

diam.; cataphylls subcoriaceous, lanceolate, unribbed, 2.5–10 cm long, acute at apex, green (B & K yellow-green 9/2.5), drying dark to medium brown (B & K yellow 3/2.5), persisting semi-intact, eventually as coarse linear fibers or as a reticulum of fibers. *Leaves* erect to spreading; petioles 5.5–26 cm long, 4–5 mm diam., D-shaped to C-shaped, flattened with blunt to sharp margins adaxially, sometimes with a medial rib, rounded abaxially; geniculum paler than petiole, up to 11 cm remote from the base of the blade, 0.6–1 cm long; blades subcoriaceous, elliptic to ovate-elliptic, acute at apex, acute to prominently attenuate at base, 24–43 cm long, 8–25 cm wide, broadest at or near the middle, the margins broadly undulate; upper surface semiglossy to glossy, lower surface weakly glossy to semiglossy, both drying matte, brownish to brownish green; midrib sharply and acutely raised above, conspicuously paler than surface, convexly to obtusely raised at base below, becoming flat toward the apex, paler than surface; primary lateral veins 4–9 per side, departing midrib at 55–85° angle, weakly arcuate in the middle of the blade,  $\pm$  reflexed at base, prominently raised above, raised below; interprimary veins weakly visible; tertiary veins visible; reticulate veins obscure; collective vein arising from about the middle of the blade, flat above and below, slightly darker than surface below, 1–7 mm from margin. *Inflorescences* erect-spreading, shorter than leaves; peduncle 12.5–26 cm long, 4 mm diam. when fresh, 1–2 mm diam. when dried, 0.8–3.8 $\times$  as long as petiole, green (B & K yellow-green 8/7.5), terete; spathe reflexed to recurved, subcoriaceous, medium green, sometimes tinged with purple at margins (B & K yellow-green 6/7.5), lanceolate, 3–5 cm long, 0.8–2 cm wide, broadest near the base, inserted at 30–60° angle on peduncle, acute to short-acuminate at apex (the acumen inrolled, ca. 2 mm long), acute at base, the margins meeting at 45° angle; spadix greenish tinged with reddish to pale pink, also reported as becoming purplish post anthesis, long-tapered to nearly cylindroid, erect, 4.5–6.5 cm long, 4–8 mm diam. near base, 3–5 mm diam. near apex, broadest at the base; flowers rhombic to 4-lobed, 1.6–2.5 mm long, 1.8–2.2 mm wide, the sides jaggedly sigmoid; 7–9 flowers visible in principal spiral, (6)14–15 in alternate spiral; tepals semiglossy to matte, with droplets; lateral tepals 1–1.2 mm wide, the inner margins straight to convex, the outer margins usually 2-sided (meeting at ca. 90° angle), occasionally 3–4-sided; pistils weakly exserted, dark brownish purple; stigma slit-like, 0.5–0.6 mm long; stamens emerging rapidly in a regular sequence from the

base, held shortly above the tepals, the laterals preceding the alternates by 13–14 spirals, the 3rd stamen preceding the 4th by ca. 2 spirals; anthers orange to reddish purple, 0.4–0.5 mm long, 0.6–0.8 mm wide, inclined over and obscuring the pistil; thecae oblong, 0.3–0.4 mm wide; pollen yellow fading to white, weakly fruity-scented. *Infructescence* with purple berries.

*Anthurium paraguayense* var. *coroicoanum* is known only from the vicinity of the type locality in La Paz Department, Bolivia, at 700 to 900 m in subtropical moist and subtropical wet forest life zones, and from Cusco, Peru, at 800 m in a subtropical rainforest life zone.

*Anthurium paraguayense* var. *coroicoanum* differs from the typical variety in its more or less elliptic rather than oblanceolate leaf blades, and by having the lowermost primary lateral veins directed at an almost 90° angle from the midrib to prominently reflexed, vs. prominently ascending in the typical variety. Another character distinguishing the two taxa is berry color: purple in var. *coroicoanum*, dark red in var. *paraguayense*.

The new variety is named for the type locality, near the Río Coroico.

BOLIVIA. LA PAZ: Caranavi–Guanay, 27.8–28.1 km N of Caranavi, near bridge over Río Coroico, 820–865 m, 15°27'–33'S, 67°45'–50'W, Croat 51657 (MO), 51704 (B, K, MO, NY). SANTA CRUZ: Prov. Ichilo, Parque Nacional Amboro, 15 km SE up the Río Pitasama from Río Surutú, 700 m, 17°44'S 63°40'W, Solomon & Urcullo 14159 (MO). PERU. CUZCO: Prov. Paucartambo, Río Tono, N of Patria, Cosnipata Valley, 800 m, 13°07'S, 71°12'W, Wachter et al. 141 (F, MO).

*Anthurium pendulifolium* N. E. Br., Gard.

Chron. 36: 362. 1904. TYPE: unknown locality, possibly Colombia, *Kew H* 457/83 (holotype, K). Figures 9, 230, 233, 234, 255.

Epiphytic, rarely terrestrial; stem pendent, 20–30 cm long, 1.5–3.5 cm diam.; leaf scars reported as conspicuous, ca. 2.8 mm wide; roots moderately dense, descending, brown, 6 mm diam.; cataphylls moderately coriaceous, broadly lanceolate, scarcely 1-ribbed, 4–19 cm long, acuminate at apex with subapical apiculum, green, drying brown (B & K yellow-red 9/2.5), persisting as coarse linear fibers, the apex remaining intact. *Leaves* spreading-pendent to pendent; petioles 27–65 cm long, 5–10 mm diam., terete to subterete or thicker than broad, slightly flattened adaxially, rounded abaxially, the surface minutely pale-speckled; geniculum paler and thicker than petiole, 1.5–3.5 cm long; sheath 2.5–12 cm; blades coriaceous to subcoriaceous, oblong to oblanceolate, acuminate at apex, acute

to rounded (rarely subcordate) at base, 64–190(207) cm long, 16–32(42.5) cm wide, broadest above the middle, the margins weakly revolute, broadly and weakly undulate; upper surface glossy to semiglossy, light to medium green (B & K yellow-green 5/10), lower surface matte, paler; midrib convexly to obtusely raised, paler than surface above, obtusely angled below; primary lateral veins (8)11–15 per side, departing midrib at 45° angle, arcuate-ascending to the margin, sunken in shallow grooves above, paler than surface, raised below; interprimary veins few, obscure; tertiary veins obscure above, scarcely raised and darker than surface below; collective vein arising in the lower third to about the middle of the blade, less prominent than primary lateral veins, (4)7–14 mm from margin. *Inflorescences* erect-spreading; peduncle 35–52 cm long, 0.5–1 cm diam., 0.5–1.7× as long as petiole, terete; spathe reflexed and twisted, subcoriaceous, pale yellowish green to creamy white, violet at margins and at base (B & K yellow-red 9/10), oblong-lanceolate, (9)20–30(60) cm long, 1.5–4.8 cm wide, broadest just above the base, acuminate at apex (the acumen inrolled), acute at base; stipe 8–12 mm long in front, 2–5 mm long in back; spadix reddish violet to reddish purple (B & K purple 2/7.5 to red-purple 7/5–10), tapered, curved, 19.5–38 cm long, 4–9 mm diam. midway, 2–4 mm diam. near apex; flowers weakly 4-lobed to rhombic, 2.5–3.5 mm long, 1.7–3.3 mm wide, the sides straight to sigmoid; 12–16 flowers visible in principal spiral, 8–27 in alternate spiral; tepals matte and weakly punctate; lateral tepals 1.4–2.2 mm wide, the inner margins broadly rounded to somewhat concave, the outer margins 3–5-sided; pistils glossy, weakly exerted, green; stigma brush-like; stamens emerging irregularly; filaments fleshy, translucent, minutely papillate, exerted 0.5 mm; anthers creamy white to yellow, 0.5 mm long, 0.6–0.7 mm wide, inclined over the pistil; thecae ovoid-ellipsoid to pyriform, weakly divaricate; pollen yellow fading to white. *Infructescence* pendent to spreading-pendent, sometimes coiled; spathe withered; spadix 27–55 cm long, 1–2 cm diam., with berries scattered throughout; berries lavender, becoming white at maturity, obovoid-oblong, rounded at apex, 10–11 mm long, 5–6 mm diam.; pericarp thickened; mesocarp mealy, white; seeds 1–2 per berry, brown, oblong, (5.5)7.3–7.8 mm long, 2.8–3 mm diam., 1.3 mm thick.

*Anthurium pendulifolium* ranges from Colombia (Amazonas and Putumayo) to northern Peru as an epiphyte at 90–550 m in tropical moist and tropical wet forest. Most collections are from the

upper Río Napo and Río Aguarico in northern Ecuador (Napo), and also from around Iquitos in Loreto, Peru. It has also been collected in northern Amazonas, in Peru along the Río Cenepa and the Río Santiago, as well as along the lower Río Pastaza in northwestern Loreto. It is to be expected throughout lowland Ecuador and northwestern Loreto in Peru.

This species is distinguished by its oblong-ob lanceolate leaf blades which are pendulous and dry pale green or yellowish green (the type specimen, of cultivated origin, has pale brown leaves, but this may be due to its age of nearly 100 years). Also distinctive are the moderately long petioles (up to ½ as long as the blades) and pale purple berries which become whitish in age. *Anthurium pendulifolium* may be confused with *A. atropurpureum* var. *arenicola*, with leaves drying the same green color and occurring in the same area. The latter differs from *A. pendulifolium* in its erect-spreading, rosulate habit, broadly oblanceolate leaf blades, shorter petioles, and conspicuously sunken tertiary veins (when fresh).

*Anthurium pendulifolium* was originally described from cultivated material thought to be from Colombia. While no Colombian material closely matches the type, much of the material collected in Ecuador matches it well.

Common names for this species include “yakiya sugkip” (Huambisa tribe, Río Santiago, Amazonas, Peru); “kankur nuka” (Río Santiago); “meko uko” (Siona Indians, Putumayo, Colombia); “fam’be” (Río San Miguel, Putumayo, Colombia); and “bagre panga” (Río Lagartacocha, Napo, Ecuador). The mashed, cooked leaves are used in a water bath by the Siona Indians (Putumayo, Colombia) to relieve bone aches and rheumatism.

WITHOUT LOCALITY: cultivated at Kew, *Kew H 457/83* (K). COLOMBIA. AMAZONAS: Puerto Nariño, Parque Nacional Amacayacu, 100 m, 3°45’S, 70°15’W, *Vásquez et al. 12506* (MO). PUTUMAYO: Buena Vista, *Piaguaje 28* (ECON); Río San Miguel, Santa Rosa de Sucumbios, 380 m, *Schultes 3609* (GH). ECUADOR. NAPO: Laguna Grande, Pica Saladero de Dantas, Cuyabeno, 0°00’00”, 76°12’45”W, *Jaramillo 6852* (MO, QCA); 265 m, *Nielsen 76272* (AAU, MO); Lago Agrio–Coca, 26 km N of Coca, 450 m, 0°29’S, 76°55’W, *Croat 50420* (MO); Coca–Hollin, Huaticocha, 500 m, 0°45’S, 77°29’W, *Palacios et al. 3543* (MO); Payamino, Reserva Florística “El Chunchu,” 250 m, 0°0’S, 77°01’W, *Cerón & Palacios 3000* (MO, QCNE); ridge W of Cotapino, parallel to Río Cotapino, 360 m, 0°40’S, 77°20’W, *Whitmore 718* (K); trail to Shushufindi, WSW of San Pablo de Las Secoyas, 300 m, 0°15’S, 76°21’W, *Brandbyge & Asanza 32892* (AAU, MO); Lago Agrio–Puerto El Carmen de Putumayo, 15 km E of Tarapoa, 91.7 km E of Lago Agrio, 260 m, 0°08’N, 76°23’W, *Croat 58579* (MO, QCA); 28 km W of Tarapoa, 48 km E of Lago Agrio,



240 m, 0°06'N, 76°33'W, *Croat 58610* (BM, MO, QCA, US, W); rd. to Agua Pungo, Tena, 1.5 km past bridge over Río Mishahuallí, 550 m, 0°59'S, 77°47'W, *Croat 58825* (MO); Estación Biológica Jatún Sacha, 8 km E of Mishahuallí, 450 m, *Palacios 2863* (MO); Parque Nacional Yasuní, 200 m, 0°55'S, 76°11'W, *Cerón & Hurtado 4012* (MO); Cantón Aguariño, lagunas de Garza Cocha, 200 m, *Cerón & Gallo 4953* (MO, QCNE); Cantón Tena, headwaters of Río Huambuno, 6 km NNW of Ahuano, 440 m, 1°00'S, 77°40'W, *Kohn 1155* (MO); Río Aguariño, E of Lago Agrio, road to Cepe Ferry Crossing, 450 m, 0°02'N, 76°50'W, *Croat 50427* (MO), *58513* (MO, P, QCA); Santa Cecilia, 200 m, 0°04'N, 76°58'W, *Sparre 13043* (S); Río Lagartococha, Redondo Cocha, 190 m, 0°35'S, 75°15'W, *Lawesson et al. 44424* (AAU). PASTAZA: Río Curaray, Lagunas Patoamo, 230 m, 1°30'S, 76°30'W, *Palacios & Neill 762* (MO, NY, QAME). PERU: AMAZONAS: Río Cenepa, *Croat 57196* (MO); Río Santiago, La Poza, 400 m (180 m), *Huashikar 150* (MO); Río Santiago, Quebrada Caterpiza, 2–3 km behind community of Caterpiza, 200 m, 3°50'S, 77°40'W, *Tunqui 784* (MO). LORETO: vic. Yanamono, Explorama Camp, 130 m, 3°28'S, 72°50'W, *Croat 61760* (AMAZ, MO), *66057* (MO); Prov. Alto Amazonas, Río Pastaza, Uchipayaco–Rimachi, 4°20'S, 76°40'W, *Díaz et al. 1287* (MO); Prov. Loreto, Pucayacu, native community of Shimaco–Urarina, *Vásquez 6033* (MO); Prov. Maynas, Iquitos Region, Río Itaya, 10 km above Iquitos, *Croat 19151* (MO); Quebrada de Bo, ca. 90 m, *Rimachi 6490* (IBE); Río Maniti, Recreo, NE of Iquitos, 115 m, 3°42'S, 72°50'W, *Vásquez & Jaramillo 1123* (MO); Río Momón, tributary of Río Nanay, Iquitos, *Davidson & Jones 9802* (LAM); Sucusari, 116 m, 7°25'S, 73°20'S, *Vásquez & Jaramillo 8247* (MO); 11 km from Río Nanay, near Iquitos, Quebrada Momoncillo, 200 m, 3°43'S, 73°20'W, *Croat 51224* (COL, F, GH, M, MBM, MO, NY, SEL, U), *Davidson & Jones 9517* (LAM); Río Amazonas, Quebrada Panguanillo, Aucayo, 90 m, *Rimachi 6041* (IBE); Río Tachacuray, tributary of Río Napo, 2°40'S, 73°30'–74°20'W, *Croat 20380* (MO). SAN MARTÍN: Tarapoto–Yurimaguas, Km 54, Lamas, 350 m, 6°23'S, 76°18'W, *Knapp 8262* (MO).

***Anthurium penningtonii* Croat, sp. nov. TYPE:**

Ecuador: Napo: between Quito & Baeza, S of road above jct. of road to Baeza & to Lago Agrio, 1,800 m, *Croat 58491* (holotype, MO 3183150; isotypes, QCA, VEN, RSA, K, US). Figures 235, 236, 256, 257.

Planta terrestris aut raro epiphytica; internodia brevia, 1–3 cm diam.; cataphyllum lanceolatum, persistens semi-intactum mox fibris stramineis fimbriatis; petiolus 11–31 cm longus, 4–8 mm diam., subteres ad triangularis; lamina late elliptica, raro oblanceolata, 35–61 cm longa, 10–19 cm lata; nervis primariis lateralibus 24–43 utroque, acute elevatis; pedunculus 21–52 cm longus, 3–4 mm diam.; spadix viridis, 2.5–5.5 cm longus, 3–5 mm diam.

Terrestrial, rarely epiphytic; stem to 50 cm long, 1–3 cm diam.; roots dense, drying whitish to tan, moderately elongate; cataphylls thin, lanceolate, 6–13 cm long, acuminate at apex, drying reddish brown, persisting semi-intact, quickly weathering

to straw-colored fibers. *Leaves* erect-spreading; petioles 11–31 cm long, 4–8 mm diam., subterete to triangular, flattened to broadly convex adaxially, sometimes with the margins sharp, rounded or sharply 1-ribbed abaxially; geniculum slightly paler and scarcely thicker than petiole, (0.6)1–3 cm long; sheath 1.5–3 cm long; blades coriaceous to subcoriaceous, broadly elliptic, rarely somewhat oblanceolate, shortly acuminate at apex, acute to narrowly acute at base, 35–61 cm long, 10–19 cm wide, broadest near the middle, the margins flat to slightly revolute; upper surface weakly glossy to semiglossy to glossy, dark to medium green, lower surface semiglossy, conspicuously paler; midrib convexly raised at base, becoming sharply acute toward the apex above, slightly paler than surface, acutely raised below; primary lateral veins 24–43 per side, departing midrib at 40–60° angle, straight to the collective vein, usually prominently and sharply raised above, flat to sunken below; interprimary veins almost as conspicuous as primary lateral veins; tertiary veins obscure, prominulous above and below on drying; reticulate veins not visible; collective vein arising from the base, equally as prominent as primary lateral veins, 10–15 mm from margin. *Inflorescences* erect; peduncle 21–52 cm long, 3–4 mm diam., 1–2.2× as long as petiole, green to purple, terete, sometimes with many weakly to prominently raised striations; spathe reflexed or rarely spreading, subcoriaceous, green, usually tinged with purple, oblong-lanceolate, 3.5–7 cm long, 0.6–1.3 cm wide, broadest near the base, acute to abruptly acuminate at apex, acute at base; spadix green, usually tinged with purple to purplish brown, sessile or stipitate to 2 mm, scarcely tapered, erect, 2.5–5.5 cm long, 3–5 mm diam. midway, 3–4 mm diam. near apex; flowers square to rhombic, 1.4–2 mm long, 1.4–1.8 mm wide, the sides straight; 5–9 flowers visible in principal spiral, 4–6 in alternate spiral; tepals matte, minutely papillate; lateral tepals 1.1–1.2 mm wide, the inner margins rounded, the outer margins 2-sided; pistils emergent, glossy; stamens exserted; anthers pink-orange, 0.4–0.5 mm long, 0.5 mm wide; thecae oblong-ellipsoid, slightly divaricate; pollen pale orange fading to white. *Infructescence* erect; spathe persisting; spadix 8–10 cm long, 1.3–1.7 cm diam., with berries scattered throughout; berries (immature) green, emergent ca. halfway, obovoid, shortly beaked at apex on drying, ca. 6.5 mm long, ca. 4 mm diam.; pericarp with raphide cells; seeds 2 per berry, oblong-obovoid, flattened, beaked at apex, 4–4.5 mm long, 2.5–2.7 mm wide, 1.5–1.8 mm thick, with a gelatinous appendage at one end.