

13475 (NY); 1,100–1,200 m, *Bunting & Stoddart* 9753 (NY). MÉRIDA: Mérida–La Azulita, La Chorrera (waterfalls N of hwy.), between Las Cruces and La Calera, 8°35'N, 71°16'W, *Croat* 54794 (MO); 28 km W of Mérida–El Vigía intersection, 1,120 m, *Bunting* 2602, 2602J (MY, NY); 9 km above Plaza Bolívar in La Azulita, SE of La Azulita, 1,590 m, 8°44'N, 71°26'W, *Croat* 54856 (MO); Mérida–Lagunilla, ca. 2 km S of Mérida, near intersection with road to La Azulita, *Bunting* 2740 (MY, NY); Mérida–El Vigía, 26 km above El Vigía, 850 m, *Bunting* 2309B (MY, NY); Caño Zancudo–La Azulita, border of Caño Blanco (Puente Hierro), *Bunting* 4382 (MY); 6 km above Caño Zancudo, near bridge across Caño Ron (second bridge), *Bunting* 2798 (MY); El Vigía–Tovar, Km 5, 3 km S of junction to Mesa Bolívar, 5 km N of Santa Cruz de Mora, 450 m, 8°26'N, 71°44'W, *Croat* 54877 (B, MO); 5 km N of El Morro, 1,800 m, 8°25'N, 71°10'W, *Hahn & Grijo* 3320 (MO); Montaña Salinas, Mesa Bolívar, 1,300–1,400 m, *Bernardi* 633 (NY); Tovar de Mérida–Panamerican Hwy., 2 km above Zea, 975 m, *Bunting* 2574 (NY). MIRANDA: Los Caracas–Higuero, 1 km E of Osma, *Bunting* 3298 (CM, MO, NY); Morros de la Guairita, 880–1,000 m, *Berry* 1829, 1897 (VEN); Quebrada Garita headwaters, N of Mérida, Vista Linda, 1,000 m, 10°26'N, 66°49'W, *Steyermark & Berry* 111961 (VEN). PORTUGUESA: 15 km E of Chabasquen, 67 km NNW of Guanare, 1,450–1,520 m, 9°26'N, 69°54'W, *Steyermark et al.* 126795 (MO). TÁCHIRA: Lobatera–Urena, 13 km NE of Lobatera, near La Victoria, 3,650–3,750 ft., *Bunting* 2352 (MY, NY); 1,216–1,250 m, *Bunting* 2351, 2351 J (MY, NY); Rubio–San Antonio, 11 km W of Rubio, *Bunting* 11665 (NY); Rubio–Las Delicias, 2 km above Matamulas, 14 km N of Las Delicias, *Bunting* 4397 (MY); 6 km above Las Delicias, 5,500 m, *Bunting* 2313B (MY), *Bunting* 2313A (NY); San Cristóbal–Santo Domingo del Táchira, Agua Dulce, *Bunting* 2372 (MY); 10 km E of La Fundación, Represa Dorada, 600–1,000 m, *Liesner & González* 10189, 10329 (VEN); 35 km SSE of San Cristóbal, La Buena, 6–12 km W of Quebrada Colorado, 600–1,200 m, 7°28'N, 72°09'W, *Liesner & González* 10865 (VEN); Pregonero–La Fundación, 19 km S of Pregonero, 1,200 m, 7°57'N, 71°45'W, *Croat* 54948 (MO); San Cristóbal–Delicias, 45 km SW of San Cristóbal, 19 km N of Delicias, 1,300 m, 9°42'N, 72°25'W, *Croat* 55031 (MO); San Cristóbal–Chorro del Indio–Caño Seco–La Florida, 1,100–1,200 m, *Bunting* 11645 (NY); 1,100 m, *Bunting* 13403 (NY); San Cristóbal–Cordero, San Rafael–Cordero, 900–1,000 m, *Bunting* 4814 (NY); Maracay–Choroní, 19 km from Maracay, along S slope of northern cordillera, 1,280–1,300 m, 10°18'N, 67°24'W, *Croat* 54499 (CAS, F, MO); La Fria, at Las Pavas, along Caño Aguas Calientes, 125–200 m, *Bunting* 13390 (NY); La Grita–Pueblo Hondo, ca. 7–8 km N of La Grita, 1,600–1,700 m, *Bunting* 11668 (NY); Dtto. Ayacucho, *Bunting & Chacón* 4983 (MO, NY); Dtto. Junín, Villa Paez–Betania, 2,050–2,350 m, *Bunting* 4958 (NY); Dtto. Cárdenas, above Palmira, 1,800 m, *Bunting* 4847 (MO); Dtto. Cárdenas, on the outskirts of Cordero, 1,140 m, *Bunting* 4864 (NY); above Palmira on the outskirts of San Cristóbal, 1,800 m, *Bunting* 13451, 13452 (NY); Dtto. Lobatera, La Cazadora, 1,600 m, 7°55'N, 72°18'W, *van der Werff & Ortiz* 5614 (MO); 2,000 m, *van der Werff & Ortiz* 5450 (MO). TRUJILLO: Agua Viva–Carora, 20 km NE of Agua Viva, E of Valerita, 150 m, *Bunting* 2822 (MY). YARACUY: on road to Candelaria, 7.5–8 km N of Salom, NE of Nirgua, W of Valencia, 1,200 m,

10°11'N, 68°30'W, *Croat* 54652 (MO, RSA); Cerro La Chapa, N of Nirgua, 1,200–1,360 m, *Steyermark & Bunting* 97722 (VEN); on the outskirts of Aracal, ca. 7 km NW of San Felipe, 600–800 m, *Bunting* 2003 S (NY). ZULIA: Perijá, 1,175 m, *Gines* 1926 (US); Serranía de Perijá, Río Omira–kuna (Tumuriara), near Colombian border, SE of Pishikakao and Iria, 1,470–1,560 m, *Steyermark et al.* 91156 (MO, VEN); Hacienda Los Chorros, 600 m, *Ferrari & Trujillo* 1535 (MY); Dtto. Mara, Puesto “El Bosque” de la Guardia Nacional, 1,450–1,600 m, 10°47'N, 72°40'W, *Bunting et al.* 12068 (MO), 12227 (MO, NY); Dtto. Mara, river basin of Río Guasare, outskirts of Destacamento Guasare, 600–700 m, *Bunting et al.* 12810 (NY); Cumbre de Rancho Grande trail, 1,200–1,300 m, 10°21'N, 67°39'W, *Bunting* 3266 (MY).

***Anthurium crenatum* (L.) Kunth, Enum. Pl. 3: 75. 1841. *Pothos crenata* L., Sp. Pl. ed. 2: 1373. 1763. TYPE: Virgin Islands: St. Thomas, C. Plumier illustration published by J. Burman, Plant. Amer. Fasc. t. 39. 1756 serves as the type. Figures 106, 111, 115.**

*Anthurium acaule* var. *portoricensis* Kuntze, O. Ktze. Rev. Gen. 2: 738. 1891. TYPE: Puerto Rico, *Kuntze* s.n. (holotype, MO; isotype, K).

*Anthurium acaule* var. *brevipens* Engl., Bot. Jahrb. Syst. 25: 362. 1898. TYPE: Puerto Rico, *Sintenis* 1582 (holotype, B; isotype, K).

Epiphytic or epilithic, sometimes forming dense clumps; stem to 9 cm long; roots moderately dense, spreading to descending, pale green pubescent, elongate, blunt, 3–4 mm diam.; cataphylls subcoriaceous, narrowly lanceolate, weakly 1-ribbed near apex, 9.5–13 cm long, narrowly acute at apex with a subapical apiculum, light green, drying reddish brown (B & K yellow 5/2.5), persisting semi-intact, eventually deciduous. *Leaves* erect to spreading; petioles 2.5–29.5 cm long, 4–17 mm diam., sharply to bluntly D-shaped, shallowly and broadly sulcate adaxially, the margins sharp but not raised, rounded to 3-ribbed abaxially, the surface weakly pale-speckled; geniculum slightly thicker and paler than petiole, 0.6–1.3 cm long; blades moderately coriaceous, broadly to narrowly oblanceolate or elliptic, sometimes ± oblong, acute to acuminate at apex (the acumen apiculate), acute (rarely weakly subcordate) at base, (18)23–100 cm long, 4–28 cm wide broadest near or above the middle, the margins sinuate to undulate; upper surface semiglossy, medium to dark green, lower surface weakly glossy to semiglossy, paler; midrib acutely angled at base, gradually becoming weakly sunken near the apex above, prominently higher than broad at base, becoming prominently convex toward the apex below, paler than surface; primary lateral veins 8–18 per side, departing midrib at

(30)40–75° angle,  $\pm$  straight to arcuate-ascending to the margin, raised above, convexly raised below; tertiary veins weakly raised above and below, darker than surface, drying prominently raised; reticulate veins weakly visible above, prominulous and slightly darker than surface below, conspicuously raised when dried; collective vein arising in the upper  $\frac{1}{3}$  of the blade or absent, 5–12 mm from margin. *Inflorescences* erect to spreading or pendent; peduncle 19–72 cm long, 3–7 mm diam., 1.6–14.4 $\times$  as long as petiole, green, terete to ellipsoid in cross section; spathe erect to spreading, subcoriaceous, sometimes flushed pink or maroon, usually light green (B & K yellow-green 7/10), linear-oblong, with the margins curled under, 4–14.5 cm long, 0.4–1.5 cm wide, acuminate at apex, obtuse to rounded at base; spadix reddish or purplish violet to maroon (dull, dark bluish purple fide S. Mayo, 1982), long-tapered, somewhat curved, 6.5–25 cm long, 3–8 mm diam. near base, 2.5–4 mm diam. near apex, broadest at the base; flowers scented like rotting fruit prior to anthesis, rhombic to square, 1.5–3 mm long, 1.6–2.2 mm wide, the sides prominently and smoothly sigmoid; 5–8 flowers visible in principal spiral, 8–12 in alternate spiral; tepals matte to weakly glossy, densely, minutely papillate; lateral tepals 0.6–1.4 mm wide, the inner margins straight to rounded, the outer margins 2-sided; pistils emergent 2–3.5 mm, glossy, green; stigma linear, 0.2–0.4 mm long, brushlike; stamens emerging in a slow, regular sequence from the base, the laterals preceding the alternates by 10 spirals; filaments translucent, broader than anthers, ca. 0.5 mm long; anthers 0.3–0.6 mm long, 0.5–0.8 mm wide; thecae oblong-ellipsoid to oblong-ovoid, weakly divaricate; pollen yellow-orange, fading to white (B & K yellow 8/5). *Infructescence* spreading-pendent; spathe withered, usually deciduous; spadix to 2.5 cm diam.; berries bright red (B & K red 4/5), obovoid, glossy, 8–10 mm long, 5–6 mm diam.; mesocarp mealy, white, sweet, becoming acrid; seeds tan to pale yellow, oblong-elliptic, 3.8–6 mm long, 2–2.8 mm wide, 1.5–1.8 mm thick, with a short gelatinous appendage at apex.

*Anthurium crenatum* is endemic to the northwestern part of the West Indies, where it is known from the Dominican Republic, Puerto Rico, and the small islands to the east of Puerto Rico, namely Vieques, Culebra, St. Thomas, St. John, Tortola, and St. Croix (all but Vieques are part of the U.S. Virgin Islands). It occurs principally in humid forests from near sea level to 900 m. "Dry evergreen woodland" is noted for *Mori & Woodbury 16999*, from St. John.

This species is characterized by its usually nar-

rowly oblanceolate, short-petiolate blades which have conspicuously raised tertiary and reticulate venation on drying and sometimes even on live plants, and by its long-pedunculate inflorescence, which is usually pendent, with a long-tapered, dark purplish violet to maroon spadix and a promptly withering, linear-oblong spathe.

*Anthurium crenatum* is not easily confused with any other species and is the only member of sect. *Pachyneurium* in the areas where it occurs. It is perhaps most closely allied to *A. crassinervium* of northern South America and Curaçao.

*Anthurium crenatum* has been confused since Schott's time with *A. acaule* (Jacq.) Schott. See the discussion of the history of this taxonomic confusion by Mayo (1982), whose paper dealing with the West Indian bird's nest *Anthurium* species demonstrates that *A. acaule* is actually a completely different species endemic to Martinique and is probably a member of sect. *Urospadix*, with most of its relatives in Brazil. Howard (1979) erroneously associates the name *A. acaule* with *A. hookeri*.

BRITISH VIRGIN ISLANDS. TORTOLA. Dotys, *Fishlock 368* (GH, K); High Bush, 375 m, *Britton & Shafer 811* (NY, US). DOMINICAN REPUBLIC. Parque Nacional Los Haitises, Monte Plata, 250 m, *Garcia et al. 664* (NY); Liali, 100–500 m, *Abbott 2601* (US); Miches–El Seibo, at crest of Cordillera Oriental, 600 m,  *Gastony et al. 694* (GH, NY, US); Río Comatillo, Bayaguana, 150 m, *Liogier 22465* (JBSD); Río San Juan, *Miller 1125* (US); Sabana del Mar, 100 m, *Liogier 18507* (NY, US). LA ALTAGRACIA: 21 km W of hwy., 200–350 m, *Pimentel 83* (JBSD, NY); "El Caracol" (where old road parallels Río Dueye), N of Boca de Yuma, 18°24'N, 68°37'W, *Zanoni et al. 10685* (JBSD); La Colorada, near headwaters of Río Llano, Km 22 on road from Santana to La Colorada, NW of hwy., 18°46'N, 68°44'W, *Mejia & Ramirez 11133* (JBSD, MO, USD); Hato de Mana, Dueye, Río Dueye, 10 km N of Hato de Mana, trail toward Las Auyamas, 18°45'N, 68°50'W, 100 m, *Mejia & Ramirez 11229* (JBSD); 21 km W of Higuey, road to El Seibo, Loma del Penon, 200–350 m, *Zanoni & Mejia 17332* (JBSD); 0.5 km from Otrabanda on road from Cruce de Los Islenos and Nisbon at Arroyo Yaoya, 18°39'N, 69°39'W, *Zanoni et al. 18967XX* (JBSD). SAMANÁ: 9 km NE of Samaná, rd. to La Laguna, and Loma Pan de Azúcar, 50 m, 19°15'N, 69°16'W, *Gentry & Zanoni 50600* (MO); Loma Pan de Azúcar, E of La Laguna, NE of Santa Barbara de Samaná, 19°15.5'N, 69°18'W, 100 m, *Zanoni & Gentry 34116* (JBSD); Peninsula de Samaná, Loma El Fronton, 19°17'N, 69°10'W, 100–256 m, *Zanoni et al. 29346* (JBSD, MO, NY, USD); Sanchez, *Rose et al. 4396* (NY, US), *Wright et al. 536* (GH, US); Las Canitas Mts., 330 m, *Taylor 7* (GH, US); 3.5 km E of Las Terrenas, 5 km S of Callejon, 19°18'N, 69°30'W, *Zanoni & Mejia 17634* (JBSD). SAN CRISTÓBAL: 8.5 km from Comatillo on road to Cruce de Pílancon and Pílancon, 18°52'N, 69°37'W, *Zanoni & Mejia 16411* (JBSD); Río Capita (de Trinidad), 15 km from Comatillo on road to Sierra de Agua and Trinidad *Mejia*, 18°50'N, 69°34'W, *Zanoni & Mejia 16318* (JBSD, MO, USD). SEIBO: Cordillera Oriental, along rock road

9.2 km SE of Miches, along Río Yeguada Arroyo Santiago, 100 m, 18°55'N, 69°9'W, *Croat* 68550 (MO); Arroyo Las Cabirnas, 5 km S of Miches-Nisibon Hwy., on road to Las Cabirnas, 18°55'N, 69°01'W, 100 m, *Zanoni et al.* 15946 (JBSD); El Salado-Otrabanda, Higüey, *Ekman* 12243 (GH, K, US); Hato Mayor del Rey, 400–500 m, *Allard* 13632 (US); Hato Mayor-Sabana del Mar, Guamira, *Jimenez et al.* 4129 (NY); Hato Mayor del Rey, 18°49.5'N, 69°19'W, *Zanoni et al.* 11966X (JBSD); Higüey, *Howard & Howard* 9790 (BM, GH, NY, US); 11.7 km W of El Valle, trail to Trepadora Alta, 18°58'N, 69°28'W, *Zanoni et al.* 21283 (JBSD). HAWAII. Oahu, cultivated at Foster Gardens, Wahiawa, *Croat* 45013 (MO), 45016 (B, MO). PUERTO RICO. Adjuntas, Las Cruces, *Sintenis* 4205 (MO, NY, P); Arecibo-Utuado, *Britton & Cowell* 345 (NY, US), *Eggers* 1142 (P), *Underwood & Griggs* 846 (NY, US); Bayamon, *Arsene et al. s.n.* (B, NY), *Stevenson* 384 (US), *Underwood & Griggs* 908 (NY, US); Bayamon, Finca Sánchez, *Hioram s.n.* (NY, P); Finca Nevares, 50 m, *Acevedo & Chinaea* 2143 (NY); Hato Tejas, 50–100 m, *Webster & Miller* 8607 (US); Candelaria, *Goll et al.* 279 (NY, US); W of Candelaria, Km 21.5 on Route 2, 80 m, 18°24'N, 66°14'W, *Solomon* 5762 (MO, SEL); Cayey-Guayama, *Underwood & Griggs* 336 (NY, US); Coamo Springs, *Britton et al.* 5971 (NY); Coco Beach, 18°22'N, 65°48'W, *Boom* 8013 (NY); Guayama Road, Quebrada Arriba, *Goll et al.* 632 (US); Juana Díaz, Peñas de las Cuevas, *Britton & Marble* 2296 (NY, US); Laguna Tortuguero, *Wagner* 286 (U); 2 mi. N of Mameyes, 50 m, *Hartley* 13373 (U, US); Maricao, *Sintenis* 479 (BM, GH, K, US); Mayagüez, *Heller* 6283 (E, GH, MO, NY, P, US); Morovis, 300 m, *Liogier* 30065 (MO); Palmer-Florida Road, *Wagner* 203 (GH); San Juan, *Hioram* (Rose) 7 (11.298) (NY, US), *Hornbeck s.n.* (W), *Krebs s.n.* (C, W), *Kuntze s.n.* (K, NY), *Riedel s.n.* (P); San Narciso, *Britton & Britton* 7270 (NY); Santurce, *Heller & Heller* 1267 (NY, US); Utuado, *Britton* 5224 (NY); Yauco, *Garber* 104 (GH, K, NY); Dorado Beach Forest, Dorado, Dorado Beach Hotel, 10 m, *Croat* 60851 (B, CM, MO, RSA); El Dorado forest, N coast, 18°28'N, 60°16'W, *Luteyn & Luteyn* 11466 (NY); Río Abajo State Forest, Hwy. 621, near end of asphalt road, 360–390 m, 18°19'N, 66°40'W, *Croat* 60860 (MO, US); Río Piedras, *Johnston* 151, 901 (NY); Sierra de Luquillo, Mt. Jimenes, *Sintenis* 1582 (K); Sierra de Naguabo, 210–675 m, *Shaffer* 3392 (NY). CULEBRA: *Britton & Wheeler* 114 (NY, US). MANATI: 2 mi. NE of Manati, *Hansen et al.* 9068 (MO, USF). VIEQUES: *Eggers s.n.* (GH), *Groszourdy* 13 (P); Isabel Segunda-Capo Cielo, *Shaffer* 2377 (NY, US). U.S. VIRGIN ISLANDS ST. JOHN: Bethania-Rosenberg, *Britton & Shaffer* 225 (NY, US); Bordeaux, 330 m, *Britton & Shaffer* 545 (NY, US). ST. THOMAS: Bourne Resolution, *Britton & Marble* 428 (NY); above Cinnamon Bay, road to Herman Farm, 60–120 m, *Mori & Woodbury* 16999 (MO); Pearl-Bourne Resolution, *Britton & Marble* 1320 (NY, US), *Eggers* 307 (GH, NY), *Friedrichthal s.n.* (K, W), *Krebs s.n.* (K, W), *s.n.* (NY), *Raunkiaer s.n.* (P, US), *Richard s.n.* (P); Signal Hill, 500 m, *Eggers* 308 (K, P), 475 (US), 814 (P), *Eggers s.n.* (Engl. Arac. no. 191) (GH, K, P, US).

Epiphytic or terrestrial; stem short, to 3 cm diam.; roots dense, ascending, green when young, becoming gray, pubescent at base, becoming smooth, tapered or ending abruptly, ca. 5–10 cm long, 3–5(8) mm diam.; cataphylls subcoriaceous, lanceolate, (4)10–22 cm long, narrowly acuminate at apex, drying reddish brown (B & K yellow-red 4/10), persisting ± intact, weathering into coarse linear fibers and persisting around stem. *Leaves* erect; petioles (4)6–16(36) cm long, (2)5–12 mm diam., C-shaped to D-shaped, broadly sulcate adaxially, rounded to obscurely flattened abaxially; geniculum slightly thicker than petiole, 0.5–1.5 cm long; sheath (1)3–8 cm long; blades subcoriaceous, usually oblanceolate-elliptic, sometimes ± elliptic, short to long-acuminate at apex, usually obtuse at base, sometimes acute or weakly rounded, (20)33–95 cm long, (5.5)13–38 cm wide, broadest at or near the middle, the margins conspicuously undulate; upper surface semiglossy, medium green (B & K green 5/2.5), lower surface matte, slightly paler, both drying grayish; midrib flat to convexly raised at base, becoming obtusely raised toward the apex above, broadly angular to 3-ribbed below; primary lateral veins 6–11 per side, departing midrib at 30–50° angle, ± straight to the margin, convexly raised above and below, slightly paler than surface; tertiary veins obscure, weakly raised to prominent when dried; reticulate veins visible, darker than surface, obscure when dried; collective vein arising in the upper 1/3 to upper 1/4 of the blade or absent, equally as prominent as primary lateral veins when present. *Inflorescences* erect, rarely spreading, usually several at different stages of development per plant; peduncle (5.5)8–33 cm long, (2)5–10 mm diam., 0.4–1.2× as long as petiole, green tinged violet, terete; spathe reflexed at anthesis, rarely recurled, subcoriaceous, green tinged with violet-purple, ovate to lanceolate, (2.5)5–16 cm long, (0.6)1–5 cm wide, broadest near the base, acute to acuminate at apex, rounded at base; stipe to 2 cm long in front, to 1 cm long in back; spadix purplish (B & K purple 4/5) to pale violet-purple (B & K purple 6/7.5), cylindrical, slightly tapered toward both ends, (2.5)8–19 cm long, (4)6–10 mm diam. near base, (3)5–9 mm diam. near apex; flowers rhombic to 4-lobed, (1.3)2.1–2.6 mm long, (1.7)2–2.6 mm wide, the sides weakly sigmoid, sometimes straight; 9–12 flowers visible in principal spiral, (9)14–16 in alternate spiral; tepals matte, pale punctate, slightly roughened; lateral tepals 0.7–1.4 mm wide, the inner margins straight to weakly convex, the outer margins 2-sided; pistils weakly raised, greenish, darker than tepals; stigma linear, 0.4 mm long; stamens emerging in a scattered pattern through-

*Anthurium cubense* Engl., Bot. Jahrb. Syst. 25: 364. 1898. TYPE: Cuba. Monte Toro, 300 m, *Eggers* 5402 (holotype, B; isotype, K). Figures 1, 112, 113, 116, 117.