holotype, COL; isotypes, CUVC, HUA, MO–5301196). Figures 26–28.

MO-5796948, Planta terrestres vel hemiepiphytica; internodia 1.1–7 cm longa, 0.9–1.8 cm diam.; cataphylla 11–26 cm long; petiolus 23–47 cm longus, 3.5–5 mm diam.; lamina oblongo-ovata, 27–42 × 15–26 cm; nervis primariis lateralibus 13–26 utroque; pedunculus 9.5–12 cm longus, 2–3 mm diam. spatha ca. 10 × 1–1.4 cm, pallide viridis; spadix 8–12 cm longus, 3–4 mm diam., pallide lutea.

Terrestrial, or occasionally appressed-climbing in understory; stem erect, 70–170 cm long, terete; **internodes** 1.1–7 cm long, 0.9–1.8 cm diam., dark green and weakly glossy, promptly turning grayish green to whitish, and finally light brown,

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*dex* Croat & M. Mora (*M. Mora & Croat* 344) —26 (top R). Habit. —27 (bottom L). Leaf blades adaxial surface. —28 (bottom R). Habit of flowering plant.

semiglossy; **cataphylls** 11–26 cm long, thin, brittle, persisting as thin semi-organized fibers tightly appressing stem, eventually only pale fibers at nodes. LEAVES distributed along stem; **petioles** 23–47 cm long, 3.5–5 mm diam., C-shaped in cross-section, obtusely sulcate adaxially toward apex; terete toward base, green, short-purplish violet-lineate, semiglossy to matte; geniculum 2.6–2.8 cm long, 5–6 mm diam., weakly darker than petiole, glossy; **blades** ovate-oblong, acuminate at apex, lobed at base, 27–42 × 15–26 cm, broadest at point of petiole attachment, subcoriaceous, dark green and matte to subvelvety above, moderately paler and matte below; anterior lobe 20–33 cm long; posterior lobes 9–15 × 6–9 cm; sinus parabolic, 7.5–11.5 cm deep; **midrib** acutely raised in a valley and concolorous above, narrowly rounded and slightly paler than surface below; **primary lateral veins** 13–26 pairs, departing midrib at 45–50° angle, quilted, narrowly raised in valleys above, bluntly angular to narrowly raised below, concolorous on both surfaces; tertiary veins in part raised below; **basal veins** 6–8 pairs, the 1<sup>st</sup> and 2<sup>nd</sup> pairs free to base; 4<sup>th</sup>–6<sup>th</sup> coalesced 3–5 cm; INFLORESCENCE erect-spreading; **peduncle** terete, ribbed circumferentially, 9.5–12 cm long, 2–3 cm diam.; **spathe** reflexed, oblong-lanceolate, acuminate at apex (acumen 6 mm long), ca. 10 × 1–1.4 cm, pale green; **spadix** 8–12 cm long, 3–4 mm diam., very light yellow, matte; flowers with 7 visible per spiral, almost square, 1.8–2.0 mm in both directions; lateral tepals 1 mm wide, outside margin with two sides, inner margins convex. INFRACTESCENCE unknown.

*Anthurium pallidicaudex* is uncommon in the Cabo Corrientes region, and is generally found growing terrestrially or climbing on trees in the understory, sometimes growing on fallen tree trunks.

The species is endemic to Colombia, known only from the type locality. It is a member of *A.* sect. *Polyneurium* and is characterized its long pale stem, almost always grayish to whitish with a semiglossy epidermis, as well as by its oblong-cordate, subvelvety blades. It is also distin-

guished by its erect inflorescence with short and circumferentially ribbed peduncles as well as by its light yellow, matte spadix and its reflexed light green spathe.

The species is similar to *A. hutchisonii* Croat, from western and central Panama, a species that could also occur in Colombia. It is similar to *A. pallidicaudex* in having elongated internodes and yellowish spadices. *Anthurium hutchisonii* differs, however, in having blades which are generally ovate-triangular, and are typically straight to concave along the margins rather than decidedly convex as in *A. pallidicaudex*.

Paratypes—COLOMBIA. **Chocó:** Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, June 2000, *M. Mora & Croat 344* (COL, MO); Mar.–Apr. 1995, *S. Suárez et al. 51* (COL); vic. Bajía Solano, near airport, 5°13'30"N, 77°22'W, 50 m, 14 Mar. 1984, *Croat 57435* (COL, JAUM, MO, QUIBDO).

*Anthurium prominerve* Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora 28* (holotype, COL; isotypes, B, CAS, CHOCO, CUVC, F, HUA, K, MEXU, MO-5796948, NY, PMA, QCNE. SEL, UB, US). Figures 29–32.

Planta terrestris; internodia brevia, 0.5–2.5 cm long, 2.7–5.1 cm diam.; cataphylla 6.5–20 cm longa; petiolus 85–108 cm longus, 12 mm diam.; lamina ovato-cordata vel ovato-sagittata 57–89 × 26.5–44 cm; nervis primariis lateralibus 10–15; pedunculus 29–83 cm longus, 4–10 mm diam.; spatha lanceolata, 16.5–25 × 2.5–4.4 cm, pallide viridis; spadix stipitatus 1.6–2.6 cm, 14–31 cm longus, 8–10 mm diam. olivaceus vel aureoviridis.

Terrestrial; stem 35–45 cm long; **internodes** short, 0.5–2.5 cm long, 2.7–5.1 cm diam., yellow-green, weakly glossy; **cataphylls** 1-ribbed, 6.520 cm long, persisting semi-intact, with longitudinal light brown

fibers and reddish brown fragments of epidermis at upper nodes, but soon deciduous in the lower internodes; roots to 3 mm diam. at base, green. LEAVES spreading; **petioles** 85–108 cm long, 12 mm diam., subterete, narrow and obtusely sulcate above, pale-speckled, almost matte; geniculum 3 cm long, 8 mm diam.; **blades** ovate-cordate to ovate-sagittate 57–89 × 26.5–44 cm, subcoriaceous, dark green and matte-subvelvety above, much paler and matte below; anterior lobe 45–70 cm long; posterior lobes rounded, 13–20 cm long, longer than broad; sinus parabolic, 9.5–15 cm deep; posterior ribs naked; major veins raised, thicker than broad, more or less acute and slightly paler than surface above; acute, weakly raised and concolorous below; **midrib** acute and slightly paler above; thicker than broad, convex, faintly 3-ribbed and slightly paler below; **primary lateral veins** 10–15 pairs, departing midrib at 45–50° angle; secondary veins thicker than broad, as conspicuous as primary lateral veins; **basal veins** 7 pairs; 1<sup>st</sup>–3<sup>rd</sup> free to base, 5<sup>th</sup>–7<sup>th</sup> coalesced to 5 cm; collective vein arising from the 2<sup>nd</sup> basal pair, 3–7(–10) mm from margin; tertiary veins weakly visible. INFLORESCENCE erect; **peduncle** terete, 29–83 cm long, 4–10 mm diam., light green short-lineate; **spathe** erect-spreading, lanceolate, long-acuminate at apex, 16.5–25 × 2.5–4.4 cm, moderately coriaceous, brittle, light green; **spadix** stipitate 1.6–2.6 cm, tapered, 14–31 cm long, 9–14 mm diam. at base, 8–10 mm midway, 4–5 mm at apex, dark olive-green, becoming bright golden yellow, with a sweet, weak aroma; flowers rhombic, 2–2.2 × 1.5–1.7 mm, 5–6 visible in the principal spiral; tepals glossy. INFRACTESCENCE with spadix olive green; **berries** globose, dark purple, green at apex.

*Anthurium prominerve* is known only from Colombia in Chocó Department at 50–285 m elevation. Most of the collections have been made in the region of Bajía Solano. The first collection was made by E. P. Killip in 1939. At Cabo Corrientes the species is common to abundant in the

forest and it is found in wet sites, generally on creek banks.

The species is a member of *A.* sect. *Polyneurium* and is principally distinguished by its major veins, which are conspicuously acutely raised above. It is also characterized by its ovate-sagittate to ovate-cordate blades, which are bicolorous, matte-subvelvety above and matte below, and by its inflorescence with a reflexed spathe and its tapered bright golden yellow spadix.

Paratypes—COLOMBIA. **Chocó:** Pueblo Rico (Risarlada)-Istmina (Chocó), 1 km W of Guarato and Río Guarato at Risarlada-Chocó border, 5°21'N, 76°11'W, 285 m, 22 Feb. 1990, *Croat 70872* (JAUM, MO); Bajía Solano, Quebrada Jellita, 50–100 m, 22 Feb. 1939, *Killip & H. Garcia 33528* (COL, US); *Killip & H. Garcia 33560* (COL, US); Near Bahía Solano, near airport, 5°13'30"N, 77°22'W, 50 m, (JAUM, MO); Trail to Miniquía E of Puerto Mutis (Bajía Solano), 20–120 m, 26 Jan. 1971, *Lellinger & La Sota 28* (US); Mecana, N. of Bahía, Quebrada La Planatilla, N. of Río Mecana, 6°16'N, 77°10'W, 50 m, 10 Jan. 1984, *Juncosa 1868* (JAUM, MO); Solano Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, *M. Mora & Croat 332* [*Croat & M. Mora 83714*] (COL, MO); Jan.–Apr. 1999, *Jácome 258, 306* (COL); Mar.–Apr. 1995, *G. Galeano 5830* (COL); Corregimiento Termales entre Jobí y Arusí, ca. Cabañas Pibaja, 5°37'24"N, 77°25'03" 5–50 m, *W, J. Betancur et al. 6011* (COL); Corregimiento Coquí, Quebrada Bongo, 150 m, 26 Mar 1994, *G. Galeano & N. Murillo 5551* (COL).

***Anthurium vartilobum*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, July–Sep. 1998, *M. Mora 11* (holotype, COL; isotypes, B, CUVC, HUA, K, MO–5581614, NY, UB, US). Figures 33–38.

Planta terrestris; internodia brevia, 2.3–



3.2 cm diam.; cataphyllae 8–10(–16) cm longae; petiolus (33–)68–84(–121) cm longus, 0.6–1.2 cm diam.; lamina trilobata, 65–74 × 33–38 cm; nervis primariis lateralibus 6–9 utroque; pedunculus 53–104 cm long, 5–8 mm diam.; spathe 9–13.5(–21) × 1.5–3.5(–5) cm, viridis; spadix stipitatus 0.4–1.8 cm, 9.5–23 cm long, 0.9–1.5 cm diam., luteus; baccae, 5–6 mm longae, 4 mm diam., atropurpureae.

Terrestrial; stem repent, to 45 cm long, 2.3–3.2 cm thick; petiole scars conspicuous and indented; **internodes** short, 4–8 mm long, green; juvenile roots pubescent, **cataphylls** 8–10(–16) cm long, persistent semi-intact, dark brown, with pale brown longitudinal fibers. LEAVES erect-spreading; **petioles** (33–)68–84(–121) cm long, 0.6–1.2 cm diam., terete and narrow to obtusely sulcate, dark olive green, weakly glossy, densely paler short-lineate throughout; geniculum 2.5–3.6 cm long, 7–13 mm diam., with a 3-branched apex that extends to the blade, with a branch for each lobe, slightly tinged with purple; pulvinus tinged with magenta; **blades** trilobate, short-acuminate at apex, 65–74 × 33–38 cm, subcoriaceous, dark green and weakly glossy above, moderately paler and matte below, medial lobe (20–)43–63 × (10.5–)14.5–28 cm, constricted to 6–10.8 cm wide near base; posterior lobes rounded, 20–32 × 11–21 cm; sinus arcuate when lobes are spreading to spatulate when lobes are directed upward and held more or less erect with respect to the midrib, 4–8 cm wide; **midrib** bluntly angular at base, acute toward apex above, round-shouldered and narrowly and sharply 3-ribbed below, slightly paler than surface on both sides; **primary lateral veins** 6–9 pairs, departing midrib at 45–55° angle, narrow and acutely raised, concolorous on both surfaces; tertiary veins moderately visible, not raised; **basal veins** 5–7 pairs, the first

pair free, the last 4 pairs fused 4.5–5.8 cm; posterior ribs naked and thick. INFLORESCENCE erect; **peduncle** terete, 53–104 cm long, 5–8 mm diam., light brown tinged with magenta at base; **spathe** lanceolate, gradually acuminate at apex, inserted at a 90° angle on peduncle, 9–13.5(–21) × 1.5–3.5(–5) cm, green, with ca. 8 darker green veins; **spadix** stipitate 0.4–1.8 cm, 9.5–23 cm long, 0.9–1.5 cm diam. at base, 0.4–0.8 cm diam. at apex, green (immature) to bright yellow; flowers 2.8–4 × 2.8–4 mm; 5–6 visible in the principal spiral; tepals glossy. INFRUCTESCENCE with spadix dark purple; **berries** oblong-ellipsoid, flattened at apex, 5–6 mm long, 4 mm diam., dark purple except whitish at apex; seeds 1, ca. 5 × 3 × 2 mm.

This species is only known from Colombia in the vicinity of Cabo Corrientes, and is probably endemic to Chocó. At Cabo Corrientes it is abundant in the forest, frequently in wet sites along creek banks.

*Anthurium variilobum* is a member of *A.* sect. *Polyneurium* and is recognized by its terrestrial habit, trilobate blades, and its erect inflorescence with a lanceolate green spathe, bright yellow, tapered spadix and its oblong-ellipsoid purple berries, which are whitish at the apex. The species is highly variable in terms of blades shape, hence the epithet *variilobum*; some individuals have posterior lobes directed outward and upward and others have posterior lobes directed downward and overlapping.

Paratypes—COLOMBIA. **Chocó**: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, June 2000, *Mora & Croat 350* [*Croat & M. Mora 83732*] (COL, MO); 3 Dec. 1998, *Tuberquia & Dolkens 664* (COL, HUA); Río Arusí, en Plano aluvial en el Tagual, 27 Mar. 1993, *Galeano & Bernal 3683* (COL); Corregimiento Termales en-

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Figs. 29–32. *Anthurium prominerve* Croat & M. Mora (*M. Mora & Croat 332*) —29 (top L). Habit of flowering plant. —30 (top R). Leaf blade adaxial surface. —31 (bottom L). Inflorescence. —32 (bottom R). Inflorescence post-anthesis.



Figs. 33–36. *Anthurium variilobum* Croat & M. Mora (M. Mora & Croat 350). —33 (top L). Habit. —34 (top R). Flowering plant. —35 (bottom L). Blade adaxial surface. —36 (bottom R). Blade showing deeply 3-lobed blade.

tre Jobí y Arusí, bosque cerca de las cabañas Pijibá, 5°37'24"N, 77°25'03"W, 5–50 m, Jan. 1995, *Betancur et al.* 6040, 6047 (COL); Quebrada Chaquí, 5°40'N, 77°16'W, ca. 200 m, Feb.–Mar. 1994, *Galleano et al.* 4338 (COL).

***Monstera amargalensis*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí: Corregimiento Arusí: trail to Punta Brava from Estación Biológica El Amargal, 5°34'13"N, 77°30'10"W, near sea level, 21 June 2000, *M. Mora* 324 [*Croat & M. Mora* 83706] (holotype, COL; isotypes, K, MO). Figures 39, 40.

Planta epiphytica; internodia brevia, 4 cm diam., petiolus 28–60 cm longus, vaginata ad apicium; lamina anguste ovata, 38–41 × 25–31 cm, pinnatifida; nervis primariis lateralibus 14–16 utroque; pedunculus 18–23 longus; spadix 12–14 m longus, 2–2.5 cm diam.

Epiphytic; stems less than 1 m long; **internodes** short, near apex, 4 cm diam. longer than broad lower down, drying medium yellow-brown and narrowly longitudinally folded. LEAVES with **petioles** 28–60 cm long, slightly longer than the blades, moderately green, matte, densely pale-speckled, sheathed to the geniculum; sheath incurled below the middle, erect near the apex, its margins persisting intact; juvenile leaves elliptic to ovate-elliptic, 1.9 times longer than wide, markedly inequilateral and lacking perforations; adult leaves erect-spreading; **blades** narrowly ovate, 38–41 × 25–31 cm, pinnatifid, at least on one side, with pinnae 2–4 per side, 2–11.5 cm wide, divided to within 1–4.5 cm from the midrib, subcoriaceous, acute to shortly and abruptly acuminate at apex, inequilateral and obtuse to rounded and weakly attenuate at base, medium to dark green and semiglossy above, moderately paler, yellow-green and semiglossy below; drying subcoriaceous to papyraceous, dark brown to dark yellow-brown above, medium yellow-brown to dark brown below; midrib broadly sunken and paler yellow-green below; **midrib** broadly

sunken and paler yellow-green above, narrowly rounded and paler below; **primary lateral veins** 14–16 pairs, arising from midrib at 40–55° angle, making a broad curve or gradual sigmoid curve to the margins, concolorous, bluntly and deeply sunken above, prominently convex, much paler and pleated below, drying moderately darker than the surface; minor veins moderately few, indistinct. INFLORESCENCE 1 per axil; **peduncle** 18–23 long, 1.4–1.6 times longer than spadix, slightly thicker in one dimension, 1–1.5 cm × 0.8–1.3 cm (drying to ca. 7–10 mm diam.); **spathe** promptly deciduous; **spadix** light gray-green, matte, whitish, 12–14 m long, 2–2.5 cm diam.; **pistils** subterete to hexagonal at apex, the style drying blackened and sunken at apex, 2.8–3.2 mm diam.; stigmas linear, extending across most of the style.

*Monstera amargalensis* is endemic to Colombia, known only from the Department of Chocó at the type locality on Cabo Corrientes as well as near Tadó in the valley of the Río San Juan. The species is characterized by its short internodes, long-petiolate leaves, fully sheathed petioles with sheaths persisting intact, 2–4-pinnatifid dark brown-drying blades and by its long-pedunculate spadix.

The species can be confused with *M. adansonii* Schott, especially in living condition, but that species has blades which consistently dry greenish in Central America and northern South America. It is also confused with *M. spruceana* (Schott) Engl., which also has blades which dry dark brown and have only a few broad pinnae, but that species has peduncles which are shorter than the spadix, rather than much longer than the spadix.

*Monstera amargalensis* is named after the type locality at Estación Biológica El Amargal.

Paratypes—COLOMBIA. **Chocó:** Municipio Nuquí: Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°31'W, near sea level, Jan.–Apr. 1999, *Jácome* 383 (COL), 423 (COL, MO); Río San Juan, just



Figs. 37–40. —37, 38 (top L, top R). *Antburium variilobum* Croat & M. Mora (M. Mora & Croat 350) —37 (top L). Close-up of inflorescence. —38 (top R). Leaf with infructescence.

below Tadó, 100 m, 15 Aug. 1976, *Gentry & Fallen 17726* (MO).

***Philodendron amargalense*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí: Corregimiento Arusí: along the Río Arusicito 5°34'16"N, 77°30'01"W, 10 m, 26 June 2000, *M. Mora & Croat 379* [*Croat & M. Mora 83762*] (holotype, COL; isotype, MO). Figures 41–43.

Planta hemiepiphytica; internodia brevía, (1.5)1.9–5 cm diam.; cataphylla 30–39 cm longa, persistens in fibris; petiolus 55–72 cm longus, 8–12 mm diam.; lamina anguste ovata vel ovato-elliptica ca. 65.5 cm longa, × 34–39 cm; nervis primariis lateralibus 9–10 utroque; inflorescentia 4 per axilium; pedunculus 12–13 cm longus, 9–11 mm diam.; spatha pallide luteovirescens, 15.5 cm longa, 1.8 × 2.0 cm diam.

Hemiepiphyte at 15 m; stems (1.5)1.9–5 cm diam., medium gray-green to olive-green, drying yellowish brown and glossy to semiglossy; **internodes** 20–30 cm long when young, promptly becoming red-brown and scurfy, shorter than broad at maturity; **cataphylls** to 15 cm long on preadult plants, unribbed, reddish, persisting as lax fibers with fragments of epidermis on preadult stems, 30–39 cm long on adult plants, unribbed at apex, weakly and acutely 1-ribbed below; midrib reddish near base, semiglossy, yellow-green toward apex, deciduous. LEAVES on juvenile plants with **petioles** 42–58 cm long, 6–7 mm diam., somewhat glossy, terete, finely pale-short-lineate, with a purplish ring at apex, adult petioles 55–72 cm long, 8–12 mm diam., medium to dark green, finely pale-striate, drying dark brown, prominently sulcate; geniculum 3–3.5 cm long, 9–12 mm diam.; **blades** narrowly ovate to elliptic-ovate, narrowly long-acuminate at apex, prominently lobed at base, ca. 65.5

cm long, 34–39 cm wide, broadest somewhat above petiole attachment, 1.6–1.9 times longer than wide; (preadult blades 40–43 cm × 17–20 cm with moderately small lobes and a V-shaped sinus), subcoriaceous, dark green and semiglossy above, moderately paler and slightly glossy below, drying dark brown above, dark yellow-brown below; anterior lobe 32–51 cm long, broadly convex on margins; posterior lobes 10–19.5 cm long, 7–14 cm wide, narrowly rounded at apex (6.5–8.5 × 5–9 cm on preadult blades); **midrib** bluntly angular to narrowly rounded and moderately paler, yellowish green above, convex and slightly to moderately paler with inconspicuous short lines below; **primary lateral veins** 9–10 pair (4–6 on preadults), arising at 65–70° angle, weakly sunken and paler above, convex and concolorous below; drying darker than the surface; minor veins moderately visible, close and fine, prominent on lower surface; **basal veins** 7–9 pairs (3–5 on preadult plants), the 1<sup>st</sup> and 2<sup>nd</sup> free to the base, with the 4<sup>th</sup> or 5<sup>th</sup> and higher order pairs coalesced 3–6 cm, the posterior rib naked 1–1.5 cm (posterior rib no more than 5–7 mm long on preadult blades); INFLORESCENCES 4 per axil; **peduncle** 12–13 cm long, somewhat flattened, 9–11 mm wide, medium green, semiglossy, maroon towards base; **spathe** pale yellow-green, semiglossy, 15.5 cm long, 1.8 × 2.0 cm diam., not constricted above tube, post-anthesis; **spadix** persisting slightly longer than spathe. INFRUDESCENCE immature, dark green, 6 cm long in front, 1.5 cm diam., old staminate spadix 6.3 cm long.

The species is endemic to Colombia in Chocó Department, known only from the region of Cabo Corrientes and is somewhat common in the forest at the El Amargal field station. The species is a member

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ence. —39, 40 (bottom L, bottom R). *Monstera amargalense* Croat & M. Mora (*M. Mora 324*). —39 (bottom L). Whole plant lying on ground. —40 (bottom R). Leaves with close-up of immature infructescence.



Figs. 41–44. —41, —42, —43. *Philodendron amargalense* Croat & M. Mora (*Mora & Croat 379*) —41 (top L). Leaf blade adaxial surface. —42 (top R). Leaf blade abaxial

of *Philodendron* subgenus *Philodendron* and is characterized by its short adult internodes, unribbed, reddish, usually deciduous cataphylls, terete petioles with a purple ring at the apex and a prominently raised petiolar plexus, the narrowly ovate to elliptic-ovate blades which dry dark yellow-brown with minutely prominent cross-veins usually visible on the lower dried surface. Also characteristic is the unconstricted spathe which is heavily tinged maroon inside and the narrowly raised, pale green midrib and the prominently raised petiolar plexus.

This species is closely related to *Philodendron sagittifolium* Liebm., but it differs from that species in having proportionately longer peduncles which are about as long as the spathe (versus much shorter in *P. sagittifolium*).

Paratypes—COLOMBIA. **Chocó**: Municipio Nuquí: Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°31'W, near sea level, July-Sep. 1998, *M. Mora* 280 [*Croat & M. Mora* 83662] (COL, MO).

***Philodendron laticiferum*** Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó: Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W. 0–60 m, July–Sep. 1998, *M. Mora* 9 (holotype, COL; isotypes, B, HUA, K, MO, US). Figures 44–46.

Planta epiphytica vel hemiepiphytica; internodia 1–2.6 cm longa, 1.8–2.7 cm diam.; cataphylla acutis-bicostata, 26–35 cm longa; petiolus 23–56 cm longus, 1.6–2 × 1.3–1.4 cm diam.; lamina ovato-oblonga vel obovato-oblonga 20–64 × 15–26 cm; nervis primariis lateralibus 15 utroque; inflorescentia 1–2 per axillum; pedunculus 8–21 cm longus, 1.2–1.5 cm diam.; spathe 13–18 cm longa, albida in lamina, subroseus in tubus extus, rubidus in tubus intus;

spadix 13.3–17 cm longus; pars pistillata 4–6 cm longa.

Hemiepiphytic or epipetric; stem appressed-climbing, terete, 1.8–2.7 cm diam., light yellowish green and weakly glossy, promptly becoming pale grayish green, semiglossy, faintly transversely fissured and becoming pale brown; **internodes** as long as broad or broader than long, 1–2.6 cm long; roots strongly appressed to substratum; **cataphylls** sharply 2-ribbed (wings to 5 mm high), spongy, brittle, deciduous, 26–35 cm long, pale green and dark green-punctate. LEAVES erect-spreading; **petioles** 23–56 cm long, 1.6–2 × 1.3–1.4 cm diam. at middle, broader than thick, spongy, obtusely flattened above, medium green, densely dark-lineate, with dark green ring at apex; **blades** ovate-oblong, to obovate-oblong (narrower at base), acuminate at apex, attenuate, narrowly rounded to subcordate at base, 20–64 × 15–26 cm, with the margins more or less undulate, subcoriaceous, dark green and semiglossy above, light green to yellowish and weakly glossy below; sinus more or less arcuate in subcordate blades; **midrib** flattened and slightly paler than surface above, narrowly rounded, slightly paler than surface and dark green short-lineate below; **primary lateral veins** 11–15 pairs departing midrib at 50–65° angle, obtusely sunken and concolorous above, thicker than broad, convex and concolorous or darker than surface below; minor veins visible not distinct; laticifers visible **basal veins** 3–4 pairs; INFLORESCENCE 1–2 per axil; **peduncle** 8–21 cm long, 1.2–1.5 cm diam.; **spathe** 13–18 cm long; spathe blade greenish white outside, white inside; spathe tube pinkish in the tube outside, red inside; **spadix** 13.3–17 cm long; staminate portion 9.3–11 cm long, white; pistillate portion 4–6 cm long, pale green. INFRUTESCENCE immature somewhat

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surface. —43 (bottom L). Stem with inflorescences. —44 (bottom R). *Philodendron laticiferum* Croat & M. Mora (*M. Mora & Croat* 337). Flowering plant removed from tree.



Figs. 45–48. —45, —46 (top L, top R). *Philodendron laticiferum* Croat & M. Mora. (*M. Mora & Croat 337*) —45 (top L). Flowering plant on ground. —46 (top R). Flowering

flattened with hexagonal fruits; seeds 5 per berry, ovoid, 1.5 mm long, green.

*Philodendron laticiferum* is only known from Colombia in the vicinity of Cabo Corrientes, from near sea level to 60 m, and probably is endemic to Chocó. It is occasional at Cabo Corrientes and is generally found on tree trunks, often at 2–6 m above the ground, or on rocky cliffs near the coast. JUVENILE plants differ by having obovate-elliptic blades which are rounded to subcordate at base.

The species belongs to *P.* subgenus *Philodendron* sect. *Calostigma* series *Glossophyllum*. It is characterized by its appressed-climbing habit, short internodes, sharply 2-ribbed spongy cataphylls, the spongy petioles which are broader than thick and have a dark green ring at apex, the mostly elongated blades which dry yellowish green and have conspicuous laticifers, as well as by the greenish white spathes which are pinkish in the tube.

*Philodendron laticiferum* is very similar to *P. pseudauriculatum* Croat, however the latter species differs by having shorter cataphylls, sulcate petioles which are proportionally longer, and narrower blades that tend to dry darker than those of *P. laticiferum*. In addition, *P. laticiferum* differs by having thinner blades with very conspicuous laticifers.

Paratypes—COLOMBIA. **Chocó:** Municipio Nuquí, Corregimiento Arusí, Estación Biológica El Amargal, 5°34'N, 77°30'W, 0–60 m, June 2000, *M. Mora & Croat 337* [*Croat & M. Mora 83719*] (COL, MO), 342 (COL, MO).

***Philodendron longipedunculatum*,**

Croat & M. Mora, **sp. nov.** Type: COLOMBIA. Chocó. Municipio Nuquí: Corregimiento Arusí: tip of Cabo Corrientes, 5°30'15"N, 77°33'00"W, 0 m, *M. Mora 61* (holotype: COL). Figures 47, 48.

Planta hemiepiphytica; internodia 2–2.5 cm longa, 3–4.5 cm diam.; cataphylla 28–32 cm longa, ecostata vel 2-costata ad apicium, deciduus; petiolus 81–93 cm longus; lamina ovata, ca. 56 × 39 cm, lobata ad basim; nervis primariis lateralibus 10–11 utroque; inflorescentia 1 per axila; pedunculus ca. 17 cm longus; spatha ca. 17.5 cm longa, extus atroroseus extus en tubo, cremeus en lamina; intus cremeus vel albus; ovula basalis, 2–3 per locula.

Hemiepiphyte, near ground, flowering at ca. 1.7 m; stem 2 m long, 3–4.5 cm diam., grayish green; epidermis flaking, light brown, drying matte, minutely and deeply ribbed (the ribs minutely undulate); leaf scars grayish; **internodes** 2–2.5 cm long; roots 3–4 mm diam.; **cataphylls** 28–32 cm long, unribbed or bluntly 2-ribbed near apex, fleshy, slightly swollen at base, deciduous. LEAVES dispersed over most of the length of the stem; **petioles** more or less terete, 81–93 cm long, drying 6–8 mm diam., light green tinged grayish, with dark green intermittent lines, with narrow purple ring at apex, drying dark brown, matte, finely dark-striate; sometimes purplish spotted in the lower 20 cm, drying dark brown; sheath unusually long, 12–13 cm long; **blades** ovate, abruptly and narrowly acuminate at apex, deeply lobed at base, narrowly apiculate at apex, ca. 56 × 39 cm, 1.5 times longer than wide, broadest just above point of petiole attachment, thin, dark green and glossy, above, light green and semiglossy to matte below, drying yellowish brown with occasionally grayish green streaks above, uniformly yellow-brown below, with the margins that dry undulate; anterior lobe ca. 41 cm long, posterior lobes ca. 19 × 17.5 cm, broadly rounded at apex; sinus spatulate, ca. 15 cm deep, 2 cm wide; **midrib** raised on both surfaces, light green; **basal veins**

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plant. —47, —48 (bottom L, bottom R). *Philodendron longipedunculatum* Croat & M. Mora. (*M. Mora 61*) —47 (bottom L). Habit. —48 (bottom R). Bases of petioles and an inflorescence at anthesis.

8–10 per side, each heavily branched, 1<sup>st</sup>–3<sup>rd</sup> free to base, 4<sup>th</sup> fused 1 cm, 5<sup>th</sup> and higher fused to 3 cm; posterior ribs weakly curved, naked for 1 cm; **primary lateral veins** 10–11 pairs, heavily branched, especially in lower 1/3 of each lateral vein, weakly quilted-sunken and much paler than surface above, drying darker than surface, raised and concolorous below, drying paler than surface; interprimary veins almost as distinct as primary lateral veins; minor veins drying visible but not markedly prominulous. INFLORESCENCE solitary; **peduncle** subterete, ca. 17 cm long, ca. 5 mm diam. midway (dry), light green, dark-green-intermittent-lineate, with purplish spots restricted to near the apex, drying blackish; **spathe** ca. 17.5 cm long, externally glossy, dark pink on tube, cream on spathe, short-lineate with scattered purplish spots throughout (lineations whitish except green abaxially), internally glossy whitish to cream and white, punctate with yellow resin canals, drying dark brown to blackish and matte; spathe tube ca. 8 cm long, 2.9 cm de diam.; spathe blade 9.5 cm long, 1.5 cm de diam. when furled.; **spadix** ca. 16.5 cm; staminate portion white, 10–11 cm long, 1.2–1.4 cm diam. midway, sterile portion 2 cm long, 1.4 cm de diam.; pistillate portion pale yellow, ca. 5.5 cm long, 1.5 cm de diam.; **pistils** 4 mm long; ovary prominently beaked at apex, the lower swollen portion 1.5 mm long, the slender beaked portion 2 mm long, the stigma globular 0.5 mm diam.; locules uncertain probably 4–5 per ovary; **ovules** basal 2–3 per locule; 0.6–0.7 mm long; funicle slightly longer than ovary.

*Philodendron longipedunculatum* is a member of *P.* subgenus *Philodendron* sect. *Calostigma*, subsect. *Macrobium*, series *Macrobium* and is known only known from Colombia in the vicinity of Cabo Corrientes, at near sea level, and probably endemic to Chocó. It is rare in the forest and the only collection was near the tip of Cabo Corrientes in an open area, near a creek.

The species is characterized by growing as a low-climbing hemiepiphyte, by its long, terete petioles with a purple ring at

the apex, the relatively long sheath, ovate-cordate, markedly bicolorous blades with pale, heavily branched major veins, and by its long-pedunculate inflorescences with slender beaked ovules, a short, globular style and 2–3 short basal ovules per locule.

***Philodendron roseocataphyllum*** Croat & Mora, **sp. nov.** Type: ECUADOR, Esmeraldas: Cantón San Lorenzo, along rd. between Lita and San Lorenzo, 0.7 km N of Alto Tambo, 0°54'30"N, 78°32'37"W, 800 m, 20 July 2000, *T. Croat, L. Hannon, D. Hannon, & E. Kinsinger 84226* (holotype, MO-5152256; isotypes B, COL, K, QCNE, US). Figures 49–52.

Planta hemiepiphytica; internodia 0.5–3 (–8) cm longa, 1.8–2.6 cm diam.; cataphylla 21–25 cm longa, persistentia semi-intacta; petiolus 50–60 cm longus, 0.7–1.0 cm diam.; lamina ovata, lobulata ad basim, 28–40 × 28–35 cm; nervis primariis later-alibus 5–9 utroque; inflorescentia 1–2 per axila; pedunculus 8–10 cm longus; spatha 16–17 cm longa, extus albus; tubo rubeus intus.

Hemiepiphytic; stems to 65 cm long; 1.8–3.5(5) cm diam., medium green, semiglossy to weakly glossy, soon finely fissured transversely, ultimately dark yellow-brown; **internodes** 0.5–3(8) cm long, slightly longer than broad; **cataphylls** 21–25 cm long, reddish, weakly 2-ribbed when young, unribbed in age, sometimes with conspicuous whitish lineations, persisting intact at upper nodes, turning dark brown, ultimately semi-intact with and underlayment of reddish brown to light brown fibers; **petioles** 50–84 cm long, 0.7–1.0 cm diam. midway, terete to D-shaped with obtuse or flaring margins, with an obtuse medial rib toward the apex, sometimes becoming 3-ribbed at the apex, densely fine, pale striate 5 mm diam at apex, LEAVES medium green, weakly glossy, finely pale green-striate; **blades** ovate to broadly ovate, acuminate at apex, prominently lobed at base, 24–57 × 28–49 cm, broadest at the point of petiole attach-



Figs. 49–52. *Philodenderon roseocataphyllum* Croat & M. Mora. (*M. Mora & Croat* 384). —49 (top L). Habit. —50 (top R). Habit. —51 (bottom L). Petiole bases and inflorescence. —52 (bottom R). Inflorescence at anthesis.

ment or slightly above, subcoriaceous, dark green and matte-subvelvety above, moderately paler and weakly glossy to semiglossy below; anterior lobe 25–43 cm long, convex on margins; posterior lobes 13–18 × 10.5–12.5 cm; sinus spatulate, 10–13 cm deep, posterior rib naked along the sinus 1–2 cm; **midrib** broadly sunken to flat and slightly paler above, convex to narrowly raised or bluntly acute, matte and darker below; **basal veins** 8–9 pairs, the last 5 pairs coalesced 2–2.5 cm; **primary lateral veins** 5–9 pairs, arising at 55–65° angle, weakly or narrowly sunken to prominently sunken above, convex to narrowly raised below; minor veins fine, more or less distinct to moderately obscure. INFLORESCENCES 1–4 per axil; **peduncle** cylindrical, 9–22 cm long, 6 mm diam., white with long white coarse striations at apex; **spathe** 16–20.5 cm long, white, tinged red on tube (at least on the abaxial surface), glossy, minutely pale-speckled to short lineate outside, glossy inside; blade white on both surfaces; spathe tube maroon within, often tinged on lower 2/3 of blade; **spadix** 14 cm long; fertile staminate portion 8.5 cm long, 1 cm diam in the broadest part; sterile staminate portion 2 cm, 1.2 cm diam; pistillate portion 4 cm long, 1 cm diam., pale green. Infructescence with **berries** pale orange, the stigmas red. Common name “rascadera” (Awá).

*Philodendron roseocataphyllum* ranges along the Pacific slope of NW South America from Colombia (Chocó) to Ecuador (Esmeraldas). At Cabo Corrientes it is occasional to common in the forest, usually occurring to 3 m high on trees.

The species is a member of *P.* sect. *Philodendron* and is characterized by its ovate basally lobed, matte-subvelvety blades, by the conspicuously persistent, reddish brown cataphylls which weather to pale fibers and by the slender, narrowly acuminate inflorescences with red tubes and white blades.

Paratypes—COLOMBIA. **Chocó**: Municipio Nuquí: Corregimiento de Arusí: Estación Biológica El Amargal, 5°34'N,

77°30'W, 50 m, July–Sept., 1998, *Mora 63* (COL). ECUADOR. **Carchi**: Río San Juan valley, 4 hour walk below Chical, Ortiz ranch between Peñas Blancas and El Pailón, 1°02'N, 78°15'W, 1,230–1,250 m, 10 June, 1993, *Boyle et al. 2012* (MO), *2013*, *2039*, *3264* (MO). **Esmeraldas**: Cantón San Lorenzo, Reserva Etnica Awá, Parroquia, Alto Tambo, Centro de la Unión, valley of Río Mira, 00°52'N, 78°26'W, 250 m, 22 Mar. 1993, *Aulestia & Aulestia 1342* (MO, QCNE); vic. of Lita, along Ibarra-San Lorenzo RR, 550–650 m, 10 June 1978, *Madison et al. 5137* (K, SEL); N side of Río Mira across from Lita, S side of Río Baboso, 750 m, 11 Aug. 1994, *Boyle & Boyle 3523* (MO); N side of Río Baboso, 0°53'N, 78°27'W, 1 July 1994, *Boyle & Boyle 3264* (MO); 3.7 km W of Río Lita bridge (old rd.), 0°52'51"N, 78°28'30"W, 647 m, 30 June 1998, *Croat et al. 82150* (MO, QCNE); 15.5 km W of Lita, 0°55'N, 78°28'W, 705 m, 22 Feb. 1992, *Croat 72371* (MO, QCNE); 142 km W of Río Lita (old rd.), vic. Alto Tambo, 6.6 km W of Río Chuchubí, 0°52'11"W, 78°27'16"W, 10 July 1998, *Croat et al. 82653* (MO, QCNE); Lita-San Lorenzo Rd., vic. Alto Tambo, 17.1 km W of Río Lita bridge (new rd.), 0°54'06"N, 78°32'27"W, 822 m, *Croat et al. 83183* (MO, QCNE); 17 km W of Río Lita (old rd.), 0°52'11"N, 78°27'06"W, 425 m, 6 July 1998, *Croat et al. 82394* (MO, QCNE); *Croat et al. 82405*; *Croat et al. 82406* (MO, QCNE); 10–20 km NW of Lita, 00°55'N, 78°35'W, 800 m, 12 May 1991, *Gentry et al. 79154* (MO, QCNE); 5 km W of Río Lita, 0°52'07"N, 78°27'43"W, 3 July 1998, *Croat et al. 82282* (MO, QCNE); 13 km W of Río Lita (new rd.), 0°54'06"N, 78°32'27"W, 814 m, 11 Oct 1999, *Croat et al. 83241* (MO, QCNE); 15.8 km W of Río Lita (new), 0°53'54"N, 78°31'57"W, 9 Oct. 1999, *Croat et al. 83159* (MO, QCNE); 18 km W of Río Lita, 6.6 km W of Río Chuchubí, 0°52'11"N, 78°27'16"W, 425 m, *Croat et al. 82635* (MO, QCNE); 19.4 km W of Río Lita, 0°54'N, 78°32'41"W, 829 m, 5 Oct 1999, *Croat et al. 83033* (MO, QCNE); 1.2 km W of El Durango, 21.1 km W of Alto Tambo, 0°52'11"N, 78°27'06"W, 8 July 1998, *Croat et al. 824351* (MO,

QCNE); 9.4 km S of El Durango; 0°55'12"N, 78°32'43"W, 425 m, 8 July 1998; 5.2 km E of Río Tulubí and crossing Río San José, vic. Río San José; 1°04'47"N, 78°38'55"W, 13 Oct. 1999, *Croat et al.* 83291 (MO, QCNE) Lita-San Lorenzo rd., 11.2 km E of Gasolinera San Lorenzo, 1°12'34"N, 78°45'34"W, 135 m, *Croat et al.* 83091 (MO, QCNE); San Lorenzo-Lita, 33.0 km E of Gasolinera San Lorenzo, along Río San José, 1.1 km N of main hwy., 1°04'44"N, 78°38'59"W, 59 m, 12 July 2000, *Croat et al.* 83951 (MO, QCNE); Esmeraldas, 4.3 km E of main San Lorenzo-Lita Hwy, 18 km W of Río Santiago, 1°10'32"N, 78°47'25"W, 44 m, 10 July 2000, *Croat et al.* 83832 (MO, QCNE).

***Rhodospatha monsalvae*** Croat & Bay, **sp. nov.** Type: COLOMBIA. Valle: Bajo Calima Region; along rd. from Buenaventura to Río Calima, near km marker 14, ca. 4 km s. of Río Calima, 3°56'N, 76°59'W, less than 50 m, 21 Mar. 1984, *Croat* 57526 (Holotype, MO-3187779; isotypes, COL, JAUM). Figures 53–56.

Planta hemiepiphytica; internodia brevissima, 3–5 cm diam.; petiolus 22–66 cm longus; lamina oblongo-elliptica, 45–88 cm longa, (11)15–29 cm lata; nervis primariis lateralibus 50–60(83) utroque; pedunculus 26–30 cm longus; spatha albescens, 14–28 cm longa; spadix alba vel cremeus (6) 11–20.5 cm longus, 9–15 mm diam.

Usually an appressed-climbing hemiepiphyte mostly to 2.5 m, rarely terrestrial as an adult; stems usually less than 1 m long; **internodes** short, mostly 3–5 cm diam. on adult plants (much smaller on pre-adult plants; juvenile plants with internodes to about 8 cm long, 4 mm diam.); the epidermis (where visible on the older part of the stem), green to gray turning light brown, deeply and conspicuously longitudinally sulcate and sharply ridged, with transverse fissures; **cataphylls** 16–53 cm long, drying light brown with loose, dark brown margins leaves held more or less erect; **petioles** sheathed to the geniculum, 22–62 cm long, pale green to me-

dium green, minutely pale-speckled, drying usually reddish brown, sometimes yellowish brown, sometimes irregularly and deeply fissured on drying (the surface densely granular with raphid cells on magnification); sheath drying dark brown, usually deciduous or with some pieces adhering along its length; geniculum sharply and broadly V-sulcate 2–4 cm long, sometimes with a weak, spreading wing on the margins; **blades** subcoriaceous, at middle or slightly above the middle, (1.8)2.8–3.8 times longer than wide (averaging more than 3 times longer than wide), 1.1–2.0 times longer than petioles (averaging 1.5 times longer than petiole), obtuse and acuminate to abruptly acuminate at apex, acute to somewhat rounded and somewhat attenuate at base (both apex and base more or less equilateral), semiglossy, slightly to conspicuously bicolorous, dark green above, moderately to much paler beneath, drying usually grayish green above, dark reddish brown below, sometimes dark brown above, yellowish brown below; **midrib** much paler and deeply sunken and marginally discolored in a band 3–5 mm wide along either side of midrib above, prominently raised and thicker than broad below, drying minutely granular on magnification; **primary lateral veins** to 50–60(83) pairs, 5–14 mm apart, mostly less than 10 mm apart, sunken above, raised below, drying somewhat lighter than surface below, arising at an angle of 60–85 degrees and only weakly curved to the margins (sometimes arising at an acute angle or in a narrow curve before spreading to the margin); interprimary veins usually 1 per pair of primary lateral veins, drying inconspicuously darker than or lighter than surface; minor veins mostly 1–2 between each pair of interprimary and primary lateral veins, sparsely granular on magnification; cross-veins oblique, weak to prominulous, more prominent toward the margins, usually branched, sometimes forming reticulate veins; the surface moderately glossy, moderately densely dark granular on magnification. INFLORESCENCE erect; **peduncle** 26–30 cm long, ca. 1 cm diam.; **spathe** greenish white,



Figs. 53–56. *Rhodospatha monsalvae* Croat & Bay. (Croat 72400). —53 (top L). Habit. —54 (top R). Petioles and inflorescence near anthesis. —55 (bottom L). Close-up of inflorescence with spathe fallen. —56 (bottom R). Infructescence in early fruit.

somewhat yellower toward the margins, white inside, 14–28 cm long, to 4.7 cm diam. (unfurled), to 8 cm wide when flattened, long, oblong-elliptic and narrowly long-acuminate before opening; **spadix** white to cream, yellow or yellowish tan, pale orange to pale purple-violet or reddish, becoming green post-anthesis (6) 11–20.5 cm long, 9–15 mm diam., stipitate to 1–3 cm, moderately tapered to a bluntly acute at apex, becoming pale green post-anthesis; **pistils** mostly irregularly and smoothly to acutely 6-sided, frequently rhombic, sometimes appearing almost rounded, 1.4–1.8 mm diam., sometimes broader than long, the margins straight to convex or weakly sigmoid; style drying brownish and truncate at apex; sides of the pistils brown, sparsely warty; stigmas raised, drying black and shiny, oblong to oblong-elliptic to elliptic, 0.6–1.4 mm long, 0.2–0.5 mm wide, depressed medially, becoming somewhat rounded in fruit and often funnellform; anthers 0.6–0.8 mm long, 0.5 mm wide; sterile flowers only a few at the base of spadix (but at least one post-anthesis inflorescence with up to 3 cm of the spadix eaten away). INFRUCTESCENCE to 23 cm long, 2 cm diam.; seeds reniform to rounded and flattened, 1–1.1 mm long, 0.8–1 mm diam., tan.

*Rhodospatha monsalvae* ranges from Panama to Ecuador from sea level to 1,800 m where it is restricted to the Pacific slope in *Tropical wet forest* (bmh-T), *Tropical rain forest* transition to *Premontane* (T-rf/P).

The species is characterized by its light brown, conspicuously fissured stems, petioles sheathed to the geniculum, usually drying reddish brown with the sheath usually deciduous with dark brown persistent fragments, a sharply sulcate geniculum and blades which are more or less equilateral and decurrent at the base, drying usually grayish above, reddish brown below with conspicuous, mostly oblique, cross veins that are frequently branched and with a lower surface that is minutely dark-granular on magnification.

*Rhodospatha monsalvae* may be confused with *R. wendlandii* Schott, but dif-

fers from that species in having blades which dry more reddish brown and with conspicuous cross-veins.

Paratypes—COLOMBIA. **Antióquia:** San Luis: Quebrada La Cristalina, 6°N, 074.45°W, 770–570 m, 24 Sep. 1987, *Ramirez & Cardenas 1619* (HUA, JAUM, MO); 600–770 m, 6°N, 74.45°W, *Ramirez & Cardenas 1296* (JAUM); 6°N, 074.45°W, 550–770 m, *Ramirez & Cardenas 1076* (JAUM); Carretera Río Claro: 650 m, 19 Mar. 1982, *Jorge Brand s.n.* (JAUM, Q); **Chocó:** along rd. between Quibdo and Las Animas, ca. 1 km N of Las Animas; 5°14'N, 76°40'W, 100 m, 15 Apr. 1983, *Croat 55956* (CHOCO, JAUM, MO); along rd. between Quibdo and Lloro ca. 5 km E of turnoff along Quibdo-Las Animas rd. ca. 1 km S of ferry over Río Atrato; 5°29'N, 76°35'W, 150 m, 16 Apr. 1983, *Croat 56006* (COL, JAUM, MO); along rd. between Quibdó and Medellín, 25 mi east of Quibdó, 200 m, 18 Dec. 1980, *Croat 52295* (MO); Pueblo Rico-Istmina, along rd. between Pueblo Rico (Risaralda) and Istmina (Chocó), along Quebrada Antón, 15 km W of Santa Cecilia, 6 km W of Chocó-Risaralda border, ca. 20 km E of Playa del Oro; along steep trail up hogback ridge beginning at west end of bridge., 5°20'30"N, 76°13'45"W, 240–350 m, 23 Feb. 1990, *Croat 70942* (MO); along rd. between Quibdo and Istmina at km 4, 6°28'N, 076°36'W, 100 m, 18 Dec. 1980, *Croat & Cogollo 52242* (COL, JAUM, MO); 100 m, *Croat & Cogollo 52243* (COL, JAUM, MO); Nuquí, Corregimiento de Arusí, Estación Biológica EL AMARGAL, 5°34'N, 077°31'W, Jan. 1999–Apr. 1999, *Jorge Jácome 371* (COL, MO); Corregimiento Arusí; vic. of Arusí, Estación Biológica El Amargal, 5°34'14"N, 77°30'10"W, 30 m, 17 June 2000, *Croat & M. Mora 83647* (= *Mora 269*) (COL, MO); Corregimiento Arusí, Estación Biológica El Amargal; along trail to Arusí, 5°34'15"N, 77°30'00"W, 20–50 m, 19 June 2000, *Croat & M. Mora 83671* (= *Mora 289*) (COL, MO); San Jose del Palmar Cerro del Torrá, *Ramos et al. 1202* (MO); **Narino:** Pasto-Tumaco Rd.-Río Nambí, departing main

rd. at Escuela Mixta El Mirador, 7 km W of Altaquer, 1°18'N, 78°04'W, 1,100 m, 26 Feb. 1992, *Croat 72400* (MO); along rd. between Altaquer and Tumaco, between Altaquer and Junín, 7 km W of Altaquer, Río Nambi, 1°18'N, 78°04'W, 1,100 m, 21 Mar. 1990, *Croat 71675* (MO); **Valle del Cauca**: along rd. around the edge of Lago Calima (situated along Hwy between Buga and Loboquerero on rd. to Buenaventura) on steep forested rocky slopes N of lake, 3°54'N, 76°33'W, 1,430 m, 13 May 1983, *Croat 56743* (COL, JAUM, MO); Along rd. from Buena ventura to Bajo Calima, ca. 4 km from Río Calima, near km 14 marker (14 km from Cali-Buenaventura Hwy); 3°56'N, 76°59'W, 50 m, 21 Mar 1984, *Croat 57526* (COL, JAUM, MO); Bajo Calima, within Lumber Concession of Cartón de Colombia, between Buenaventura & Río Calima, vic. of Camp Portado Pulpapel, 11 km N of main Calí-Buenaventura Hwy, 3°56'30"N, 77°01'00"W, 50 m, 4 July 1986, *Croat 62775* (MO); along old gravel rd. between Cali and Buenaventura, near village of Sabaletas, 100 m, 28 Aug. 1976, *Croat 38566* (MO); along rd. from Buenaventura to Río Calima, 3°56'N, 77°01'W, 160 m, 4 Feb. 1990, *Croat 70150* (COL, MO, NY); along rd. between Buenaventura and Málaga, km 51.7 from main Cali-Buenaventura Hwy, 4°03'N, 77°5'W, 16 July 1993, *Croat & Bay 75783A* (MO); Bajo Calima; within forestry concession of Bajo Calima, between Buenaventura & Río Calima, behind headquarters of Camp Portada Pulpapel, 11 km N of main Calí-Buenaventura Hwy, 3°56'30"N, 77°01'00"W, 50 m, 9 July 1986, *Croat & Monsalve 61398* (COL, MO); along rd. between Buenaventura and Málaga, 51.7 km from main Cali-Buenaventura Hwy, 4°03'N, 77°5'W, 16 July 1993, *Croat & Bay 75783* (MO); between Buenaventura and Río Calima, Cartón de Colombia Forest Concession Area, 11 km NW of Cali-Buenaventura Hwy be-

hind Pulpapel headquarters, 3°56'30"N, 77°01'00"W, 50–80 m, 16 July 1988, *Croat 69299* (MO); Buenaventura-Malaga, vicinity of Bajo Calima, along rd. past Pulpapel headquarters (at km 17) to Bahía de Málaga; at km 44 from the main Cali-Buenaventura Hwy, 4°03'N, 077°08'W, < 100 m, 5 Feb. 1990, *Croat & Watt 70195* (MO, JUAM, VEN); Bajo Calima Region, Municipio Buenaventura along rd. between Buenaventura and Málaga, at km 40, 4°4'N, 77°9'W, 100 m, 5 Feb. 1990, *Croat 70179* (G, GH, MO, US, USM). ECUADOR. **Carchi**: Chical, 1,200–1,250 m, *Thompson et al. 1064* (CM, MO); San Marcos de los Coaquiéres-Gualpi Bajo, 1°06'N, 078°17'W, 1,000 m, *Ollgaard 57469* (AAU, MO); Tulcán, Reserva Etnica Awá, Comunidad San Marcos, 25 km al NW de El Chical, parroquia Maldonado, 1°06'N, 78°14'W, 1,500 m, 16–30 Nov. 1990, *Rubio et al. 1093* (MO, QCNE); Parroquia El Chical. Centro Gualpí Medio. Río Canumbí, 1°02'N, 78°15'W, 1,150 m, 19–28 Feb. 1993, *A. Grijalva et al. 587* (MO, QCNE); Sendero a San Marcos al norte de la casa comunal, 1°02'N, 78°16'W, 1,000 m, 23 May 1992–27, *G. Tipaz et al. 1132* (MO, QCNE); **Esmeraldas**: San Lorenzo, Lita-San Lorenzo, 15.5 km W of Lita, 0°55'N, 78°28'W, 705 m, 22 Feb. 1992, *Croat 72367* (MO); Parroquia Mataje, Reserva Etnica Awá, 1°08'N, 78°33'W, 200 m, 21 Sep. 1992, *Aulestia et al. 540* (MO, QCNE); 250 m, *Aulestia et al. 1379* (MO, QCNE); Parroquia Alto Tambo, Centro de la Unión, Cañón del Río Mira, 0°52'N, 78°26'W, 250 m, 22 Mar. 1993, *Aulestia et al 1238* (MO, QCNE); **Pichincha**: Reserva Endesa, about 8 km N of km 113 on Quito-Pto. Quito Hwy, vic. of Río Cabayales, 0°05'N, 79°02'W, 700 m, 16 July 1986, *Croat et al. 61526* (MO). PANAMA. **Veraguas**: Vic. of Santa Fe, along dirt rd. between Santa Fe and Río San Luis, past Escuela Circolo Alto de Piedra, ca. 5 mi N of school, 8°33'N,

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Figs. 57–60. —57, —58, —59 (top L, top R, bottom L). *Xanthosoma daguense* var. *amar-galense* Croat & M. Mora. —57 (top L). Habit showing adaxial leaf surfaces. —58 (top



R). Inflorescence at anthesis. —59 (bottom L). Petiole bases with inflorescence and in-fructescence. —60 (bottom R). *Xanthosoma daguense* Engl. var. *daguense*. Leaf blade adaxial surface.

81°08'W, 670 m, 28 June 1987, *Croat* 66971 (MO).

*Xanthosoma daguense* Engl. var. **amargalense** Croat & M. Mora. **var. nov.** Type: COLOMBIA. Choco: Municipio Nuquí: Corregimiento Arusí, Estación Biológica El Amargal, along trail to Arusí, 5°34'15"N, 77°30'00"W, 20–50 m, 19 June 2000, *M. Mora* 300 [*Croat & M. Mora* 83682] (holotype: COL, isotype: MO). Figures 57–59.

Planta terrestris, ad 1 m; internodia 2.5–3 cm longa, 1.5–4 cm diam.; petiolus 36–44 cm longus, 0.8–1 cm diam.; lamina late ovata, 36–47 × 22–27 cm, margin crispatus; nervis primariis lateralibus 3–45 utroque; inflorescentia 1–3 per axilum; pedunculus 6–13.5 cm longus; spatha 11–15 cm longa; tubo 4–5 cm longo, 2.6–3 cm diam., extus et intus viridus; lamina 7–10 cm longa.

Terrestrial in forest, to 75 cm tall; látex abundant, white; stems erect, reclining at base, to 1 m long; **internodes** 2.5–3 cm long, 1.5–4 cm diam., light brown, with epidermis weakly shiny and prominently transversely fissured throughout most of its length, with petiole scars and a few remaining **cataphyll** fibers persisting; LEAVES erect-spreading; **petioles** 36–44 cm long, 0.8–1 cm diam. toward the apex, weakly spongy, green, semiglossy, obtusely angular toward the apex, more nearly cylindrical toward the base, sheathed  $\frac{3}{5}$ – $\frac{1}{2}$  of its length, transversely marked with dark green irregular lines, sometimes with tinges of purple, semiglossy; **blades** ovate-sagittate, 36–47 × 22–27 cm, thin, acuminate at apex, with margins crispate almost throughout except along the upper  $\frac{1}{2}$  of the sinus, dark green and semiglossy above, much paler below; anterior lobe 23–30 cm long, broadly convex along margins; posterior lobes more or less triangular, obtuse at apex, weakly directed outward, 15–20 cm × 8–12 cm; **midrib** deep-

ly sunken, concave and weakly bicolorous above, prominently round-raised and weakly paler below; **primary lateral veins** 3–5 pairs, departing from midrib at 40–60° angle, curving upward and joining the internal collective veins, narrowly sunken and concolorous above, prominently round-raised, weakly paler than surface below with a medial rib and 2 smaller lateral ribs on each side; collective veins 2–4 pair (2 prominulous, 2 weakly visible) **basal veins** with 4–6 acroscopic pairs and 4 basioscopic pairs per side; tertiary veins moderately conspicuous, darker than the surface, the majority flat, not raised. INFLORESCENCES 1–3 per axil; **peduncle** 6–13.5 cm long, 5–8 mm diam., flattened above, light green, semiglossy; **spathe** 11–15 cm long; spathe tube 4–5 cm long, 2.6–3 cm diam., outside green on both surfaces; spathe blade 7–10 cm long, acuminate at apex, creamy white; **spadix** 7.5–14 cm long; pistillate portion ellipsoid, 8–22 mm long, ca. 7–8 mm diam. at base and at apex, to 1 cm diam. midway, dark yellow; staminate portion clavate, 4–6.5 cm long, 9 mm diam. at the broadest point, cream-colored; sterile staminate cylindrical, 1.5–2.5 cm long, 5–7 mm diam., creamy white.

*Xanthosoma daguense* var. *amargalense* is known only from the type locality in the Cabo Corrientes where it is infrequent in the forest near the biological station.

The taxon differs from *Xanthosoma daguense* var. *daguense* (Fig. 60) in having somewhat paler semiglossy blades with the margins minutely undulate and the spathe tube which is green on both inner and outer surfaces. In contrast, var. *daguense* has blades darker and somewhat velvety above with the margins smooth and, in addition, has spathe tubes which are solid dark violet-purple inside and sometimes outside as well (see key below).

**KEY TO VARIETIES OF *XANTHOSOMA DAGUENSE***

Blades velvety above with the margin entire; inflorescences with the tube of the spathe green outside and purple inside . . . . . *X. daguense* Engl.  
 Blades semiglossy above with the margin crisped; inflorescences with the tube of the spathe green outside and inside . . . . *X. daguense* var. *amargalense* Croat & M. Mora

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