

zuela, Amazonas: Dpt. Atures, Caño Cabeza de Monteco, affluent of Río Autana, 110–120 m, 4°52'N, 67°27'W, *Guanchez & Melgueiro 3451* (holotype, VEN; isotype, VZM).

Terrestrial; internodes short, drying 2.5 cm diam.; cataphylls persisting semi-intact; petioles 30 cm long, sheathing 1.7 cm at the base, cross-sectional shape not known; geniculum 0.8–1 cm long, remote from the blade base by 4.5 cm; blades pergamentaceous to subcoriaceous, broadly ovate, gradually acuminate at apex (the acumen 25 mm long), weakly cordate at base, 33.5 cm long, 22.5 cm wide; sinus 1.8 cm deep; the lower surface brown-punctate; the lower naked portion of midrib subterete and narrowly sulcate; posterior rib naked 1.5–2 cm; primary lateral veins ca. 8 per side, slender, departing midrib at ca. 40° angle, the lower 2–3 pairs at broader angle, arcuate-ascending to the margin; collective vein lacking or arising only in the upper fourth of the blade. *Inflorescences* slightly longer than leaves; peduncle 58 cm long; spathe reflexed-recurved, narrowly ovate, 9 cm long, 2.5 cm wide, acuminate at apex, decurrent 1.2 cm at base; stipe 1.7 cm long in front, 4 mm long in back; spadix weakly tapered, 8.2 cm long (apex missing), 7 mm diam. at anthesis, to 1.1 cm diam. in pre-fruiting condition. *Infertescence* not known.

Anthurium guanchezii is endemic to Venezuela and known only from the type locality at 110 to 120 m in a region which lies near the boundary between the tropical moist forest and premontane wet forest life zones.

The description given here is based only on the original type description and the species is therefore imperfectly known. Still, there is little doubt that *A. guanchezii* is a member of sect. *Pachyneurium* and is probably most closely related to *A. iramirezae*, which is also glandular-punctate, but differs in lacking a remote geniculum and in having a cartilaginous rather than a subcoriaceous blade with basal veins not naked at the sinus. In addition, *A. iramirezae* has a narrower spathe, a sessile spadix and occurs at 1,350 m on granite outcrops.

Anthurium guanchezii is also related to *A. bonplandii* because of its glandular-punctations. It is easily distinguished from any of the varieties of that species by its ovate blades with a remote geniculum. While some specimens of *A. bonplandii* subsp. *bonplandii* have a remote geniculum, none have such ovate blades.

VENEZUELA: AMAZONAS: Dept. Atures, Caño Cabeza de Manteco, affluent of Río Autana, "Manteco" rapids, 110–

120 m, 4°52'N, 67°27'W, *Guanchez & Melgueiro 3451* (VEN, VZM).

Anthurium halmoorei Croat, Ann. Missouri Bot.

Gard. 70(2): 301. 1983. TYPE: Mexico. Nayarit: along Hwy. 28 between Tepic and Jaliscoacán at Km 15.5, ca. 1,000 m, *Croat 45337* (holotype, MO 2690192-193; isotypes, CAS, K, MEXU, MICH, SEL). Figures 146, 147, 152.

Epiphytic or epilithic; stem 1.5–5 cm diam.; roots dense, spreading to descending, tan to greenish, smooth, short, and stubby, 7–10 mm diam.; cataphylls coriaceous, lanceolate, (5)17–23 cm long, acute and apiculate at apex, green, sometimes reddish, drying tan to brown, persisting with apex remaining intact, dilacerating at base. *Leaves* erect to spreading; petioles 15–26 cm long, 7–18 mm diam., D-shaped to thicker than broad, broadly sulcate adaxially with the margins sharply raised to obtuse, sharply 1-ribbed to obscurely 3-ribbed or rounded abaxially, the surface pale-speckled; geniculum paler and thicker than petiole, 1–2.5 cm long; blades coriaceous, oblanceolate to oblanceolate-elliptic, short-acuminate at apex (the acumen shortly apiculate), acute to attenuate at base, 32–108 cm long, 10–43 cm wide, broadest above the middle, the margins prominently undulate; upper surface semiglossy, medium green, lower surface semiglossy to matte, much paler; midrib flat to obtusely angular at base, becoming narrowly acute and then flat toward the apex above, prominently higher than broad and 1-ribbed at base, becoming convexly raised toward the apex; primary lateral veins 5–14 per side, departing midrib at 40–55° angle, straight then arcuate-ascending to the margin, convexly raised, much paler than surface above, prominently raised and paler than surface below; interprimary veins less conspicuously raised above, visible and flat below; tertiary veins obscure above, darker than surface below; collective vein arising from near the apex or absent, flat to weakly sunken above, weakly raised and darker than surface below, 6–11 mm from margin. *Inflorescences* spreading, shorter than leaves; peduncle 32–43 cm long, 9–10 mm diam., 2–2.5 × as long as petiole, subterete, obscurely angled; spathe spreading, subcoriaceous, green, sometimes tinged with purple (B & K yellow-green 6/10), ovate to broadly ovate, 13–16 cm long, 6.2–9.7 cm wide, broadest near the base, inserted at 70° angle on peduncle, acuminate at apex, acute at base; spadix green, purple or green heavily tinged with purple (B & K red-purple 2/5), cylindrical,

9–21 cm long, 11–27 mm diam. near base, 5–7 mm diam. near apex; flowers 4-lobed, 2.4–2.8 mm long, 2.7–3.2 mm wide, the sides sigmoid; 8–14 flowers visible in principal spiral, 12–20 in alternate spiral; tepals matte, weakly punctate, minutely papillate; lateral tepals 1.5–1.8 mm wide, the inner margins convex; pistils slightly raised, green, tinged with purple in the area of stigma; stigma linear, 0.4–0.6 mm long, droplets appearing 4–5 days before stamens emerge; stamens emerging \pm rapidly from the base, inclined over the pistil; filaments exerted, ca. 0.3 mm long, 0.8 mm wide; anthers orange; thecae ellipsoid, scarcely divaricate; pollen orange, fading to white (B & K yellow 7/2.5). *Infructescence* 20–23 cm long, 3 cm diam., pendent; spathe usually persisting, green; berries pale yellow, greenish at tip, irregularly obovoid, 12–15 mm long, 7–9 mm diam.; mesocarp fleshy, with numerous raphide cells; seeds 2 per berry, pale tan, subglobose, weakly flattened, 5–6.5 mm long, 3.5–4.1 mm diam., ca. 2.5 mm thick, with a sticky appendage at both ends.

Anthurium halmoorei is restricted to western Mexico in the states of Nayarit, Jalisco, and Michoacán in seasonally very dry forests from 450 m to 1,000 m. It usually occurs on rocks on very steep slopes in forested areas.

This species is characterized by its generally oblanceolate or oblanceolate-elliptic blades with usually free-ending primary lateral veins; by its petiole which is acute abaxially; and especially by its ovate to ovate-elliptic spathe, green to purplish spadix, and greenish yellow mature berries.

Anthurium halmoorei is most easily confused with *A. schlechtendalii* subsp. *jimenezii*, which differs in having the petiole subquadrangular and usually flat abaxially, and in having a lanceolate spathe and red berries at maturity. The latter taxon occurs only in Guerrero and southern Oaxaca.

MEXICO: MICHOACÁN: Aguillilla, *McVaugh 24741* (MICH); Coalcomán de Matamoros, *Rzedowski 16707* (ENCB, MICH). NAYARIT: Tepic–Jalcocotán, at Km 15.5, Hwy. 28, 1,000 m, *Croat 45337* (CAS, F, K, MEXU, MICH, MO, SEL, WIS); E of Tepic–Navarrete road, Barranca, NW of Tepic, *Dressler 339* (MO, UC); Jalcocotán, *Gentry & Gilly 10734* (MEXU, US), *McVaugh 12140* (MICH), *Moore & Bunting 8692* (BH); 4 km SE of Pochotitán, 1,000 m, 21°37'N, 104°41'W, *Miller & Téllez 3163* (B, MO); Mirador El Águila, *McVaugh 15281* (MICH); NE of Santa María de Oro, *Feddema 703* (MICH); vic. Tepic, *Bates et al. 1554* (BH), *Dressler 1024* (UC), *Ferris 6816* (DS), *Lewis s.n.* (MICH). JALISCO: Mpo. Jalisco, El Tuito–Puerto Vallarta, *Anderson 6113* (ENCB, MICH); 3 mi. N of El Reflon on road to Tepic, *Norris & Taranto 12645* (CAS, MO); Autlán de Navarro, *McVaugh 10224* (MICH), *Wilbur 2289* (MICH); El Tuito–Puerto Vallarta, *Delgado 359* (MICH), *Hernández*

2608 (MEXU); S of San Pedro, *Koepfen & Iltis 593* (BH); Talpa de Allende, *McVaugh 23408* (MICH).

Anthurium hammelii Croat, Monogr. Syst. Bot.

Missouri Bot. Gard. 14: 109. 1986. TYPE: Panama. Bocas del Toro: 5 km ENE of Cerro Pate Macho, near Finca Serrano, NE of Boquete, 1,675 m, *Hammel 6160* (holotype, MO 2802252). Figures 148, 153.

Description based on dried material only. Epiphytic; stem 1 cm diam.; cataphylls subcoriaceous, 6 cm long, brown, persisting semi-intact; petioles 33–34 cm long, 4 mm diam., apparently subterete; geniculum 1 cm long; blades subcoriaceous, oblong to oblong-elliptic, acuminate at apex (the acumen flat, 15–20 mm long), obtuse at base, 30–31 cm long, 5.5–7 cm wide, broadest at or near middle, the margins weakly undulate; midrib convexly raised above, more prominently so below; primary lateral veins 9–11 per side, departing midrib at 60° angle, arcuate to the collective vein, raised above and below; interprimary veins few, almost as conspicuous as primary lateral veins; tertiary veins prominent above and below; collective vein arising from the base, less prominent than primary lateral veins, 2–4 mm from margin. *Inflorescences* erect, shorter than leaves; peduncle 28 cm long, 3 mm diam., slightly shorter than petiole, terete; spathe subcoriaceous, dark reddish purple, ovate-rounded, 8.5 cm long, 7 cm wide, broadest at or near middle, the apex round and minutely apiculate, the base cordate; stipe 1 cm long in front and back; spadix cream, cylindroid-ellipsoid, 2.1 cm long, 8 mm diam. midway, broadest at the middle; flowers rhombic, 1.5–2.4 mm long, 2–2.5 mm wide; 5–7 flowers visible in principal spiral; lateral tepals 1–1.5 mm wide, the inner margins rounded; pistils not emergent; stamens emerging well above tepals, then retracting to level of tepals, held in tight cluster above pistil; anthers 0.6 mm long, 0.6 mm wide; theca ovoid, scarcely divaricate. *Infructescence* not seen.

Anthurium hammelii is known only from the type collection made in Bocas del Toro, Panama, at 1,675 m in lower montane rainforest.

This species is distinguished by its leaves with the petiole longer than the blade, its oblong-elliptic blades, its large, ovate-rounded spathe, and cylindroid-ellipsoid, cream-colored spadix.

Anthurium hammelii is similar in overall appearance to *A. protensum* subsp. *arcuatum*, which differs in having proportionately shorter petioles, a much narrower spathe, and a more elongate, tapered spadix.