This species is recognized by its thick, erect to spreading leaves which dry yellow-green, its petioles which are sharply sulcate adaxially and 5–8-ribbed abaxially, and by its long-tapered, deep purple spadix which becomes greenish brown at anthesis. It is also reported to have deep purple berries.

Anthurium leonianum might be confused with *A. dombeyanum*, which, in Ecuador, occurs only in the provinces of Loja and Tungurahua (only two collections are known from the latter province). *Anthurium dombeyanum* differs mainly in having the petioles rounded abaxially. In addition, the leaf blades of *A. leonianum* are conspicuously yellow-green on drying, while in *A. dombeyanum* they are usually brownish or dull grayish green. The spadix of *A. dombeyanum* is generally shorter than that of *A. leonianum*.

Anthurium leonianum also bears some resemblance to two species from central Colombia, *A. glaucospadix* and *A. caucavallense*. Both have, at least at times, yellowish green leaf blades on drying, though the color more closely approaches that of some specimens of *A. dombeyanum*. Although the cataphylls of the type specimen of *A. leonianum* at Berlin appear to be hooked and refolded, they are straight and lanceolate on living collections from the same area. It is here believed that the cataphylls of the type specimen are so shaped because of the way it was prepared. This character, along with the lower angle of the primary lateral veins (45–60 vs. 50–90°) and peduncle-petiole ratio (peduncles 4–5 vs. 1–2 times longer than the petioles in *A. leonianum*), serve to distinguish this species from *A. caucavallense*. *Anthurium glaucospadix* also differs in having the primary lateral veins depart the midrib at a broad angle, as well as in having a bluish green, glaucous spadix and red berries.

The name *Anthurium leonianum* was used in the Flora of Río Palenque (Dodson & Gentry, 1978), based on *Dodson & Tan 5389*, but that collection represents a new and unrelated species, *A. sparreorum*, described in the present treatment. The latter species has a thinner blade with the collective veins arising at the base and running close to the margin, whereas *A. leonianum* has a coriaceous blade with the collective vein arising from one of the primary lateral veins in the upper ¼ of the blade. A character that may be used to distinguish the two immediately is the number of primary lateral veins per side (10–15 in *A. leonianum* vs. (15)20–30 in *A. sparreorum*). *Anthurium sparreorum* is known from lower elevations, generally around 200–300 m in premontane wet forest.

ECUADOR. IMBABURA: Ibarra–Lita, 1,500 m, *Cobb 21 E* (MO, QCA); Salinas–Lita, 900–1,000 m, 0°45′N, 78°15′W, *Juncosa 2262* (K, MO); Tercer Paso, on San Lorenzo RR, 1,100 m, *Madison et al. 4960* (MO, SEL); Volcán Cotacachi, W slopes, *Sodiro s.n.* (B, QPLS); Río Meta, Ibarra–Lita, E of La Carolina, border of Carchí Prov., 1,090 m, *Croat 38986* (MO).

Anthurium lindmanianum Engl., Bot. Jahrb. Syst. 25: 367. 1898. TYPE: Brazil. Mato Grosso: Cupim near Palmeiras, *Lindman 2455 1/2* (lectotype, S). Figures 175–177.

Anthurium douradense Rizzo, Rev. Goiana Med. 16: 31–33. 1970. TYPE: Brazil. Goias: Serra Dourada, *Rizzo 4532* (holotype, UFG; isotype, RB).

Terrestrial or epilithic, rarely epiphytic; stem frequently creeping over ground, 1–5 cm diam.; roots moderately dense, descending, fuzzy, drying 2–4 mm diam.; cataphylls subcoriaceous, lanceolate, 2–9(15) cm long, acute to acuminate at apex, green, drying reddish brown, persisting ± intact or as coarse linear fibers. *Leaves* erect-spreading; petioles (2)11–57(65) cm long, (2)8–18 mm diam., bluntly to sharply D-shaped, flattened to slightly sulcate adaxially, rounded abaxially, the surface pale-speckled; geniculum slightly paler and thicker than petiole, (0.2)0.8–2 cm long; blades coriaceous to subcoriaceous, oblanceolate to broadly elliptic, acute to obtuse to short-acuminate at apex, cuneate-attenuate to obtuse to rounded, rarely shallowly cordate at base, (14)20–84 cm long, (4.2)12–29(34) cm wide, broadest usually above the middle, the margins usually flat, sometimes broadly undulate; upper surface glossy to semiglossy, medium green (B & K green 2/2.5), lower surface matte, paler; major veins sometimes paler on both surfaces; midrib convexly raised above, prominently and acutely raised below (about as high as broad); primary lateral veins (4)7–10(14) per side, departing midrib at (30)40–60(80)° angle, arcuate-ascending to the margin or to the collective vein, raised, sometimes becoming sunken toward margin above, raised below; tertiary veins weakly etched, and sometimes concolorous above, prominulous and darker below, conspicuously raised on both surfaces when dried; collective vein arising from about the middle to near the apex of the blade or absent, sunken above, weakly raised below, 5–13 mm from margin. *Inflorescences* erect to spreading, equaling or longer than leaves; peduncle (15)35–134 cm long, (1)2–12 mm diam., 1.3–2.3(14.6)× as long as petiole, terete; spathe spreading to reflexed, sometimes recurled, subcoriaceous, withering and/or deciduous, yellow-green (B & K yellow-green

8/10), lanceolate, (3)5–17 cm long, (0.5)1–2 cm wide, broadest near the base, inserted at 20–40° angle on peduncle, long-acuminate at apex (the acumen ca. 3 mm long), acute to obtuse at base; spadix pinkish to dull brownish olive-green to dark red or purplish violet, oblong, weakly tapered, sessile or stipitate to 4 cm, erect, (1.5)4–12(20) cm long, 3–7 mm diam. midway, 1.5–4 mm diam. near apex, moderately tapered; flowers 4-lobed, 1.8–3 mm long, 1.2–2.7 mm wide; (2)4–9 flowers visible in principal spiral, 4–10 in alternate spiral; tepals matte, minutely papillate; lateral tepals 0.9–2.2 mm wide, the inner margins straight to broadly rounded, sometimes minutely and unevenly erose, the outer margins 2–5-sided; pistils not emergent before anthesis, slightly raised at anthesis, caviform with erect, reddish margins; stigma linear becoming circular, 0.2–0.3 mm long; lateral stamens preceding the alternates by 2–16 spirals, the 3rd stamen preceding the 4th by 7–10 spirals; anthers 0.4–0.6 mm long, 0.4–0.7 mm wide, inclined over and obscuring the pistil; thecae ovoid-ellipsoid, not divaricate. *Infructescence* with spathe deciduous; spadix normally more than 15 cm long, bearing berries in the basal portion only; berries dark purple to dark red toward the apex, white below, obovoid, "hollow" when rehydrated, 7–9 mm long, 4–6 mm diam.; seeds 1–2 per berry, 5.5–6.8 mm long, 3–3.5 mm diam., 2–2.3 mm thick, weakly apiculate at both ends, pale-punctate.

Anthurium lindmanianum is known from Brazil in the states of Mato Grosso, Rondônia, Goiás and in the southern and central eastern parts of Pará at 90 to 1,000 m. It grows terrestrially in sandy soil, frequently along stream banks, among or on sandstone rocks, in gallery forest and scrub.

This species is recognized by its broadly elliptic or sometimes oblanceolate blades, which are rounded to abruptly acuminate at the apex, by its long-pedunculate inflorescence, and by its berries, which are purple at the apex and whitish at the base. It is also distinguished by its stem creeping over the surface of the ground and by its leaves being erect from the apex of the stem. The stem may even be subterranean. In cultivation, the species grows best when given direct access to water, e.g., when growing on a large brick placed in a pool of water. The appressed stem adheres closely to the brick (above the water line) in this situation.

Anthurium lindmanianum is most easily confused with *A. bonplandii* subsp. *bonplandii*, which occurs in the same state of Brazil (Pará). Typical specimens of *A. bonplandii* from Pará, all collected north of the Rio Amazonas, mostly differ in having conspicuous, dark brown plate glands on the undersurface of the leaf blades, and prominently raised tertiary venation on both leaf blade surfaces on drying. In contrast, the tertiary venation of *A. lindmanianum* is inconspicuous on the upper surface and generally less conspicuous on the lower surface on drying, and dark brown (or colorless) glandular punctations are normally not present and are not conspicuous where observed. In Pará, *A. lindmanianum* occurs in the area of the Serra dos Carajas in the central eastern part of the state, and in the Serra do Cachimbo (including the immediate lowlands to the north, i.e., the Rio Cururú) in the southwest. Thus, the species appears to prefer upland areas, a trend which continues toward the south, where it is more prevalent.

A few collections from Pará deserve mention, being rather markedly different from typical material and possibly meriting subspecific recognition once the taxon is better represented in herbaria by collections from this area. These collections, *Berg & Henderson 493*, *Bockerman 248*, *Sperling et al. 5658*, and *Secco et al. 136*, are all smaller than average for the species in all aspects and have a prominently stipitate spadix. In addition, the peduncle may be up to 14.6× larger than the petiole (vs. 1.3–2.3 times for typical material), and the spadix of two of these collections is reported as "black."

BRAZIL. Cultivated at Munich Bot. Gard., *Bogner 586* (MO); cultivated by Burle-Marx, *Croat 57174* (MO); cultivated at Tropic World, San Diego, California, *Croat 57157* (MO). GOIÁS: Rio Araguaia, 6 km NW of Piranhas, 700 m, *Irwin et al. 17703* (IAN, K, MO); Serra do Caiapo, 12 km S of Caiaponia, near small creek, 720 m, *Hutchison 8505* (MO); 48 km S of Caiaponia, 800–1,000 m, 17°12′S, 51°47′W, *Irwin & Soderstrom 7239* (MO, SEL), *Prance & Silva 59634* (K, NY); Serra Dourada, *Rizzo 4532* (RB, UFG); 1.3 km NW of junction with road to Mossâmedes on GO 070 from Goiania to Goías, 750–800 m, 15°57′S, 50°02′W, *Thomas et al. 5778* (NY). MATO GROSSO: 30 km ENE of Barra do Garcas, 450 m, *Anderson 9785* (RB); Chapada dos Guimaraes, above Veu da Noiva, 720 m, *Prance et al. 19164* (U); 5 km E of Chapada dos Guimaraes, road to EMBRATAL, 720 m, *Prance et al. 19375* (NY); 270 km N of Xavantina, 12°54′S, 51°22′W, *Gifford 146* (NY); Cerrado-Pantanal, Matas de Transição, 600 m, *Martinelli 366* (K); Serra Itapirapuan, *Lindman 2407 1/2* (cited by Engler (1898) as *2455 1/2*) (B, S); Araguaia, direção Rondopolis, *Hutchison 8548* (UEC); Fazenda Cachimbo, *Cordeiro 1087* (MG, US); base camp, 12°49′S, 51°46′W, *Harley et al. 10631* (K); Xavantina-São Felix, 12°54′S, 51°52′W, *Ratter et al. 960, 966* (K); Xavantina, 12°54′S, 51°22′W, *Gifford 145, 146* (K); Ponte de Pedra, *Hatschbach & Koczicki 33205* (K); Cupim, near Palmeiras, *Lindman 2455 1/2* (S); Rio Juruena, Cachoeira Misericordia, *Rosa & Santos 1998* (MG, MO, NY); Serra Ricardo Franco, 700–800 m, 15°S, 60°W, *Windisch 1623* (K); Serra do Roncador, 84–85 km N of

Xavantina, 550 m, *Hunt 5800* (K), *Hunt & Ramos 5740* (K, NY), *Irwin et al. 16446* (GH, IAN, MO, TEX); Mpo. Jauru & Pontes e Lacerda, 38 km SE of Pontes e Lacerda on BR 174 to Cáceres, 15°27′S, 59°04′W, *Thomas et al. 4694* (NY); Mpo. Luciaria, 43 km S of Pto. Alegre do Norte, 1–5 km W of BR158, 11°17′S, 51°45′W, *Thomas et al. 4440* (MO); Mpo. Rondonopolis, Serra da Petrolina, *Hatschbach 34125* (K). PARÁ: Maraba, Alto da Serra, *Secco et al. 136* (MO); Rio Cururú, canal SE of Missão Cururú, Alto Tapajós, 140 m, 7°35′S, 57°31′W, *Anderson 10602* (NY); 2 hours downstream from Missão Cururú, Mouro, Alto Tapajós, 100–200 m, 7°15′S, 57°55′W, *Anderson 11080* (COL, K, MO, NY, U); Tapajós, *Rosa & Santos 1906* (MG, MO, NY); Serra do Cachimbo, Cachimbo, 500–600 m, 9°20′S, 54°53′W, *Bockermann 248* (UB), *Pereira 1821* (RB); Serra dos Carajás, Serra Norte, AMZA exploration camp, 600 m, 6°00′S, 50°15′W, *Berg & Henderson 493* (F, GH, INPA, MG, RB, US, WIS); 2 km W of AMZA Exploration Camp N-5, 700 m, 6°04′S, 50°08′W, *Sperling et al. 5658* (MG, MO); 20 km NW of Serra Norte mining camp, less than 500 m, 5°55′S, 50°26′W, *Daly et al. 1697* (INPA, MG, MO); Serra Norte, Maraba, Clareira N-1, *Cavalcante & Silva 2631* (MG), *Silva et al. 1631, 1866* (MG); Mpo. Itaituba, Serra do Cachimbo, 5 km from Cachimbo airport, along Rio Formiga, 500–600 m, 9°23′S, 54°55′W, *Silva et al. 135* (NY, INPA). RONDÔNIA: ca. 35 km WSW of Ariquemes, Mineraceo Taboca at Massangana, 10°02′S, 63°20′W, *Zarucchi et al. 2650* (F, INPA, MG, MO, NY, RB, US); 4 km from Ariquemes, BR-364, 200–500 m, 9°55′S, 63°06′W, *Vieira et al. 548* (MG, MO, NY).

Anthurium linguifolium Engl., Pflanzenr. IV. 23B(Heft 21): 162. 1905. TYPE: Ecuador. Manabí: between El Recreo and Agua Amarga, *Eggers 15530* (lectotype, B; isolectotypes, F, K). Figures 178, 180.

Terrestrial; stem to 19 cm long, ca. 1 cm diam.; roots dense, ascending, green to whitish, pubescent to smooth, short, 1–1.5 cm long, 5–6 mm diam.; cataphylls subcoriaceous, linear-lanceolate, 3–10.5 cm long, obtuse to acute or acuminate at apex, drying reddish brown (B & K yellow-red 4/10), persisting ± intact, splitting at base. *Leaves* erect-spreading; petioles 4–7 cm long, 5–7 mm diam., erect-spreading, subtriangular, convexly raised to obtusely ribbed, sometimes broadly sulcate adaxially, the margins sharply raised, somewhat rounded and sharply 1-ribbed abaxially, conspicuously swollen to 14 mm diam. at base; geniculum slightly paler and conspicuously thicker than petiole, 0.5–2 cm long; blades subcoriaceous, oblong-linear, acute, sometimes apiculate at apex, acute to rounded at base, 25–85 cm long, 2.5–6.5 cm wide, broadest at or near the middle, the margins broadly and shallowly undulate; upper surface matte to semiglossy, medium green, lower surface matte, conspicuously paler; midrib above obtusely raised at base, becoming sharply and acutely raised and higher than broad toward the apex, pale-speckled, slightly paler than surface, below acute throughout, paler and more yellowish than surface; primary lateral veins 8–15 per side, departing midrib at 30–60(–70)° angle, not well distinguished from interprimary veins, slightly arcuate to the margin, weakly sunken to weakly raised in shallow grooves, rather obscure above; interprimary veins almost as conspicuous as primary lateral veins; tertiary veins obscure above, conspicuously darker than surface below, prominulous on both surfaces when dried; collective vein usually arising from near the apex, sometimes from near the base, obscure above, equally as prominent as interprimary veins below, 1–7 mm from margin. *Inflorescences* erect-spreading to spreading, shorter than or equaling leaves; peduncle 38–57 cm long, 4 mm diam., 7.6–19(38)× as long as petiole, green, terete; spathe spreading to reflexed-spreading, coriaceous, yellow-green, sometimes tinged with purple abaxially (B & K yellow-green 5/7.5), narrowly lanceolate, 7–8.5 cm long, 0.8–1.5 cm wide, broadest near the base, inserted at 45° angle on peduncle, acuminate at apex (the acumen inrolled), obtusely rounded at base; spadix glaucous, dull lavender-purple (B & K purple 5/2.5), sessile, slightly tapered, cylindroid, erect, 5–8.2 cm long, 7–9 mm diam. near base, 4–6 mm diam. near apex, broadest at the base; flowers 4-lobed, 2.1–2.6 mm long, (1.5)2.4–3 mm wide, the sides weakly sigmoid; (4)7–9 flowers visible in principal spiral, (3)5–7 in alternate spiral; tepals matte; lateral tepals 0.8–1.4 mm wide, the inner margins weakly concave to slightly rounded, the outer margins usually 2-, sometimes 3–4-sided; pistils emergent, bright green (B & K yellow 5/2.5); stigma ellipsoid, 0.3–0.4 mm long; stamens emerging in a regular sequence from the base, the laterals preceding the alternates by 9 spirals, the 3rd stamen preceding the 4th by 3 spirals, borne at edge of tepals in a circle around the pistil; anthers straw-colored (B & K yellow-red 9/10), 0.6 mm long, 0.8 mm wide; thecae ovoid, slightly or not divaricate; pollen pale yellow (B & K yellow 9/2.5), sweetly scented at anthesis. *Infructescence* with persistent spathe; fruits not seen.

Anthurium linguifolium is known from only two collections made in coastal Ecuador in Manabí province, between Bahía de Caraquez and Canoa, near sea level in a very dry tropical forest life zone.

This species is characterized by its linear-oblong, weakly undulate blades, short petioles, rather elongate stem with short, more or less erect roots throughout its length (above ground) and by its glaucous, dull lavender-purple spadix.