

collected at a rather low elevation (700–800 m) and is the only collection known from Morona-Santiago Province in Ecuador; its leaf blade is also unusually broad. *Vargas 6209*, from Cadena in Cuzco, Peru, is aberrant in having the peduncle only $\frac{3}{4}$ the length of the petiole (vs. (2)7–10× longer in typical *A. dombeyanum*), although the spadix is rather immature. Two collections from near Quillabamba in Cuzco, Peru (*Croat 50962*, *50919*) differ in having the petioles 3-ribbed abaxially, whereas most, if not all, other material has petioles rounded abaxially. *Barbour 2583*, from Amazonas in Peru, is remarkable in having a spathe 4 cm broad near the base and a petiole recorded as terete. The spathe of *Croat 58192*, from San Martín, approaches the dimensions of the Barbour collection.

ECUADOR: LOJA: Cerro Campana, Vilcabamba-Yanagana, Km 7, 1,900 m, 79°16'W, 4°17'S, *Lojtnant & Molau 15002* (AAU, GB); Loja-San Lucas, 2,100 m, *Asplund 18056* (S); Km 25–32, 2,200 m, *Dodson & Thien 597* (MO), *659* (MO, US, WIS); 19 km N of Loja, 2,070 m, 4°10'S, 79°10'W, *Croat 50847* (AAU, B, CM, GB, K, M, MBM, MO, QCA, SEL, US); Mollococha, 10 km W of Vilcabamba, 1,600 m, *Harling & Andersson 21769* (GB). MORONA-SANTIAGO: Gualaquiza, Misión Bomboiza, Misión Salesiana, 700–800 m, *Sparre 19272* (S). TUNGURAHUA: *Sodiro s.n.* (B); Agoyan, *Sodiro s.n.* (B; photo, MO). PERU: Without locality, *Dombey s.n.* (P). AMAZONAS: Prov. Bagua, 15.6 km E of main plaza in Bagua, 5 km above La Peca, 1,050–1,160 m, 5°33'S, 78°21'W, *Croat 58358* (MO, USM); 12 km E of La Peca (by trail), 1,700 m, *Barbour 2583* (MO); Bagua Grande, Longa Grande, Buenos Aires (Calpon), 1,420 m, *Diaz & Campos 3427* (MO); Bagua-Nazareth, 370 m, *Ellenberg 3538* (MO); Prov. Bongara, Bongara, 8 km above Pedro Ruiz Gallo (Jazan), road to Pomacochas, 1,500–1,600 m, 5°55'S, 77°53'W, *Knapp & Alcorn 7538* (MO); Río Utcubamba, SE of Naranjitos, *Gentry et al. 61375* (MO); Suyobamba, 3 km NE of Pedro Ruiz Gallo, 1,400 m, 5°55'S, 77°58'W, *Gentry et al. 61290* (MO); Chiclayo-Río Utcubamba, trail above hwy., NW of Pedro Ruiz Gallo, 1,300–1,400 m, *Young & Eisenberg 289* (MO); Moyobamba-Bagua, NW of Pedro Ruiz Gallo, 1,820 m, 5°52'S, 77°56'W, *Croat 58314* (MO); at jct. of road to Chachapoyas, NW of Pedro Ruiz Gallo, 1,440 m, 5°56'S, 77°56'W, *Croat 58321*, *58324* (MO, USM, VBD), *58322* (CAS, CM, MO, NY, RSA, USM), *58323* (K, MO, RSA, SEL, US, USM); Lago Pomacocha, Moyobamba-Chachapoyas, Km 339–340, Pomacocha, 2,200–2,250 m, 5°47'S, 77°53–54'W, *Croat 58254* (MO, NY, USM), *58281* (MO); Prov. Chachapoyas, Hacienda Shani, Chachapoyas, *Cevasco s.n.* (USM). AYACUCHO: Valle de San Miguel, Media Naranja, 2,000 m, 13°13'S, 73°95'W, *Guerrera 2034* (F). CAJAMARCA: Prov. Cajamarca, Huambos, 2,200 m, *Ferreya 8409* (NY, USM); Prov. Jaén, Río Chamaya, Bagua-Olmos, 35 km E of Pucara, 70 km W of Río Marañón bridge, 630 m, 6°0'S, 78°52'W, *Croat 58366* (AAU, C, CAS, CM, GH, K, KYO, MO, NY, SEL, U, US, USM). CUZCO: Prov. Calca, Vilcabamba, 2,700 m, *Vargas 3988* (CUZ); Prov. Convención, Choquellwanca, 1,450 m, *Vargas*

12947 (CUZ); Cuzco-Kiteni, Cocalpampa, 150 km NW from Cuzco, 1,210–1,435 m, *Núñez et al. 6816* (MO); Rosario Mayo, 950–1,200 m, *Chávez 3334*, *3336* (MO), *Vargas 20674* (US); Quillabamba-Cuzco, just S of Quillabamba, 1,050–1,200 m, 12°20'S, 72°44–45'W, *Croat 50919* (CM, MO), *50962* (COL, M, MO, MY, USM); Santa Teresa-Chaullay, at Quellomayo, 139 km from Cuzco, 1,200–2,600 m, 13°08'S, 72°36'W, *Núñez & Motocanchi 8752* (MO); Urusayhua, 1,400 m, *Chávez 507* (MO); Río Mopillo, Yupanqui-Río Apurimac, Pomobamba, 2,000 m, *Davis et al. 1261* (F, SEL); Río Urubamba, Quillabamba, 1,100 m, *Solomon 3111* (MO, F); Prov. Quispicanchis, Cadena, 1,060 m, *Vargas 6209* (CUZ); Masca Pata, Hda. Itio, 2,000 m, *Vargas 3053* (CUZ); Prov. Urubamba, Km 88–92, 2,500 m, *Vargas 3396* (CUZ); km 110 Machupicchu-Cuzco, 2,000 m, 13°09'10"S, 72°31'W, *Núñez 8679* (MO); 2,900 m, *Núñez 8423* (MO); Machupicchu, *Jackson & Jackson P-1* (F); 2,000 m, *Bogner 904* (K); 2,300 m, *Vargas 21642* (CUZ, MO); 2,300 m, *Zahner s.n.* (M); railway, Km 96, 2,300 m, *Palmer 181* (K); Laderas, 2,100 m, *Vargas 2982* (CUZ); Papacahua, 4 stops on railroad above Machupicchu, 2,500 m, 13°11'S, 72°30'W, *Croat 50969* (MO); Tankarata, 2,650 m, *Vargas 13576* (CUZ, US). HUÁNUCO: Tingo María Region, Huamincina, 1,800 m, *Woytkowski 34220* (F, G, MO, UC); Prov. Huánuco, Acomayo, 2,300 m, *Woytkowski 34331* (F, MO, UC); Río Tuleca, Huánuco-Tingo María, km 443, 6 km N of Acomayo, 2,450 m, 9°04'S, 76°04'W, *Croat 57842* (CAS, CM, MO, NY, RSA, SEL, US, USM). JUNÍN: Prov. Acobamba, Acobamba-Oxapampa, Carretera 20B, 23 km NE of Acobamba, 2,170 m, *Jones 9138* (LAM, MO); Prov. Tarma, Tarma-Oxapampa, 38 km NE of Tarma, on Carretera 20B, 2,226 m, *Jones 9105* (LAM); Tarma-San Ramón, 1,000–3,000 m, 11°10'S, 75°20–45'W, *Sullivan et al. 1067* (F, MO, SEL); 2,400 m, 11°10'S, 75°33'W, *Smith & Canne 5931* (B, MO); Carpapata, 2,400–2,500 m, *Cerrate 2810* (USM); Huasahuasi, 2,760 m, *Hutchinson 4164* (UC, US); Huacapistana, rd. to Palca, *Weberbauer 1975*, *2007*, *2158* (B); Huacapistana, 1,800–2,400 m, *Killip & Smith 24328* (NY, US); Matichaca, near Huacapistana, 2,100–2,200 m, *Ferreya 11180* (NY); 28–34 km NE of Tarma, 2,400–2,500 m, *Dillon & Turner 1354* (F, MO), *Croat 57707* (AAU, B, BM, K, MO, RSA, U, USM), *Gentry & Tredwell 37285* (MO). LA LIBERTAD: Río Santo Domingo, Piedra Grande, 1,670 m, *Macbride 3668* (F). PASCO: Prov. Oxapampa, Palmazu, 2,100 m, 10°32'S, 75°23'W, *Smith et al. 8495* (MO). SAN MARTÍN: Rioja-Pomacocha, km 291, near Amazonas border, Venceremos, 1,850 m, 5°45'S, 77°40'W, *Gentry et al. 45343* (MO); Moyobamba-Chachapoyas, Km 400–404, 1,150–1,280 m, 5°45'S, 77°29'W, *Croat 58204* (MO, USM), *58192*, *58207* (MO).

Anthurium ernestii Engl., Pflanzenr., IV, 23B(Heft 21): 80. 1895.

a. **Anthurium ernestii** var. **ernestii**. TYPE: Peru. San Martín: Pongo de Cainarachi, *Ule 6325* (lectotype, B). Figures 124, 128–130.

Epiphytic; stem 6–20 cm long, 1–3 cm diam.; roots dense, green, whitish when dried, velutinous, 2–5 mm diam.; cataphylls subcoriaceous, 2-ribbed,

3–12 cm long, acuminate at apex, drying reddish brown to light brown (B & K yellow-red 4/10), persisting intact, eventually as reticulum of fine, straw-colored fibers with the apex remaining intact. *Leaves* erect-spreading; petioles 4–30 cm long, 3–13 mm diam., D-shaped, sulcate and with a medial rib adaxially, the margins acute, rounded to 1–5-ribbed abaxially; geniculum thicker and paler than petiole, 0.5–2.3 cm long; sheath 1.5–6 cm long; blades subcoriaceous, elliptic to oblanceolate to oblong-oblanceolate, acute to acuminate at apex (the acumen flat), attenuate to obtuse, rarely rounded at base, (25)40–60(131) cm long, (6)7–20(36) cm wide, broadest at or above the middle, the margins broadly undulate, frequently concave in the lower part of the blade; both surfaces matte to semiglossy, generally drying green; midrib broadly and acutely raised at base, becoming flat toward the apex above, acutely raised below with a prominent central ridge at base, becoming slightly convex at apex; primary lateral veins 6–15 per side, departing midrib at 30–70° angle, straight to arcuate-ascending to the margin, prominently raised near the midrib, flat to sunken near the margin above, prominently raised below, drying orangish; tertiary veins prominulous, raised on both surfaces; collective vein arising in the upper 1/3 of the blade, 5–13 mm from margin. *Inflorescences* erect; peduncle 3–25(45) cm long, 2–6 mm diam., 0.5–3(5.7)× as long as petiole, pale green, terete; spathe erect to reflexed or recurved, subcoriaceous, green to green tinged with red at base (B & K yellow-green 6/7.5), lanceolate to broadly lanceolate, 4–12 cm long, 1–3(4) cm wide, broadest near base or sometimes at or near middle, inserted at 45–80° angle on peduncle, abruptly acuminate to acute at apex, acute at base; spadix pinkish to magenta to purplish or green at anthesis, sessile, rarely stipitate to 0.5–1 cm, cylindrical, slightly tapered, erect, slightly curved, 3–11(20) cm long, 3–14 mm diam.; flowers 4-lobed, 1–1.9 mm long, 1.4–1.7 mm wide, the sides sigmoid; 5–8(17) flowers visible in principal spiral, 7–11(16) in alternate spiral; tepals matte, densely papillate; lateral tepals 0.4–1 mm wide, the inner margins straight to convex, the outer margins 2–3-sided; pistils raised, the exposed portion rectangular to squarish, often reddish violet, darker than tepals; stigmas slitlike to ellipsoid, 0.2–0.6 mm long; stamens emerging in a regular sequence, the laterals preceding the alternates by up to 27 spirals, the 3rd stamen preceding the 4th by up to 25 spirals; filaments ca. 0.6 mm long, 0.8 mm wide; anthers purplish or pinkish to pinkish white, 0.2–0.7 mm long, 0.4–0.6 mm wide, inclined over and obscuring the pistil; thecae ellipsoid, not di-

varicate; pollen pale yellow fading to white. *Infructescence* spreading; spathe withered; berries red-violet to violet (B & K purple 3/10–4/10), subglobose to obovoid, rounded at apex, 4–10 mm long, 3–6 mm diam.; seeds 1–2 per berry, obovoid, 2–4 mm long, 1.5–2.5 mm diam., creamy brown, with sticky appendage at apex; mesocarp grayish, juicy, somewhat mealy.

Anthurium ernestii var. *ernestii* ranges throughout western Amazonia, from southern Colombia (Putumayo) to Peru (Amazonas, Loreto, San Martín, Huánuco, Pasco, and Madre de Dios), and western Brazil (Acre and Amazonas as far east as the Rio Madeira), mostly below 500 m (rarely to 800 m) in tropical moist, premontane wet, and tropical wet forest life zones.

This species is recognized by its fine, thin, pale brown to pale tan network of cataphyll fibers with the uppermost cataphylls often skeletally intact or nearly so and by its oblanceolate leaf blades which generally dry green or greenish brown with the primary lateral veins more or less orange (especially on the lower surface). Also characteristic is the generally short peduncle and especially the cylindroid spadix which is about 5–8× (rarely to 13×) longer than broad and often has a minutely prickly appearance owing to the tight clusters of stamens and the upturned tepals on dried collections (or more rarely the exerted styles).

Like most of the widespread species of sect. *Pachyneurium*, *A. ernestii* var. *ernestii* is quite variable overall and is not easily understood when only specimens representing a portion of the geographical and/or morphological extremes are at hand. Among the most variable characters for the species are spadix and fruit color. Spadix color has been reported as greenish yellow, pale green, pale olive-green, orange-buff, pink, pinkish, yellowish pink, grayish pink, light purplish pink, reddish, reddish brown, light pink-brown, purplish white, light violet, violet, pale purple, purple, reddish cream, or cream turning magenta. It is generally not a dark color (at least at anthesis), nor a color easily qualified. As in many species of *Anthurium*, the spadix often changes color during the course of anthesis. Fruits are variously described as violet, dark violet, bright purple, purple, or red.

The morphological plasticity of *Anthurium ernestii* is rather remarkable and is geographically clinal in nature, with plants increasing in size from north to south. In Ecuador, most notably in Napo, plants tend to be relatively small with short petioles and small inflorescences, and leaves mostly drying distinctly green with the characteristic or-

angish primary lateral veins. Additionally, leaf blades are proportionately narrower in Ecuador (averaging $4.6\times$ longer than broad) than in Peru (averaging $3.4\times$ longer than broad).

Peru is believed to be the center of distribution for the broadly interpreted taxon comprising *Anthurium ernestii*, and the departments of Loreto (including newly created Ucayali Department), San Martín and Madre de Dios in particular harbor the greatest amount of morphological diversity. This is particularly true of the Río Huallaga and Río Ucayali basins (especially the region between the east banks of the latter and Acre, in Brazil).

In Loreto, and to a lesser extent in Huánuco and Pasco, the specimens seen exhibit an overall tendency toward a significant increase in size and show a greater departure from the "typical" condition of leaves drying green or greenish. Many dry brown or brownish green, but still largely exhibit the orangish primary lateral veins.

Anthurium ernestii typically has a peduncle about twice as long as the spadix, but in San Martín Department a few collections from Distrito Tocache Nuevo are very large in overall size and have peduncles 30–42 cm long and about $3\times$ longer than the spadix. The number of flowers per spiral for the spadices of these plants represents the higher range limit for the taxon.

Peduncle length in relation to petiole length is greater in the northern part of the range (a collection from southern Colombia has a peduncle $5.7\times$ longer than the petiole, the greatest disparity observed). In Peru, the peduncles are normally about equally as long as the petioles. Overall, the peduncle is commonly no more than $3\times$ longer than the spadix.

Anthurium ernestii appears to be most closely related to *Anthurium galactospadix*. It differs at once from *A. ernestii* in having the spathe longer than the stouter spadix, and in having more (13–28) flowers per spiral.

Anthurium ernestii is apparently also closely allied to *A. uleanum*, which is largely sympatric. In general, *A. uleanum* may be distinguished from *A. ernestii* by its more slender, glaucous-looking spadix, longer peduncle and petioles, and leaf blades which mostly dry brown. In addition, *A. uleanum* lacks the characteristic pale, skeletally intact cataphylls and orangish drying primary lateral veins of *A. ernestii*. Occasionally, spadices of dried collections of what are believed to be *A. ernestii* var. *ernestii* may have a thin, waxy layer when they are very young, but this is usually soon sloughed off, at least before anthesis. *Harling 1118* is an example.

Anthurium ernestii comprises two varieties, with var. *ernestii* encompassing the range of the species. Variety *oellgaardii*, which occurs in central Ecuador in Pastaza, differs from the typical variety in having a proportionately more slender, tapered spadix, a spreading, rather than erect, peduncle, and leaves which dry bright green. In Ecuador, peduncle length for var. *ernestii* ranges up to the lower limit for var. *oellgaardii*, but rarely exceeds it and is often much shorter.

A source of possible confusion is a Field Museum photograph of the type of *A. ernestii*. It depicts two different herbarium specimens. The one on the left (*Ule 6325*) is the lectotype of *A. ernestii*. The specimen on the right (apparently now lost) is labeled *Ule 5776* and closely resembles the specimens discussed under *A. galactospadix* (*Cid & Nelson 2563*, *Prance et al. 7471*). The latter specimen consists of part of a leaf blade, a petiole, and an inflorescence. This specimen apparently represents a mixed collection since a note on the specimen indicates that *Ule 5776* is actually a Gesneriaceae and that the specimen in the photograph is possibly *Ule 5788*. However, *Ule 5788*, represented by a plant at Geneva, is a species with a much shorter petiole than the one depicted in the photograph.

BRAZIL. ACRE: Mpo. Cruzeiro do Sul, Mpo. Caramari Amazonas, Rio Jurua, N of Cruzeiro do Sul, 150 m, $7^{\circ}13'S$, $72^{\circ}13'W$, *Croat 62482* (F, MO, TEX), *Croat 62492* (MO); Rio Moa, Boiador, 150 m, $7^{\circ}37'S$, $72^{\circ}37'W$, *Croat & Rosas 62302*, *62303* (CAS, INPA, MO), *62408* (INPA, MO). AMAZONAS: Boca do Acre, *Prance et al. 2338* (INPA); Rio Jurúa, *Ule 5788* (G); Mpo. Humayta, Rio Madeira, Tres Casas, *Krukoff 6097* (NY), *Krukoff 6496*, *6548* (GH, NY), *Krukoff 6547* (GH, K, NY). COLOMBIA: PUTUMAYO: El Wiskey, 13 km S of Umbria, vic. Finca Santa María, 300 m, *Plowman 2066-A* (F). ECUADOR: MORONA-SANTIAGO: Patuca, 600 m, *Harling 1118* (S); Río Paute, Méndez, 700 m, *Harling 1090* (S); Méndez-Paute, 600 m, $2^{\circ}44'S$, $78^{\circ}19'W$, *Lojtnant & Molau 14549* (AAU); Yurupaza, 600 m, $2^{\circ}40'S$, $78^{\circ}14'W$, *Harling 984* (S). NAPO: 3 km E of Anangu, Communa San Isla, 260 m, $0^{\circ}29'S$, $76^{\circ}21'W$, *Lavesson et al. 39799* (AAU); Puerto Bolívar-Comunidad Siona, S of proximity of Victoriano Criollo, *Jaramillo & Coello 2850* (AAU, QCA); Puerto Napo-Puerto Misahualli at jet. with Río Napo, 3.5 km E of Puerto Napo, $1^{\circ}02'S$, $77^{\circ}47'W$, *Croat 58885* (MO); 2–5 km SSW to WSW of San Pablo de las Secoyas, path to Shushufindi, 300 m, $0^{\circ}15'S$, $76^{\circ}21'W$, *Brandbyge et al. 32548*, *32796*, *33359*, *33412*, *36222* (AAU); trail to Shushufindi, E of San Pablo de las Secoyas, *Jaramillo & Coello 2685* (AAU, QCA); N of San Pablo de las Secoyas, *Jaramillo & Coello 2804* (AAU, QCA); Orellana, Sector Huashito, 20 km N of Coca, 250 m, $0^{\circ}20'S$, $77^{\circ}05'W$, *Gudino 211* (MO); San Pueblo, 35 mi. E of Lago Agrio, *Hodgson 165* (K); Lago Agrio-Puerto El Carmen de Putumayo, vic. Tarapoa, 76 km E of Lago Agrio, 240 m, $0^{\circ}07'N$, $76^{\circ}23'W$, *Croat 58632* (MO); Río Aguatico, Cuyabeno,

S of the river, 200 m, 0°17'S, 75°53'W, *Holm-Nielsen* et al. 21543 (AAU, MO); Dureno, *Pinkley* 245 (ECON), *Jaramillo & Coello* 3029 (QCA); Lago Agrio, 7.2 km S of Río Aguarico, 270 m, 0°02'N, 76°51'W, *Croat* 58643A (MO, NY, QCA), 58642 (MO, QCA); 350 m, 58689 (MO, QCA); 17.3 km N of Lago Agrio, 0°07'N, 76°50'W, *Croat* 50304 (MO); Lagunas de Cuyabeno, 300 m, 0°01'S, 76°11'W, *Brandbyge* et al. 33983 (AAU), 36079 (AAU, MO); 265 m, *Poulsen* 80804 (AAU), *Nielsen* 76092 (AAU); Reserva Faunística de Cuyabeno, N of Laguna Grande, 265 m, 76°11'W, 0°01'N, *Balslev* et al. 84417 (AAU); Río Shushufindi, near confluence with Río Aguarico, 300 m, 0°18'S, 78°20'W, *Balslev* 4831 (NY); Tena-Puyo, 5 km S of bridge over Río Napo, 510 m, 1°05'S, 77°47'W, *Croat* 58921 (MO); Tena, *Asplund* 9423 (S); 5.7 km W of Tena, 500 m, 0°01'S, 77°51'W, *Croat* 58855 (MO, QCA); Río Cotapino, 50 km NE of Tena, Cotapino, 500 m, *Harling* et al. 7023 (GB); Río Arajuño, Hacienda Aguida, 450 m, 1°07'S, 77°36'W, *Marles EE 13A* (F); Río Due, Baeza-Lago Agrio, Km 65, trail to Chuseuyacu, "Zona Reserva Ecológica Cayambe-Coca," *Jaramillo & Coello* 3061 (AAU); Río Napo, Ahuano, 1°04'S, 77°31'W, *Lugo* 245 (GB, MO); Parque Nacional Yasuni, Anangu, 260-350 m, 0°31'-32'S, 76°23'W, *Lawesson* et al. 39473 (AAU), *Luteyn & Mori* 8530 (NY), *Luteyn* et al. 8700 (MO); Pozo petrolero Daimi 2, 200 m, 0°55'S, 76°11'W, *Cerón & Hurtado* 4088, 4238 (MO); near confluence with Río Aguarico, Ballesteros (military post), *Harling* et al. 7368 (GB, MO); confluence of Río Coca and Río Napo, Coca, 350 m, *Harling & Andersson* 11798 (GB); Coco-Las Sachas, 0°25'S, 76°55'W, 250 m, *Ceron* et al. 2425 (MO, QCNE); Coca, Río Payamino, 350 m, *Harling & Andersson* 11928 (GB); Payamino, Reserva Florística "El Chuncho," 0°30'S, 77°1'W, 250 m, *Ceron* et al. 2275 (MO, QCNE), 2286 (MO, QCNE), 2516 (MO, QCNE); E of Puerto Misahuallí, 400 m, *Besse* et al. 1194 (SEL); 8 km below Puerto Misahuallí, 1.5 km S of Río Napo, 450 m, 1°04'S, 77°36'W, *Palacios* et al. 448 (MO, NY, QAME, QCNE); Santa Rosa, 32 km E of Tena, 0°01'N, 77°30'W, *Lugo* 2065 (GB); Río Napo-Tena, 8 km SE of Tena, Shingupino, 480 m, *Grubb* et al. 1530 (K, NY); Jatún Sacha Biological Reserve, 8 km ESE of Puerto Misahuallí, 400 m, 1°04'S, 77°37'W, *Miller* et al. 2198, 2200 (MO); 400 m, *Cerón* 1330 (MO, QCNE), 1742 (MO, QCNE), 1694 (MO, QCNE), 2578 (MO, QCNE), 2671 (MO, QCNE); Río Pacuno, Bimbino, 300 m, 0°40'S, 77°20'W, *Whitmore* 746 (K); Río Putumayo at Colombian frontier, Baeza-Puerto El Carmen de Putumayo, 43.7 km SE of Lago Agrio, 16.9 km SE of Dureno, 2.1 km W of Guarumo, 240 m, 0°7'N, 76°39'W, *Croat* 58591 (MO, QCA); Río Wai si aya, northern tributary of Río Aguarico, 300 m, 0°15'S, 76°21'W, *Brandbyge* et al. 32652, 32653, 36195, 36199 (AAU); Yasuni Nacional Parque, 200 m, 0°55'S, 76°11'W, *Cerón & Hurtado* 3866 (MO), 230 m, 0°52'S, 76°05'W, *Cerón* 3345 (MO); Río Yasuni, 180-200 m, 1°05'S, 75°35'W, *Lawesson* et al. 43314, 43320 (AAU); Lago Garza Cocha, 200 m, *Lawesson* et al. 43500 (AAU); 80 km upriver from Nuevo Rocafuerte, 225 m, *Foster* 3671, 3703B (F), *Alarcon* 47 (QCA); Cantón Lago Agrio, Dureno, 350 m, 0°2'S, 76°42'W, *Cerón* 347 (MO), *Cerón & Cerón* 3131 (MO); Cantón Orellana, sector Huashito, 20 km N of Coca, 250 m, 0°20'S, 77°05'W, *Rubio* 259 (MO); Cantón Tena; Río Blanco community at headwaters of Río Huambuno, 6 km NNW of Ahuano, 440 m, 1°00'S, 77°40'W, *Kohn* 1136 (MO). PASTAZA: Puyo-Diez de Agosto, 8.2 km NE

of Diez de Agosto, 970 m, 1°27'S, 77°51'W, *Croat* 59051 (MO, QCA); Río Bobonaza, oil exploration camp Chichirota, 300 m, 2°22'S, 76°40'W, *Oellgaard* et al. 35301 (AAU); Río Capihuari, tributary of Río Pastaza, 285 m, 2°30'-31'S, 76°50'-55'W, *Oellgaard* et al. 35102 (AAU); Río Curaray, S side of river, mouth of Río Queramo, 230 m, 1°30'S, 76°32'W, *Neill & Palacios* 6775 (MO, NY, QAME), *Palacios & Neill* 719 (K, MO, QAME); N side of river, las lagunas Potoamo, 230 m, 1°30'S, 76°30'W, *Neill & Palacios* 6818 (MO, NY, QAME); Loroceachi, 200 m, 1°36'-38'S, 75°58'-59'W, *Jaramillo* et al. 30918, 31150, 31568, 31584 (AAU), 30965B (MO), 31188 (AAU, MO); Centro-Oriente, Tzapino, *Jaramillo & Coello* 3602 (QCA), 3644 (QCA); Tiwaeno, *Jaramillo & Coello* 3207 (QCA). PERU. AMAZONAS: Prov. Bagua, Río Cenepa, Isla de Chigkan, 330 m, *Kayap* 320 (MO); Quebrada de Apigagentsa, 720 m, *Kayap* 602 (MO); Quebrada Eseteketai, 240 m, *Kayap* 841 (MO); Huampami, ca. 5 km E of Chávez Valdivia, 200-250 m, 4°30'S, 78°30'W, *Ancuash* 1095, 1260, 1336 (MO), *Berlin* 2046 (MO), 2080 (MO, PMA), *Kujik* 72, 161, 237, 302 (MO); S of Huampami, S of river, 266-283 m, *Berlin* 1689 (MO); S of Huampami, trail to Sasa, 250 m, *Berlin* 1707 (MO); above Quebrada Tuhusik, 5 min. down river from Chávez Valdivia, 230-270 m, *Berlin* 560 (MO); Río Cenepa-Quebrada Kayamas, 270-300 m, *Berlin* 514 (MO); Río Huampami, 250-280 m, *Kayap* 1251, 1339 (MO); Río Maraño, above Pongo de Manseriche, 200 m, *Wurdaek* 2456 (US), *Mexia* 6132a (UC); Río Santiago, E of the river, Galilea, 180 m, *Huashik* 71 (MO); Quebrada Caterpiza, 2-3 km behind community of Caterpiza, 65 km N of Pinglo, 200 m, 3°50'S, 77°40'W, *Huashik* 1793, 2025, 2086, 2275 (MO), *Tunqui* 395, 690, 712, 840 (MO); 1-2 km below La Poza, 180 m, *Leveau* 3, 264, 306, *Peña* 84 (MO); 400 m behind La Poza, 180 m, *Huashik* 142 (MO); behind house of Jaime Braga, *Leveau* 59 (MO); Chiriaco-Puente Venezuela, 43 km NE of Chiriaco, 350-800 m, *Barbour* 4429 (MO); E of Huampami, trail to Shaime, 200-600 m, *Berlin* 1918 (MO); trail E from La Peca into Serranía de Bagua, 1,000-1,400 m, *Gentry* et al. 23090 (MO); Quebrada Wampushik, 310 m, *Kayap* 936 (MO); Mesones-Muro Hwy., 8 km E of Montenegro, at km 286, 8 km E of Montenegro, 650 m, 5°20'S, 78°20'W, *Hutchison & Wright* 3764 (UC). HUÁNUCO: Tingo María Region, Bella Durmiente, 700 m, *Ferreya* 13808 (USM); Tingo María-Monson, Cuevas de Gucharo "Parque Nacional Tingo María," Río Patay, 650 m, 9°21'S, 76°12'W, *Croat* 57930 (MO); Prov. Leoncio Prado, Dtto. Rupa Rupa, Río Huallaga, 700-800 m, *Croat* 21023 (MO); 750-800 m, *Ploemman & Ramirez* 7568 (F, MO); Tingo María Region, 675 m, *Croat* 50978 (MO, RSA), *Solomon* 3388 (MO); W of Tingo María, 700-800 m, *Schunke* 10516 (MO); Prov. Pachitea, W of Codo de Pozuzo, 500-1,000 m, 9°40'S, 75°28'W, *Foster* 9217 (MO); Bosque Nacional de Iparia, Río Pachitea, 1 km above Tournavista, near Miel de Abeja, 300-400 m, *Schunke* 1827 (F, NY, US), 2240 (F). LORETO: Río Ampiyacu, Pucaurquillo, *Davis* et al. 819 (F, SEL); Prov. Alto Amazonas, Balsapuerto, 150-350 m, *Killip & Smith* 28695 (F, NY, US); Río Huallaga, Lagunas, *Croat* 17838 (MO, USM); Yurimaguas, 135-200 m, *Ferreya* 4949 (USM), *Killip & Smith* 28074 (NY, US); Puerto Arturo, below Yurimaguas, 135 m, *Killip & Smith* 27733 (NY, US); Río Parapanara, Yurimaguas, less than 500 m, *Croat* 17931 (MO); Río Pastaza, Andoas, 180 m, 2°55'S, 76°25'W, *Croat* 51255 (CM, MO), *Vásquez* 4435 (MO),

Vásquez & Jaramillo 848 (MO, RSA), *Vásquez et al. 2985* (MO); Prov. Loreto, San Jose de Parinari, 150 m, 4°32'S, 74°30'W, *Vásquez & Jaramillo 3326* (MO); Pucayacu (native community Shimaco-Urarina), *Vásquez 6036* (MO); Río Marañón, 1 hr. above Saramuro, 4°40'S, 75°00'W, *Díaz & Ruiz 872* (MO, SEL); Río Samaria, Atuncocha, *Vásquez et al. 4362* (MO); Río Santiago, 200 m, *Mexia 6142a* (MC, UC); Campamento 2-Flor de Yarina, 140-160 m, 5°02'S, 74°30'W, *Gentry et al. 38068* (MO); Prov. Maynas, Sacarita de Yanayacu, 90 m, *McDaniel & Rimachi 25633* (MO), *25668, 25684* (IBE, MO); Santa María de Nanay, Quebrada Yarina, 150 m, 3°55'S, 73°40'W, *Vásquez et al. 12200* (MO, US); Iquitos Region, Río Maniti, Recreo, NE of Iquitos, 115 m, 3°42'S, 72°50'W, *Vásquez & Jaramillo 1139* (MO); Río Itaya, Sanangal, 120 m, 4°10'S, 73°20'W, *Vásquez et al. 315* (MO); Quebrada Tahuayo, above Tamishiyaco, *Croat 19708, 19744* (MO); Río Amazonas, village Yanamono, near mouth of Río Napo, 150 m, 3°25'S, 72°50'W, *Croat 50125* (from a live plant collected by A. Gentry) (MO); Yanamono, Explorama Tourist Camp, *Croat 61762* (AMAZ, MO, WIS), *Gentry et al. 31496, 36637, 61833* (MO), *Gentry 29912A* (MO); Mariscal Castilla, 106 m, 3°55'S, 70°30'W, *Vásquez & Jaramillo 9344* (MO); Río Gueppi, tributary of Río Putumayo, 8 km from mouth of river, Puerto Peru-Río Napo trail, 200 m, *Gentry et al. 21963* (F); Explorama Inn, ca. 2 km W of Indiana, 130 m, *Gentry et al. 55988* (MO); Río Napo, *Croat 20188* (MO); Río Yaguasyacu, trib. of Río Ampiyacu, Brillo Nuevo, 2°40'S, 72°00'W, *Balick et al. 1040* (GH); Prov. Maynas, Dist. Iquitos, Iquitos Region, Río Momón, Quebrada Momoncollo, 200 m, 3°43'S, 73°20'W, *Croat 51223* (BM, CAS, MO, USM); Prov. Maynas, Dtto. Amazonas, Quebrada Yanamono, below Indiana, 120-140 m, *Rimachi 1198* (MO). MADRE DE DIOS: serranía across Río Alto Madre de Dios from Shintuya, Pantiacolla, 480-840 m, *Gentry et al. 27359* (MO); confluence of Río Tambopata and Río La Torre, 39 km SW of Puerto Maldonado, 12°50'S, 69°20'W, *Smith et al. 118, 610* (US), 638 (NY, US), *Smith 230* (US), *Smith 307* (MO, US); Manú National Park, Cocha Cashu Uplands, 400 m, 11°45'S, 71°0'W, *Nunez 5549* (CUZ, MO, USM); Río Manu, 350-400 m, *Davidson 117* (MO), *Foster 5811* (F), *Foster & Terborgh 6482* (F); Tambopata Wildlife Reserve, 30 km S of Puerto Maldonado, 260 m, 12°15'S, 69°17'W, *Young & Stratton 120, 141* (MO), *Young 18* (MO, NY); Prov. Manu, Río Palotoa (Río Pantiacolla), tributary of Alto Madre de Dios, NW of Shintuya, 500 m, *Foster & Terborgh 6749* (F). PASCO: Prov. Oxapampa, Iscozain-Villa America, 350-450 m, 10°11'S, 75°15'W, *Smith 2854* (MO, US); Palcazú Valley, Iscozain, less than 500 m, *Salick 7265* (MO); Río Pichis, 10 km downriver, E of island, Puerto Bermudez, Reserva Musmquiqui "Nuevo Hoboken," *Foster & Wright 8041, 8127* (F), *Kuntze 2006* (NY). SAN MARTÍN: Tocache Nuevo-Juanjui, 84 km S of Juanjui, 14.1 km beyond bridge over Río Pulcacha, 600 m, 7°41'S, 76°40'W, *Croat 58029, 58031A* (MO), *58030* (CM, MO, USM); Pongo de Cainarachi (Shanusí), *Ule 6325* (B); Prov. Mariscal Cáceres, Madre Mía, 760-880 m, *Boeke & Ramírez 1281* (NY); Prov. Mariscal Cáceres, Dtto. Tocache Nuevo, Tocache Nuevo, E of bridge, 500 m, *Schunke 7790* (MO); Quebrada de Cañuto, 500 m, *12107* (IBE); Colegio Agropecuario de Tocache, 400 m, 8°13'S, 76°32'W, *Croat 57994* (CAS, F, DUKE, GH, M, MO, RSA, SEL, TEX, US, USM), *57995* (B, K, MO, USM); 5 km S of Cachaco, 42 km N of Tocache Nuevo,

330 m, 7°58'S, 76°38'W, *Croat 58048* (MO, NY, USM); Fundo de Las Flores, 550-600 m, 8°10'S, 76°33'W, *Croat 50991* (CM, MO), *50992* (F, MO, SEL), *50993* (MO, NY), *50994* (B, CM, IBE, K, M, MO, RSA, USM); Fundo Geográfico del Sr. Luis Luden, Quebrada de Ishichimi, 400 m, *Schunke 8107* (MO); Granja Santa Ysabel, old rd. to Limón, 400 m, *Schunke 10326* (MO); Palo Blanco, W of bridge, 600-700 m, *Schunke 5624* (F, NY, U, US); Palo Blanco, E of bridge, road to Shunte, 500-800 m, *Schunke 7391* (CM, MO); Quebrada Pucayacu, chacra del Sr. Alfredo Sinarahua, 400 m, *Schunke 12001* (IBE); Río Huallaga, W of Escuela de Balsa Proana, 400 m, *Schunke 3637* (COL, F, NY, US); 1-2 km downriver from Tocache Nuevo, Miramar, 500 m, 8°10'S, 76°28'W, *Plowman et al. 11417* (F, USM); Quebrada de Tanta, *Schunke 4045* (F); Río Tocache, Fundo Melodia, road to Shunte, 800 m, *Schunke 7496* (CAS, MO); Río de La Plata, 550-650 m, 8°10'S, 76°25'W, *Croat 51000, 51029, 51033, 51035, 51041* (MO), *51002* (MO, USM); 5 km NE of bridge over Río Huallaga, Fundo del Sr. Manuel Gatica, less than 100 m, 8°08'S, 76°23'W, *Croat 57986* (MBM, MO, USM), *57987* (CM, MO, RSA, USM), *57988* (F, MO, P, US, USM); Fundo del Sr. Manuel Gatica, 660-700 m, *Schunke 12136, 12138, 12186* (MO); NE of Tocache Nuevo, 400-600 m, *Schunke 8354, 8372, 8373, 8375* (F, MO), *8376* (F, MO, NY). UCAYALI: Prov. Ucayali, Río Pisqui, 7°45'S, 75°01'W, *Tessman 3249* (NY); Prov. Colonel Portillo, Km 99 on Carretera Federico Basadre, Arbo-retum Von Humboldt, 350 m, 8°45'S, 75°05'W, *Díaz et al. 680* (K, MO); Arboretum Von Humboldt-Puerto Inca, 5 km E of Pucallpa-Tingo María road, Km 86, less than 500 m, 8°17'S, 74°58'W, *Croat 51051* (MO); Bosque Nacional de Iparia, NW of Río Ucayali, 1 km below Iparia, 250 m, 9°12'S, 74°30'W, *Schunke 2783* (F, NY).

b. *Anthurium ernestii* var. *oellgaardii* Croat, var. nov. TYPE: Ecuador. Pastaza: between oil exploration camp Chichirota & Destacamento Cabo Pozo, 300 m, 2°25'S, 76°39'W, *Oellgaard et al. 34881* (holotype, MO 3039089; isotypes, AAU, QCA). Figure 131.

Differt a var. typicum pro pedunculo longiore et spadice graciliore elongatoque.

Description based on dried material only. Epiphytic; stem 1-1.5 cm thick; roots dense, whitish or brownish, velutinous, moderately short, 1-3 mm diam.; cataphylls subcoriaceous, lanceolate, unribbed, 5-8 cm long, acuminate at apex, tan, persisting as reticulum of fine and dilacerated fibers. *Leaves* erect-spreading; petioles 7-15 cm long, 3-6 mm diam., D-shaped, sulcate with a prominent medial rib and erect margins adaxially, 3-5-ribbed abaxially; geniculum thicker than petiole, 0.5-1 cm long; sheath 3-5.5 cm long; blades subcoriaceous, obovate to oblanceolate-elliptic, short-acuminate at apex, gradually attenuate toward the base, acute to obtuse at base, 54-87(100) cm long, 18-34 cm wide, broadest above the middle, the margins broadly undulate; midrib acutely raised

above, obtusely raised and faintly reddish below; primary lateral veins 10–16 per side, departing midrib at 30–50° angle, straight to arcuate-ascending to the margin, prominently raised above, less so below; tertiary veins raised, prominulous; collective vein arising in the upper 1/3 of the blade, raised above and below, prominulous, 2–10 mm from margin. *Inflorescences* spreading-pendent; peduncle 23–54 cm long, 3–9 mm diam., 2.2–4.5(5.9)× as long as petiole, terete; spathe reflexed, subcoriaceous, greenish, sometimes tinged with violet-purple, oblong-oblancoate, 5–30 cm long, 0.9–3.5 cm wide, inserted at 40–70° angle on peduncle, acuminate at apex, acute at base; stipe 5–20 mm long in front, 1–10 mm long in back; spadix purple, cylindroid, slightly tapered, curved, erect, 7–8 cm long, 4 mm diam. near base, 3 mm diam. near apex; flowers 4-lobed, 1.2–1.5 mm long, 1.2–1.5 mm wide, the sides sigmoid; 5–6 flowers visible in principal spiral, 10–12 in alternate spiral; tepals minutely papilae, pale-punctate; lateral tepals 0.8 mm wide, the inner margins rounded, weakly scarious, minutely erose, the outer margins straight to rounded, 2-sided, paler; stigma oblong-ellipsoid, 0.3–0.7 mm long, 0.1–0.3 mm wide; anthers 0.5 mm long, 0.5 mm wide; thecae oblong-ellipsoid, slightly divaricate. *Infructescence* pendent; spathe persisting; spadix 7–60 cm long, 0.7–3 cm diam.; berries dark violet-purple in upper 1/3 becoming whitish toward the base, subglobose to cylindroid, 5–10 mm long, 3–4 mm diam.; pericarp with white raphide cells; seeds 2.8–4 mm long, 1.5–1.9 mm wide, 1.0–1.2 mm thick, with a gelatinous, transparent appendage at both ends.

Anthurium ernestii var. *oellgaardii* is known at present only from east central Ecuador in the province of Pastaza in the vicinity of the type locality on the Río Bobonaza and Río Bufo at about 300 m in a tropical moist forest life zone. Some of the collections are reported from periodically flooded forest dominated by *Mauritia* palms.

This variety is distinguished by its large, broadly oblanceolate blades, which dry green with reddish brown or yellowish major veins and are attenuate at the base, and especially by its long-pedunculate inflorescence which is spreading-pendent at anthesis and produces a stout purple infructescence to 60 cm long and 3 cm diam. in fruit. It is noteworthy that only the type specimen has an infructescence of such large dimensions; all others are substantially more slender.

This variety shares most features of the typical

variety, except the slender, tapered spadix. The latter differs in its proportionally shorter, cylindroid, spadix, generally shorter peduncles (in relation to petiole length) which are erect, and blades which usually dry brownish or, if greenish, very rarely clear green.

Anthurium ernestii var. *oellgaardii* can also be confused with *A. ulcanum*, which has similar leaves, a long peduncle, and a similar, tapered inflorescence. That species differs in having tepals which bear a waxy, powderlike, grayish white covering on drying, and leaves which dry brownish. In contrast, the tepals of *A. ernestii* var. *oellgaardii* are minutely granulose and glossy on drying, and the leaves dry green.

Most of the specimens examined are of fruiting material, and the upper limits of flowering spadix length are not known.

This variety is named in honor of Benjamin Oellgaard, who participated in several expeditions to Ecuador and who made all known collections of var. *oellgaardii*.

ECUADOR: PASTAZA: Río Bobonaza, Cachitama—outlet of Río Bufo, 300 m, 2°20'S, 76°40'W, *Oellgaard et al.* 34733, 34735, 34737 (AAU); Destacamento Cabo Pozo—oil exploration camp Chichirota, 300 m, 2°25'S, 76°39'W, *Oellgaard et al.* 34881 (AAU, MO), 34882 (AAU); Destacamento Cabo Pozo—La Boca, near outlet to Río Pastaza, 275 m, 2°30–35'S, 76°38'W, *Oellgaard et al.* 34933, 34937 (AAU); Río Bufo, N tributary of Río Bobonaza, 300 m, 2°20'S, 76°40'W, *Oellgaard et al.* 34764, 34801 (AAU), 34769 (AAU, MO).

Anthurium eximium Engl., Bot. Jahrb. Syst. 25: 412. 1898. TYPE: Costa Rica. Puntarenas: in forest near Punta Mala, *Tonduz 6768* (lectotype, BR; isolectotype, CR). Figures 125, 132.

Epiphytic; stem elongate, 10–100 cm long, ca. 1 cm diam.; roots ascending to descending, pale green, pubescent, moderately elongate, somewhat tapered, 3–5 mm diam.; cataphylls subcoriaceous, narrowly lanceolate, 3.7–10 cm long, acute at apex with a subapical apiculum, yellowish green, drying brown, persisting intact, eventually deciduous. *Leaves* spreading; petioles 7–12 cm long, 6–7 mm diam., D-shaped to subterete, broadly to narrowly sulcate adaxially, the margins blunt or sharp, not raised, abaxially rounded to 3-ribbed; geniculum thicker and paler than petiole, 0.5–1 cm long; blades subcoriaceous, narrowly oblanceolate, long-acuminate at apex (the acumen apiculate), narrowly acute to acute to obtuse or narrowly rounded at base, 23–80 cm long, 3.3–11.5 cm wide, broadest above the middle, the margins weakly undulate;