

50 m, 9°35'N, 82°53'E, *Burger et al. 10444* (F, MO). SAN JOSÉ-HEREDIA: Cerro Zurquí, southern slope, end of Calle Zurquí, 1,800–2,000 m, *Almeda & Nakai 3706* (MO); Río Para Blanca, Cerro de Zurquí, 1,600–1,800 m, 10°03'N, 84°01'W, *Burger et al. 9342* (MO). SAN JOSÉ: Carrillo Station, 700 m, *Gomez et al. 21168* (MEXU, MO). PANAMA. BOCAS DEL TORO: Changuinola–Almirante, Railroad Station at Milla 7.5, less than 100 m, *Croat 38129* (CAS, F, IBE, K, MEXU, MO, NY, PMA, RSA, S, SEL, UC, US, VDB, W, WIS), *Croat & Porter 16246* (MO); Criollo (just above Buena Vista)–Quebrada Higue-rón, Chiriquí trail, *Kirkbride & Duke 784* (MO); 15 km S of town of Changuinola, Changuinola–1 dam site, 300–500 m, *Antonio 3146* (MO). CHIRIQUI: Quebrada Hondo-Continental Divide, on Calderas-Chiriquito Trail, *Kirkbride & Duke 960* (MO); Boquete Region, Palo Alto, 4.5 mi. NE of Boquete, *Hammel 7542* (MO); Cerro Colorado, 1,200–1,500 m, *Croat 33265* (F, MO, SEL, US, VEN), *Folsom & Collins 1754, 1764* (MO), *Folsom et al. 4840* (MO), *Mori & Dressler 7849, 7852* (MO), *Sullivan 359* (MO); Cerro Colorado mine area, from Chamí station to 9 mi. along rd., 1,100–1,750 m, 8°35'N, 81°54'W, *Hammel & Trainer 14977* (MO); Fortuna Road, Gualaca–Fortuna Dam, 5.9 mi. NW of Los Planes de Hornito, 1,370 m, 8°43'N, 82°15'W, *Croat 49898* (MO). VERAGUAS: Santa Fe Region, N of Escuela Agrícola Alto Piedra, 700–900 m, *Croat 49035* (MO), *Croat & Folsom 33958* (CM, F, MO), *Folsom 2994* (MO), *Mori & Kallunki 2563* (MO); 6–7 km W of Santa Fe, 900 m, *Nee 9717* (MO, PMA).

Anthurium willifordii Croat, sp. nov. TYPE:

Peru. Loreto: Napo River, Explorama Camp, on Río Sucusari, below 200 m (originally collected by Jack Williford), *Croat 61087* (holotype, MO 3244489; isotypes, B, K, NY, USM). Figures 339, 340.

Planta epiphytica; internodia brevía, 1–2 cm diam.; cataphyllum persistens intactum mox deciduum; petiolus quadrangularis ad trapeziformis, interdum subteres, 2–4.5 cm longus, 4–5 mm diam.; lamina oblanceolata aut oblanceolata-elliptica, (14)18–50 cm longa, 5.5–16 cm lata; nervis primariis lateralibus 6–13 utroque; pedunculus 2.5–9 cm longus; spatha erecta, atropurpureus, navicularis, 2.3–4 cm longa, 1–2 cm lata; spadix dilute purpureo-violaceum aut griseo-purpureum, cylindroides, 1.7–4 cm longus, 2–5 mm diam.; baccae magentae.

Epiphytic; stem short, 1–2 cm diam.; roots numerous, dense, spreading to descending, pale to medium green, smooth, bluntly tapered, moderately elongate, 3–4 mm diam.; cataphylls subcoriaceous, broadly triangular, 1.5–5 cm long, acute at apex, pale yellowish green, drying brown, persisting intact, soon deciduous. *Leaves* spreading; petioles 2–4.5 cm long, 4–5 mm diam., erect-spreading to spreading, quadrangular to trapezoidal, sometimes subterete, with a medial rib and the margins prominently raised adaxially, sharply 3–5-ribbed abaxially, the surface slightly pale-speckled; geniculum becoming reddish tinged, 0.4–0.7

cm long; blades subcoriaceous to moderately coriaceous, oblanceolate to oblanceolate-elliptic, obtuse, minutely apiculate at apex, obtuse to rounded at base, (14)18–50 cm long, 5.5–16.5 cm wide, usually broadest above the middle, the margins sometimes undulate; upper surface matte-velvety, moderately quilted, medium green, lower surface velvety with conspicuous crystalline cells, slightly paler and often tinged with red; both surfaces drying brown to grayish brown; midrib prominently acute at base, becoming narrowly raised toward the apex above, prominently acute and tinged with reddish below; primary lateral veins 6–13 per side, departing midrib at 50–70° angle, straight, flat to weakly raised above, weakly raised and darker than surface and tinged with red below, drying slightly raised above and below; interprimary veins less prominent than primary lateral veins, darker than surface below; tertiary veins slightly darker than surface below, drying weakly raised; reticulate veins obscure; collective vein arising from near the base or in upper third of blade, weakly sunken to flat above, weakly raised and darker than surface below, equally as prominent as primary lateral veins, 4–10 mm from margin. *Inflorescences* erect; peduncle 2.5–9 cm long, 2–3 mm diam., 1.2–3× as long as petioles, green faintly tinged purplish, terete with obscure ridge; spathe erect, subcoriaceous, dark purple to purplish violet (B & K red-purple 2/5), ovate-elliptic, navicular, 2.3–4.7 cm long, 1–2 cm wide, broadest in the lower third, cuspidate-acuminate at apex, acute and weakly decurrent at base; spadix reddish (B & K red 7/10) to faintly purplish violet or grayish purple, very short, cylindrical, erect, 1.7–4.7 cm long, 2–6 mm diam.; flowers rhombic and weakly 4-lobed, 1–1.5 mm long, 1.5–1.7 mm wide, the sides ± straight parallel to spiral, jaggedly sigmoid perpendicular to spiral; 8–9(14) flowers visible in principal spiral, 17–21 in alternate spiral; tepals matte, densely and minutely papillate; lateral tepals 0.5–0.9 mm wide, the inner margins rounded to bluntly 3-sided, the outer margins 2–3-sided to shield-shaped and 4-sided; pistils raised, purple, much darker than the tepals; stigma slitlike, 0.2–0.3 mm long; stamens emerging from near the middle, lateral stamens emerging to ½ the distance to the apex before alternates emerge at lower ⅓ of spadix; anthers white, 0.4–0.5 mm long, 0.4–0.5 mm wide, contiguous at the surface of the tepals; thecae narrowly ovoid, conspicuously divaricate; pollen yellow, fading to white. *Inflorescence* with berries scattered throughout; berries obovoid, magenta, rounded at apex.

Anthurium willifordii is endemic to Loreto Department in Peru, where it has been collected once in the vicinity of the Explorama Camp on the Río Sucusari, a tributary of the Río Napo, at less than 200 m. It was found here as an epiphyte in a tropical moist forest life zone.

This species is a very distinctive one, the chief characters being the short, stubby spadix on a short peduncle and the quilted leaf blades, which are matte above, velvety and frequently tinged red below. The petioles are of variable cross-sectional shape: quadrangular to trapezoidal or sometimes subterete; they are always sharply 3–5-ribbed abaxially.

No other species is likely to be confused with *A. willifordii*, and only *A. superbum* and *A. reflexinervium* share the character of quilted, velvety or red-tinged leaf blades.

The new species is named in honor of Jack Williford, of Brandon, Florida, who originally collected live plants along the Río Sucusari.

PERU. LORETO: Río Napo, Explorama Camp, on Río Sucusari, below 200 m, originally collected by Jack Williford, *Croat 61087* (B, K, MO, NY, USM).

Anthurium wurdackii Bunting, Acta Bot. Venez. 10: 279. 1975. TYPE: Venezuela. Amazonas: Cerro Yapacana, 3°45'N, 66°45'W, 825 m, *Steyermark & Bunting 103099* (holotype, VEN; isotypes, MO, MY, NY, US). Figure 341.

Description based on dried material only. Terrestrial or epilithic; stem short, stout, growing horizontally, 1.5–4 cm diam.; cataphylls thick, ca. 4–7 cm long, dark brown, persisting \pm intact or weathering into fine linear fibers. *Leaves* erect to spreading; petioles 22–55 cm long, 5–8 mm diam., subterete, somewhat flattened and narrowly sulcate with rounded margins adaxially, rounded abaxially; geniculum 1–1.5 cm long; blades thickly coriaceous, broadly ovate-elliptic to somewhat broadly lanceolate in larger blades, acute to obtuse at apex, shallowly cordate at base, 28–53 cm long, 10.5–26 cm wide, broadest at or just below the middle; sinus broadly and shallowly arcuate; upper surface glossy, dark green, lower surface; midrib flat at base; becoming convexly raised toward apex; basal veins 3–4 pairs, prominently arcuate-ascending, usually merging with the margin, at least the first vein extending to near or above the middle of the blade; primary lateral veins 3–4 per side, departing midrib at 40–60° angle, slightly arcuate, steeply

ascending, raised above and below; interprimary veins few, less conspicuous than primary lateral veins; tertiary veins sunken above, raised above and below; collective vein arising in the upper half of the blade or absent. *Inflorescences* longer than leaves; peduncle (44)55–81 cm long, ca. 4–7 mm diam., 1–2 \times as long as petiole; spathe erect-spreading at anthesis, becoming reflexed to recurved, subcoriaceous, green tinged with maroon at apex at anthesis, becoming purple, lanceolate, (6.5)8–14.5 cm long, 1.5–2.5 cm wide, decurrent for 1.5–2 cm at base; spadix maroon, stipitate to 7–13 mm, narrowly tapered, 6.5–18 cm long, 6–7 mm diam. near base, 3–4 mm diam. near apex; flowers rhombic, 2.7 mm long, 2.9 mm wide, the sides straight to weakly sigmoid; 8 flowers visible in principal spiral, 6 in alternate spiral. *Infructescence* with spathe persisting; spadix 7–21 cm long, 1.5–2 cm diam.; berries white, maroon at apex, ca. 8 mm diam.

Anthurium wurdackii is known only by two collections from Amazonas, Venezuela, on Cerro Yapacana at 825 m in premontane wet forest, and on Cerro Neblina at 780 m in lower montane moist forest.

This species is an atypical member of the section and can be recognized by its subterete petioles, coriaceous, broadly ovate-elliptic leaf blades that are shallowly cordate at the base and have three to four pairs of basal veins and steeply ascending, mostly free-ending primary lateral veins. Also characteristic are the long peduncle, maroon, sharply tapered spadix, and whitish berries that are maroon at the apex.

Anthurium wurdackii is not closely related to any other species in sect. *Pachyneurium*. In leaf texture, it is most similar to *A. bonplandii* subsp. *bonplandii* or subsp. *guayanum*, but those differ in lacking basal veins and having oblanceolate to elliptic leaf blades that are attenuate to obtuse at the base.

VENEZUELA. AMAZONAS: Cerro Yapacana, 825 m, *Steyermark & Bunting 103099* (MO, MY, NY, US, VEN); Dpt. Río Negro, Cerro Neblina, Camp IV, 15 km NNE of Pico Phelps, north branch of river in canyon, 780 m, 0°51'N, 65°57'W, *Liesner 16664* (B, MO).

Anthurium xanthoneurum Bunting, Phytologia 60(5): 298. 1986. TYPE: Venezuela. Amazonas: Dept. Río Negro, Cerro Aratitoyope, ca. 70 km SSW of Ocamo, 900 m, 2°10'N, 65°34'W, *Steyermark et al. 130054* (holotype, NY; isotypes, MO, VEN). Figure 342.