

SAN JUAN: San Juan del Norte, *Smith 87* (MO). ZELAYA: Cerro El Inocente, S slope, *Stevens 6793* (MO). PANAMA: WITHOUT LOCALITY: *Duke 11427* (OS). CANAL AREA: Balboa, *Standley 28564* (MO); Gatún, hills W of Canal, *Standley 27210* (US); Culebra, *Gaillard 2698* (US); Frijoles, *Pittier 2679* (US); Gorgona-Gatún, *Pittier 2278* (US); Las Cascadas, *Dodge & Hunter 8651, 8659a, 8662* (MO); Obispo, *Standley 31719* (US); Salamanca Hydrographic Station, *Dodge et al. s.n.* (MO); Summit Gardens, *Croat 10281* (MO), *32983* (M, MICH, MO, RSA, TEX.); Ancón Hill, Orchid Garden, *Bartlett & Lasser 16609* (MICH, MO); Barro Colorado Island, *Bailey & Bailey 72* (BH), *Croat 4231, 4554, 6511, 7292, 8495, 8512, 9534, 11325* (MO), *7920, 10195* (MO, PMA), *Ebinger 181* (MO), *Shattuck 638* (MO); Gatún Lake, *Standley 31343* (US); Madden Dam, Azote Caballo Road, *Dodge 16579* (MO); Quebrada Ancha, *Steyermark & Allen s.n.* (MO); Río Casaya headwaters, E of Gamboa, *Nee 9024* (MO); Río Indio de Gatún, *Pittier 2801* (US). CHIRIQUÍ: SW of Portobelo, *Liesner 1075* (MO, US); mining rd. above San Félix, 18–27 mi. off Panamerican Hwy. (above Chamí), 1,200–1,500 m, *Croat 33085* (B, C, K, MBM, MO, US); Cerro Colorado, *Antonio 1527* (MO), *Croat 33498* (MO, UCLA); Puerto Armuelles region, W of Puerto Armuelles, San Bartolo Limestone, *Busey 593* (MO). COLON: Portobelo Region, Río Guanche, 1–4 km S of Portobelo hwy., 0–50 m, $9^{\circ}30'N$, $79^{\circ}40'W$, *Knapp & Schmalzel 3598* (MO), *Knapp et al. 4609* (MO); Río Boquerón, E of Salamanca, 50 m, $9^{\circ}35'N$, $79^{\circ}32'W$, *Knapp et al. 5826* (MO, B). DARIÉN: line CC, *Duke 5235* (MO); NE of Jaqué, *Sytsma & D'Arcy 3433* (K, MO); Cerro Sapó, Río San Antonio at base of cerro, 5 km S of Garachiné, 130 m, $7^{\circ}59'N$, $78^{\circ}25'W$, *Hammel et al. 14802* (MO), *14811* (M, MO); Cerro Tacarcuna, S slope, *Gentry & Mori 13892* (MO); Serranía de Pirre, *Croat 37751* (MO). PANAMÁ: S of Alcalde Díaz, *Nee 8566* (MO); Alajuela, *Pittier 2344* (US); Torti Arriba, *Folsom et al. 6584* (MO); Cerro Brewster, SW of mountain, *Lewis et al. 3475* (MO); Río Majé, *Croat 34441* (MO), *34600* (F, K, MO, US); Serranía de Majé, *Folsom & Collins 1701* (MO); confluence of Río Ambrino and Río Ipeti, 100 m, $8^{\circ}57'N$, $79^{\circ}32'W$, *Churchill & de Nevers 4479* (MO); Parque Nacional del Darién, ridge between Río Topalisa and Río Pucuro, ca. 13 km E of Pucuro, $8^{\circ}03'N$, $77^{\circ}20'W$, 450–600 m, *Hammel et al. 16193* (MO).

Anthurium santiagoense Croat, sp. nov. TYPE:

Ecuador. Morona-Santiago: Proveduria, confluence of Río Bomboiza and Río Zamora, 600 m, $3^{\circ}25'S$, $78^{\circ}27'W$, *Palacios 1492* (holotype, MO 3420759; isotypes, NY, QAME). Figure 283.

Planta terrestris; internodia brevia, 1.5–2 cm diam.; cataphyllum findens in fibras lineares tenues; petiolus 24.5–27 cm longus, 1–1.2 cm diam., triangularis; lamina late elliptica ad oblongo-elliptica, 75–97 cm longa, 21.5–29 cm lata; pedunculus 20–48 cm longus, 5–11 mm diam., stipes 1–3 mm longus; spadix atropurpureus, cylindricus, 6.5–7 cm longus, 5–6 mm diam.

Description based on dried material only. Terrestrial; stem 1.5–2 cm diam.; roots few, pale grayish, pubescent, elongate, to 4 mm diam.; cataphylls probably coriaceous, 10–13.5 cm long,

acute at apex, yellow-green, persisting as fine, pale, linear fibers; petioles 24.5–27 cm long, 1–1.2 mm diam., triangular, flattened to broadly sulcate adaxially, the margins acute, acutely angled abaxially; blades subcoriaceous, \pm broadly elliptic to oblong-elliptic, abruptly acuminate to long-acuminate at apex (the acumen 15–20 mm long), narrowly acute at base, 75–97 cm long, 21.5–29 cm wide, broadest just above the middle, matte to weakly glossy, greenish; midrib prominently raised above, higher than broad and paler than surface below; primary lateral veins 25–33 per side, departing midrib at 60–75° angle, straight-ascending to the collective vein, slightly raised above and below, slightly paler than surface below; interprimary veins almost as conspicuous as primary lateral veins, drying raised above and below; tertiary veins visible when dried, raised; collective vein arising from near the base, drying raised above and below, equally as prominent as primary lateral veins, 7–20 mm from margin. *Inflorescences* with peduncle 20–48 cm long, 5–11 mm diam., drying greenish; spathe reflexed, subcoriaceous, green, broadly lanceolate, 7–8 cm long, 1.8–2.6 cm wide, broadest near the base, abruptly acuminate at apex, 4 mm long; stipe 7–17 mm long in front, 1–3 mm long in back; spadix deep purple, cylindroid, erect, sometimes slightly curved, 6.5–7 cm long, 5–6 mm diam. midway; flowers \pm square, 1.5–2.1 mm in both directions; 7–10 flowers visible in principal spiral, 6–7 in alternate spiral; lateral tepals 0.9–1.2 mm wide, the inner margins \pm straight, the outer margins 2-sided; pistils somewhat exerted; stigma ellipsoid, 0.3 mm long, droplets drying as abundant crystals and persisting; stamens emerging well above tepals; filaments translucent, flattened, 0.7 mm wide; anthers yellow, 0.4–0.5 mm long, 0.6 mm wide; thecae oblong, 0.2–0.3 mm wide, slightly divaricate; pollen fading to tan. *Infructescence* not seen.

A member of series *Multinervia*, *Anthurium santiagoense* is endemic to Ecuador, where it is known from the Río Santiago watershed (hence the name) in the Serranía de Cutucú and in Morona-Santiago Province at 600 to 1,830 m, in premontane moist and tropical moist forest life zones.

This species is characterized by its large, unusually broadly elliptic leaf blades which dry green and have numerous primary lateral veins, its relatively long, more or less triangular petioles, and its deep purple, cylindroid spadix. Characteristic also are the exerted stamens and yellow anthers.

Anthurium santiagoense is readily recognizable and not likely to be confused with any other species. The only other member of series *Multinervia* on

the eastern slope of the Andes which approaches *A. santiaogense* in size is *A. fasciale*, which has more or less oblong leaf blades with more irregular primary lateral veins, and petioles that are rounded abaxially. *Anthurium narinoense*, from the Pacific slope in Colombia, is remarkably similar in overall appearance and differs mainly by its more slender spadix.

ECUADOR. MORONA-SANTIAGO: Río Bomboiza and Río Zamora confluence, Proveduria, 600 m, 3°25'S, 78°27'W, *Palacios 1492* (MO, NY, QAME); Cordillera de Cutucú, W slopes, Logroño-Yaupi, 2°46'S, 78°6'W, *Madison et al. 3382* (SEL).

Anthurium sarukhanianum Croat & Haager, sp. nov. TYPE: Mexico. Guerrero: 2–3 km N of Zihuatanejo, dry slopes, less than 100 m, *Haager s.n.* (holotype, MO 3582582; isotypes, MEXU, PR). [Cultivated in Praha and Brno.] Figures 277, 284.

Planta epilithica; internodia brevia, ad 3 cm diam.; petiolus U-formatus, adaxialiter sulcatus, abaxialiter rotundatus, 6–10 cm longus, 12–17 mm diam.; lamina oblanceolata ad angustè obovata, 40–75 cm longa, 17–23 cm lata; nervis primariis lateralibus 9–12 utroque; pedunculus 20 cm longus; spathe erecta, viridis multum suffusa purpurea intus, 3.5–5 cm longa, 2.5–3.5 cm lata; spadix clavatus, 4–5 cm longus, 1.3–1.7 mm diam.

Epiphytic, to less than 1 m tall; stem short, 3 cm diam.; roots dense, 3–5 mm diam., whitish (green when moistened); cataphylls triangular, 7 cm long, weathering into brown fibers. *Leaves* erect-spreading; petioles 8–12 cm long, 12–18 mm diam., obtusely U-shaped, deeply sulcate adaxially, the margins erect to incurved (in plants cultivated under epiphytic conditions), rounded abaxially; geniculum shaped like and paler than petiole, 1.2–1.7 cm long; blades moderately coriaceous, oblanceolate to narrowly obovate, shortly acuminate at apex, acute to narrowly rounded at base, 40–75 cm long, (12)17–23 cm wide, the margins broadly and conspicuously undulate; upper surface weakly quilted, glossy, medium green, lower surface matte, slightly paler; midrib above convexly raised (with obscure medial rib on drying), becoming convexly raised toward the middle, below prominently convexly raised and weakly speckled; primary lateral veins 9–12 per side, departing midrib at 40–45° angle, moderately straight to the margin, then ascending, convex on both surfaces; interprimary veins lacking or few; major tertiary veins weakly sunken above, weakly raised and slightly darker than surface below; reticulate veins visible only on lower surface; collective vein absent. *Inflorescences* erect,

much shorter than leaves; peduncle 20 cm long, 5 mm diam., drying 3.5 mm diam., 2–3× as long as petiole, terete; spathe erect, broadly ovate, 3.5–5 cm long, 2.5–3.5 cm wide, green, heavily tinged or mottled with purple on both surfaces, especially on the inner surface and along margins outside, inserted at 30° angle on peduncle, rounded and retuse at apex (the acumen short apiculate), rounded to subtruncate at base, the margins tightly recurved, meeting at 180° angle, then decurrent for a short distance; spadix medium green, clavate, sessile, held at 160° angle from peduncle, 5 cm long, 7 mm diam. near base, 1.3–1.7 mm diam. near apex, broadest just below the apex, broadly rounded at apex, evenly tapered to the base; flowers rhombic to sub-4-lobed, 2.3–2.7 mm long (fresh), 1.8–2.2 mm long (dry), 1.8–2.3 mm wide (fresh), 2–2.5 mm wide (dry), the sides almost straight to smoothly sigmoid parallel to spiral, jaggedly sigmoid perpendicular to spiral; 13–16 flowers visible in principal spiral, to 20 or more in alternate spiral; tepals semiglossy, minutely papillate, with few subrounded inclusions visible through the epidermis, drying matte, light reddish brown, weakly warty, with a thin, loose layer of wax; lateral tepals 1.2–1.5 wide, shield-shaped, the inner margins almost straight, the outer margins weakly acuminate; pistils green, umbonate, protruding weakly into the space between the tepals, the exposed area 0.5 mm diam., soon completely obscured by the stamens; stigma linear, drying 0.35 mm long; stamens emerging slowly beginning at the middle of the spadix and proceeding toward both ends, the laterals preceding the alternates, clustered tightly over the pistil; anthers whitish, 0.5 mm long, 0.6 mm wide, held at the level of the tepals; thecae narrowly ovoid, somewhat divaricate. *Infructescence* not known.

Anthurium sarukhanianum is narrowly endemic to western Mexico, known only from the type locality in the state of Guerrero, where it is locally common.

It can be confused with *A. schlechtendalii* subsp. *jimenezii* or *A. halmoorei*, which occur in similar habitats in western Mexico, but can be distinguished from either by its conspicuously clavate spadix, a feature unique among Central American species of *Pachyneurium*.

This species was first collected in 1977 by Jiri Haager of Prague, Czechoslovakia, and is named in honor of José Sarukhán, Director of the Instituto de Biología of the Universidad Autónoma de México, who assisted in the preparation of Haager's expedition in Mexico.