

anthers 0.4–0.6 mm long, 0.6–0.8 mm wide; thecae ovoid, slightly divaricate; pollen pale orange. *Infructescence* pendulous; spathe withered or absent; spadix 22–53 cm long, 1.4–1.7 cm diam., mostly bearing berries in the basal portion only; stipe to 10 cm long; immature berries reported as brown.

Anthurium pachylaminum is known from Loreto, San Martín, and Pasco in Peru at (240)320 to 770 m. It may be epiphytic or terrestrial in sandy, inundated soils and on steep slopes in tropical moist and premontane wet forest life zones.

This species is distinguished by its unusually large, coriaceous leaf blades (hence the name), with the tertiary veins etched into the upper surface (when fresh) and the primary lateral veins departing the midrib at an acute angle and running more or less straight to the margin. The leaf blades of *A. pachylaminum* are often pustular or glandular on the lower surface, and the spathe does not wither at anthesis, but often persists and remains in a weathered condition on the fruiting spadix.

Anthurium pachylaminum bears a similarity in leaf shape and inflorescence shape and color to *A. atropurpureum* var. *arenicola*. The latter, however, has mostly eglandular lower leaf surfaces, and the spathe withers at anthesis. It also generally has smaller leaves and shorter peduncles (1–4× as long as petiole) than *A. pachylaminum* (2–9× as long as petiole).

PERU. LORETO: Prov. Alto Amazonas, Río Capihuari, 5 km NE of Andoas, near Ecuador border, 240 m, *Gentry & Díaz 28226* (MO, NY); Prov. Maynas, Río Tacshapuraray, *Croat 20389* (F, MO, USM). PASCO: Prov. Oxapampa, Iscozain-Villa America, Palcazú Valley, 300 m, 10°12'S, 75°13'W, *Smith 3855* (MO); Río Iscozain, Cabeza de Mono, 10 km SW of Iscozain, Palcazú Valley, 320 m, 10°20'S, 75°18'W, *Gentry et al. 41949* (MO). SAN MARTÍN: Moyobamba-Chachapoyas, Km 430–431, E of Naranjos at Río Naranjos, 770 m, 5°21'S, 77°20'W, *Croat 58161* (AAU, B, BM, CAS, F, G, GH, K, M, MO, NY, P, QCA, RSA, SEL, U, US, USM); Río Huallaga, Tocache Nuevo-Juanjui, 65.5 km S of Juanjui, 16 km S of Río Pulcacha, 700 m, 7°50'S, 76°40'W, *Croat 58076* (MO); 65.5 km N of Tocache Nuevo, 114.5 km S of Juanjui, 16 km S of Río Pulcacha and village of San Martín, 700 m, 7°50'S, 76°40.5'W, *Croat 58063* (MO); 56 km W of Rioja, 2 km E of Naranjos, 770 m, 5°51'S, 77°40'W, *Knapp et al. 7451* (BM, MO); Prov. Mariscal Cáceres, Dtto. Tocache Nuevo, Fundo de Las Flores, 550–600 m, 8°10'S, 76°33'W, *Croat 50990* (K, MO); Quebrada de Canuto, 500 m, *Schunke 10945* (CM, MO); Quebrada de Ishichimi, Tocache, 400 m, *Schunke 10047* (MO); Río Tocache, Puento Palo Blanco, 10 km W of Tocache Nuevo on rd. to Puerto Pizana, 550–650 m, 8°14'S, 76°36'W, *Plowman et al. 11347* (F); Puento Palo Blanco, 500–550 m, 8°14'S, 76°36'W, *Plowman & Schunke 7432* (F).

Anthurium palenquense Croat, sp. nov. TYPE:

Ecuador. Los Ríos: Río Palenque Science Center, along trails W of laboratory and in vicinity of laboratory clearing, 210–250 m, *Croat 38670* (holotype, MO 2395515; isotypes, AAU, B, K, NY, QCA, PMA, RSA, US). Figures 221, 223, 224.

Planta terrestris; internodia brevia, 1–1.2 cm diam.; petiolus (6)10–30 cm longus, 5–20 mm latus, triangularis; lamina elliptica ad lanceolata ad oblanceolata, basi attenuata; nervis primariis lateralibus (9)14–30 utroque; pedunculus 10–60 cm longus, 2–10 mm latus, quadrangularis vel 2–4-costatus; spatha angusti lanceolata ad oblonga-lanceolata, 3–12 cm longa, 0.5–2.5 cm lata, viridis; stipes liber ad 1–5 mm; spadix contractus, (2)4–12 cm longus, 6–9 mm latus prope basim, 3–4 mm latus prope apicem, flavo-virens; baccae ovoideae, purpureae, 5–11 mm longae, 5–6 mm latae.

Terrestrial; stem green turning brown, calloused, 15–30 cm long, 1–2.5 cm diam.; leaf scars obscured by root mass, 1 cm high, 1–1.5 cm wide; roots numerous, descending, grayish or green, smooth or scurfy, blunt, 1–20 cm long, 2–5 mm diam.; cataphylls membranous to subcoriaceous, lanceolate, 4.5–17 cm long, narrowly acute and apiculate at apex, green tinged reddish at margins, drying pale tan (B & K yellow 5/10), persisting semi-intact or as coarse linear fibers or as bundles of linear fibers, often with the apex remaining intact. *Leaves* erect to spreading; petioles (6)10–30 cm long, 5–20 mm diam., sharply triangular, flattened to broadly convex adaxially, the margins winged, sharply angular abaxially; geniculum scarcely thicker and slightly paler than petiole, the angular ribs often conspicuously and minutely undulate, 1–3 cm long; sheath 1–2 cm long; blades subcoriaceous to coriaceous, elliptic to lanceolate or oblanceolate, long-acuminate at apex (the acuminate flat to slightly inrolled), attenuate with conspicuously concave margins at base, (16)30–64(70) cm long, (7.5)10–23 cm wide, broadest usually near or below the middle, the margins broadly undulate; upper surface matte, velvety, the cells convex, sunken, forming an alveolate pattern when dried, dark green (B & K green 4/2.5), lower surface matte, paler (B & K green 7/2.5); midrib flat to obtusely angular at base, becoming sharply acutely raised toward the apex above, acutely raised (knife-edged), and higher than broad below; primary lateral veins (9)14–30 per side, departing midrib at 40–65(80)° angle, ascending straight to the collective vein, weakly sunken to weakly raised above, darker than surface and weakly raised below; interprimary veins numerous, scarcely sunken, ± parallel to and less conspicuous than primary

lateral veins; tertiary veins obscure above and below; collective vein arising from near the base, weakly sunken or weakly raised above, weakly raised or flat below, prominulous when dried, equally as prominent as primary lateral veins, 5–18 mm from margin. *Inflorescences* erect to slightly spreading or \pm pendent, shorter than leaves; peduncle 10–60 cm long, 2–10 mm diam., 0.3–3 \times as long as petiole, green to dark purple or heavily tinged-mottled with red-purple (B & K red-purple 2/2.5), \pm quadrangular or with 2–4 irregular ribs and convex sides; spathe spreading and weakly twisted or reflexed, membranous to subcoriaceous, green tinged maroon at margins and along main nerves (B & K red-purple 2/10), minutely pale-speckled (at least abaxially), narrowly lanceolate to oblong-lanceolate, 3–12 cm long, 0.5–2.5 cm wide, broadest near base, inserted at 30–90° angle on peduncle, acuminate at apex (the acumen inrolled, (2)5–15 mm long), acute to decurrent at base; stipe 3–15 mm long in front, 1–5 mm long in back; spadix yellow-green tinged with purple, becoming purple-violet or dark green tinged purplish at anthesis, cylindrical, sometimes weakly tapered, erect to curved, (2)4–12 cm long, 3–5 mm diam. near base, 3–4 mm diam. near apex; flowers with a faint, sweet, fruity scent, square to rhombic, 2–3.8 mm long, 1–3.8 mm wide, the sides straight to gradually sigmoid; 2–5 flowers visible in principal spiral, 2–6 in alternate spiral; tepals matte to semiglossy, minutely papillate and weakly punctate; lateral tepals 1.4–2.6 mm wide, the inner margins broadly convex, turned up against pistil, the outer margins 2-sided; pistils exerted 0.4–1.5 mm, glossy, green, sometimes tinged with purple around the stigma; stigma ellipsoid, greenish, 0.4–0.8 mm long, 0.25–0.4 mm wide, brushlike with blunt papillae, droplets appearing 1 week before stamens emerge; stamens emerging rapidly in a regular sequence from the base, the laterals preceding the alternates by 5–28 spirals (by ca. $\frac{3}{4}$ the length of the spadix), held erect above tepals and pistil; filaments translucent, exerted, 0.6–1 mm long, 0.4 mm wide; anthers orange (B & K yellow-red 7/10), 0.4–0.6 mm long, 0.5–0.7 mm wide, not obscuring pistil; thecae ellipsoid, 0.25 mm wide, weakly divaricate; pollen orange to yellow fading to cream-white (B & K yellow-red 7/2.5). *Infructescence* with spathe persisting; spadix 5–15 cm long, 0.5–1.5 cm diam.; berries dark purple, ovoid, acute at apex, 5–11 mm long, 5–6 mm diam.; pericarp thickened, with numerous raphide cells; seeds 1–2 per berry, with numerous raphide cells, rounded to ovoid, usually flattened on one side, 4–5.6 mm long, 3.2–3.8 mm diam.,

1–2.8 mm thick, with a translucent gelatinous appendage at both ends.

A member of series *Multinervia*, *Anthurium palenquense* occurs in Ecuador in Esmeraldas, Cotopaxi, Los Ríos, and Pichincha provinces, at 80 to 400 m, typically in mature forest or in disturbed primary forest in tropical moist and premontane wet forest life zones. Most collections were made at the Río Palenque Biological Station in Los Ríos, hence the name.

Anthurium palenquense is distinguished by its terrestrial habit, coarse cataphyll fibers, triangular-winged petioles and closely veined, bicolorous blades which are attenuate at the base and matte to semi-velvety on the upper surface. In addition, the long-exserted stamens and the brushlike stigma are characteristic. An unusual feature is the pale raphide cells speckling the petioles, spathe, tepals, and even the filaments, as well as the pericarp and seed coat. This species (erroneously reported as *A. buenaventurae* Engl.) is pollinated by *Eulaema bomboides* (Dodson & Gentry, 1978).

Two collections of *Anthurium palenquense* from Esmeraldas and Cotopaxi (*Asplund 16306* and *Sparre 17214*), do not display the brushlike stigma (typical of the species), but agree in other characters with the present overall concept of *A. palenquense*.

Anthurium palenquense is most closely related to *A. napaeum*, which differs in having the leaf blades mostly acute at the base with convex to more or less straight (rather than concave) margins.

ECUADOR, COTOPAXI: Quevedo–Latacunga, 44.7 km E of Quevedo, 400 m, 0°51'S, 79°12'W, *Croat 55862* (AAU, CAS, DUKE, GB, JBG, MO, OOM, QCA, RSA, SAR, TEX, US); Río Guapara, 20 km NW El Corazón, 250 m, *Sparre 17214, 17465, 17466* (S). ESMERALDAS: Quinindé, Rosa Zarate, *Asplund 16306* (S); Río Esmeraldas, Río Mutil, 6.6 km beyond Univ. Techn. Luis Vargas Torres–Est. Exp. Mutil, 80 m, 0°52'N, 79°33'W, *Croat 55610* (MO, QCA, U). LOS RÍOS: Quevedo–Santo Domingo de Los Colorados, Río Palenque Biological Station, 150–250 m, 0°35'S, 79°25'W, *Croat 38670* (AAU, B, K, MO, NY, QCA, PMA, RSA, US), *38688* (AAU, MBM, MO, NY, QCA, RSA), *49739* (MO), *50659* (CM, MICH, MO, SAR), *Dodson 5173* (MO, QCA, SEL, US), *Dodson & Gentry 12830* (SEL), *Dodson & McMahon 5059* (MO, SEL, US), *Gentry & Dodson 41298* (MO), *Lojtnant & Molau 15766* (AAU), *Madison 3742* (cult. at SEL) (MO), *Schupp 83* (SEL), *Watson 267* (NY). PICHINCHA: Santo Domingo–Quinindé, 300 m, *Solis 13952* (F).

Anthurium pallatangense Engl., Bot. Jahrb. Syst. 25: 385. 1898. TYPE: Ecuador. Cotopaxi: vic. Angamarca, *Sodiño s.n.* (holotype, B). Figures 222, 225.