

m, 22°53'S, 43°07'W, *Croat 53757* (CM, K, MO, NY, RSA), 53781 (MO); Itaipu, Morro das Andorinhas, *Araujo & Vilaca 3847* (GUA); Represa do Camorim, *Araujo 3751* (GUA); road to Represa do Camorim, Estrada da Boca do Mato, Vergem Grande, *Rocha 151* (GUA); Cabo Frio, Arraial do Cabo, Pontal beach, *Segadas-Viana et al. 665* (NY). SÃO PAULO: cultivated at Floricultura Campina Hda., *Hutchison 8850* (MO).

Anthurium cotobrusii Croat & R. A. Baker, *Brenesia* 16(Suppl. 1): 43. 1979. TYPE: Panama. Chiriquí: above San Félix, along mining road, 18–27 mi. off Pan-Am Hwy., 1,200–1,500 m, *Croat 33058* (holotype, MO 2381190-91; isotypes, AAU, B, CAS, CM, COL, CR, DUKE, F, GH, K, L, M, MBM, MEXU, NY, P, PMA, RSA, SEL, US, W). Figures 107, 108.

Terrestrial or often epilithic; stem usually less than 15 cm long, 1–3 cm diam.; roots descending, greenish or grayish brown, smooth to weakly pubescent, moderately thick and elongate, to 6 mm diam.; cataphylls subcoriaceous, lanceolate, 4.5–11 cm long, acute at apex, green, sometimes tinged with purplish, drying light brown, persisting semi-intact, eventually as fine linear fibers. *Leaves* erect to spreading; petioles 15–65 cm long, 4–7 mm diam., ± terete, weakly sulcate to flattened adaxially, rounded abaxially; geniculum thicker than petiole, (1)3–5 cm long; blades subcoriaceous, narrowly ovate to triangular, long-acuminate at apex (the acumen downturned, weakly apiculate), shallowly and broadly cordate at base, 16–65 cm long, 9.5–33 cm wide, broadest at base, the margins weakly undulate; anterior lobe (13)18–30(37) cm long, the posterior lobes (5)7–13(15) cm long, directed upward and slightly inward, narrowly rounded at apex; sinus arcuate to broadly parabolic when flattened, hippocrepiform when not, (4)7–9 cm deep; upper surface semiglossy, dark to medium green, lower surface glossy to semiglossy, conspicuously paler, both drying matte to weakly glossy, yellowish green; midrib obtusely raised at base, becoming more sharply raised and then sunken at apex above, obtusely to convexly raised and more prominent below; basal veins 3–5 pairs, all free to base or 3rd–4th coalesced 4–6 cm, weakly raised to flat above, weakly raised and darker than surface below; posterior rib naked, gradually curved to almost straight, turned up on outer margin; primary lateral veins 4–8 per side, departing midrib at 50–60° angle, broadly arcuate, sharply to weakly raised or weakly sunken above, weakly raised to flat and darker than surface below; interprimary veins obscure above, flat and darker than surface

below; tertiary veins obscure above, weakly visible below; reticulate veins obscure above and below; collective vein arising from one of the uppermost basal veins or one of the lowermost primary lateral veins, sunken above, slightly raised and darker than surface below, almost as prominent as primary lateral veins, 3–8 mm from margin. *Inflorescences* erect-spreading; peduncle (4)20–60 cm long, 4–10 mm diam., (0.7)1–1.7× as long as petiole, terete; spathe reflexed, subcoriaceous, green to pale green or green with purplish veins or heavily suffused with purple on inner surface, sometimes tinged with purple only at base, ovate to narrowly ovate, weakly boat-shaped to flat, (2.5)5–15 cm long, (1.7)2.7–4.5 cm wide, inserted at 60–90° angle on peduncle, acuminate at apex (the acumen inrolled), acute to rounded or shallowly cordate at base; stipe 1–2 cm long in front, 2–6 mm long in back; spadix green to brownish green to dark purple-violet, cylindroid to weakly tapered, erect to curved, (2.5)5–25 cm long, 7–15 mm diam. near base, 3–7 mm diam. near apex; flowers ± 4-lobed, 3.5–5 mm long, 3.5–4 mm wide; 3–6 flowers visible in principal spiral, 7–10 in alternate spiral; tepals sparsely punctate, more densely so near the margins, semiglossy to matte, the inner margins broadly convex; pistils emergent, matte, green; stigma linear, purple-violet or green, ca. 0.6 mm long, with brushlike papillae; droplets appearing 1–3 weeks before stamens emerge, sometimes persisting when 1st and 2nd stamens are opening; stamens weakly exerted, in a tight cluster above pistil; filaments whitish, soon retracting, 0.4 mm long, 1 mm wide; anthers orange to yellowish, 0.6–0.9 mm long, 1 mm wide; pollen pale orange fading to white, yeasty-scented. *Inflorescence* erect spreading; spathe persisting; spadix 12–18 cm long, 1.5–2 cm diam.; berries pale orange (B & K yellow-red 8/7.5), obovoid, darker and rounded at apex with radial ridges, 12–15 mm long, 8–11 mm diam.; mesocarp juicy, orange; seeds usually 2 per berry, oblong-ellipsoid, 6.5–7.5 mm long, 2.5–4 mm diam., encased in flattened, translucent envelope that projects up to 3 mm beyond the apex of the seed and up to 1 mm beyond the lateral margins.

Anthurium cotobrusii is found in Costa Rica and Panama, in premontane wet forest at elevations of 600 to 1,850 m.

This species is most easily distinguished by its subcoriaceous leaves which have more or less obscure reticulate veins when dried, and by its prominently tapered, violet-purple spadix with stamens in tight clusters. In the dried state the flowers have

their tepals turned somewhat upwards, which, in conjunction with the clustered stamens, gives the spadix a rough appearance. Other diagnostic features are the primary lateral veins often free to the margin in the basal half of the blade, the thick, grayish roots that are densely long-pubescent on drying and the early emergent berries that are quadrangular with prominent ridges radiating from the center to the corners.

Anthurium cotobrusii is an atypical member of sect. *Pachyneurium*, probably related to other cordate and subcordate, orange-fruited species such as *A. colonicum*, *A. nervalum*, *A. ranchoanum*, and *A. watermaliense*.

Specimens of *A. cotobrusii* with longer posterior lobes can be confused with *A. watermaliense*, but that species is distinguished by its early emergent pistils held above the tepals before anthesis, and by its often persistently long-exserted stamens.

The species was placed in sect. *Cardiolonchium* by Croat & Baker (1979) and later in sect. *Belolonchium* (Croat, 1983), but was confirmed as a member of sect. *Pachyneurium* by its involute veneration.

COSTA RICA. PUNTARENAS: Las Cruces-Neily, Fila de Cal, Gómez 19649 (CR, MO); Río Coto Brus, 23 km N of La Unión, Panama border, Croat 26674 (MO); San Vito de Coto Brus-Villa Neily, Fila de Cal, Cuesta Fila de Cal, 300-600 m, 8°41'N, 82°56.5'W, Hammel 14160 (MO); Cordillera de Talamanca, Tres Colinas, 1,800-1,850 m, 9°7'N, 83°4'W, Davidse et al. 25652 (MO); Cerro Frantizius-Cerro Pittier, Río Canasta, 9.5 air km NW of Agua Caliente, 1,500-1,600 m, 9°2'N, 82°59'W, Davidse et al. 28366 (MO); Cerro Pando, 1,000-1,800 m, 8°55'N, 82°45'W, Barringer & Gómez 1617 (F); Refugio de Fauna Silvestre, Peñas Blancas de Esparza, 1,000-1,400 m, 10°7'50"N, 84°40'25"W, Herrera et al. 295 (DUKE, F, MO, TEX, US); cultivated at Las Cruces Botanical Garden, 1,300 m, Croat 44452 (MO); originally from Las Alturas, Croat 44387 (MO). PANAMA. CHIRIQUÍ: above San Félix along mining road 18-27 mi. off Pan-Am Hwy., above Chamí or turnout to Escopeta, 1,200-1,500 m, Croat 33058 (AAU, B, CAS, C, M, COL, CR, DUKE, F, GH, K, L, M, MBM, MEXU, MO, NY, P, PMA, RSA, SEL, US, W), 33147A, 33152 (MO); Cerro Colorado, 7.6 km from main road, 1,450-1,750 m, Folsom et al. 4840 (MO); 17 km NE of San Félix, 13-14 km by road NE of bridge over Río San Félix, 1,000 m, Nee 10699 (MO); Cerro Hornito, beyond Gualaca, 2-3 km E of Finca Linares, vic. Planes de Hornito, 1,400-1,900 m, Croat 48850

(CM, COL, CR, ENCB, LE, M, MO, U); 1,750-1,900 m, 8°41'N, 82°10'W, Croat 67983 (MO).

Anthurium cowanii Croat, sp. nov. TYPE: British Guiana. Kaieteur Plateau, forest along Potaro River, ca. 1 mi. above Kaieteur Falls, 470 m, Cowan & Soderstrom 2230 (holotype, BH; isotypes, K, NY, US). Figure 103.

Planta epiphytica; internodiis brevibus, caule 1-1.5 cm diam.; cataphyllum persistens semi-intactum; petiolus 8.5-13 cm longus, 7-10 mm diam., D-formatus; lamina oblanceolata, 50-90 cm longa, 13.5-30 cm lata; pedunculus 49-63.5 cm longus, 3-7 mm diam.; spatha 9-16 cm longa, 1.5-2.5 cm lata; spadix stipitatis, (9)15-18(21) cm longis, 6-7(10) mm diam., atropurpureus-rubescens ad brunneo-rubescens. Baccae ignotae.

Description based on dried material only. Epiphytic; stem ca. 1-1.5 cm diam.; roots dense, numerous, grayish brown, somewhat pubescent, ca. 2-3 mm diam.; cataphylls apparently subcoriaceous, at least 8 cm long, acute at apex, brown (B & K yellow 4/2.5), persisting semi-intact, eventually as fine linear fibers; petioles 8.5-13 cm long, 7-10 mm diam., D-shaped, apparently sulcate adaxially, with the margins prominently raised, probably rounded abaxially; geniculum slightly thicker than petiole, 0.8-1.7 cm long; sheath (2.5)5.7-6.5 cm long; blades coriaceous, oblanceolate, acute to shortly acuminate at apex, narrowly rounded to obtuse at base, 50-90 cm long, 13.5-30 cm wide, broadest above the middle, the margins apparently undulate; both surfaces semi-glossy to weakly glossy, grayish green to brownish green; midrib convexly raised above, slightly paler than surface, prominently convex to higher than broad below, somewhat darker than surface; primary lateral veins 9-16 per side, departing midrib at 25-50° angle, straight, becoming somewhat arcuate toward the apex, prominently convex above and below, more so below; interprimary veins not present; tertiary veins prominulous, raised above and below; reticulate veins weakly raised; collective vein arising from near the apex, raised above and below, 3-11 mm from margin. Inflorescences with peduncle 49-63.5 cm long, 3-7 mm diam., 6.1-7.5× as long as petiole, probably terete; spathe apparently erect to spreading, coriaceous, green, oblong-lanceolate, 9-16 cm long, 1.5-2.5 cm wide, broadest near the base, shortly acuminate at apex (the acumen inrolled, 7-15 mm long), acute at base; stipe 1.5-4(7) cm long in front, 0.5-1.5(2.5) cm long in back; spadix dark purple-red to brown-red, long-tapered, somewhat curved, held at 150-165° angle from peduncle, (9)15-18(21) cm long,