
New Species of *Philodendron* (Araceae) from Bajo Calima, Colombia

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ABSTRACT. Twenty new species of *Philodendron* Schott (Araceae) from Bajo Calima, Colombia, are described as new: *P. baudoense* Croat & D. C. Bay, *P. canicaule* Croat & D. C. Bay, *P. chrysocarpum* Croat & D. C. Bay, *P. coriaceum* Croat & D. C. Bay, *P. discretivenium* Croat & D. C. Bay, *P. dryanderæ* Croat & D. C. Bay, *P. furcatum* Croat, *P. heterocraspedon* Croat & D. C. Bay, *P. hiberisiccans* Croat & D. C. Bay, *P. monsalveae* Croat & D. C. Bay, *P. ninoanum* Croat & D. C. Bay, *P. oblanceolatum* Croat & D. C. Bay, *P. polliciforme* Croat & D. C. Bay, *P. rhodospathiphyllum* Croat & D. C. Bay, *P. rubromaculatum* Croat & D. C. Bay, *P. striatum* Croat & D. C. Bay, *P. suberosum* Croat & D. C. Bay, *P. tricostatum* Croat & D. C. Bay, *P. trojîtense* Croat & D. C. Bay, and *P. venulosum* Croat & D. C. Bay.

RESUMEN. Viente nuevas especies del *Philodendron* Schott (Araceae) de Bajo Calima, Colombia, se describen como nuevas: *P. baudoense* Croat & D. C. Bay, *P. canicaule* Croat & D. C. Bay, *P. chrysocarpum* Croat & D. C. Bay, *P. coriaceum* Croat & D. C. Bay, *P. discretivenium* Croat & D. C. Bay, *P. dryanderæ* Croat & D. C. Bay, *P. furcatum* Croat & D. C. Bay, *P. heterocraspedon* Croat & D. C. Bay, *P. hiberisiccans* Croat & D. C. Bay, *P. monsalveae* Croat & D. C. Bay, *P. ninoanum* Croat & D. C. Bay, *P. oblanceolatum* Croat & D. C. Bay, *P. polliciforme* Croat & D. C. Bay, *P. rhodospathiphyllum* Croat & D. C. Bay, *P. rubromaculatum* Croat & D. C. Bay, *P. striatum* Croat & D. C. Bay, *P. suberosum* Croat & D. C. Bay, *P. tricostatum* Croat & D. C. Bay, *P. trojîtense* Croat & D. C. Bay y *P. venulosum* Croat & D. C. Bay.

Key words: Araceae, Bajo Calima, Colombia, IUCN Red List, *Philodendron*.

This paper treats 20 new species of *Philodendron* Schott (Araceae) from Bajo Calima, Colombia. The aim is to succinctly publish these new species of *Philodendron* in preparation for a more thorough treatment in an entire flora of the Bajo Calima region, complete with thorough descriptions, keys, and illustrations. The Bajo Calima region, which covers roughly 80,000 ha. of lowland tropical rainforest and is located on the Pacific Andean slopes in central Colombia, is known to be one of the centers of diversity for Araceae. The majority of these (13) are members of section *Macrobelyium* (Schott) Sakuragui, while six are members of section *Philodendron* Schott. These two sections are the most common in the genus, which currently comprises nine sections. The only other sections known from Central America are section *Tritomophyllum* (Schott) Engler and section *Macrogynium* Engler. The other sections, *Baurisia* (Reichenbach ex Schott) Engler, *Philopsammos* G. S. Bunting, *Schizophyllum* (Schott) Engler, *Polytomium* (Schott) Engler, and *Campitogynium* K. Krause in Engler, are all restricted to South America. As is evident from the numbers of new species from this one small region alone, there remain many undescribed species of *Philodendron* in the Andean portions of South America, so collectors should bear this in mind while collecting.

1. *Philodendron baudoense* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Bajo Calima region, Km 17.5, 6.5 km NW of Pulpapel facility, 130 m, 11 July 1993, T. B. Croat & D. C. Bay 75645 (holotype, MO-04575188; isotypes, B, COL, CUVC, K, US).

Planta hemiepiphytica aut terrestris; internodia 3–16 cm longa, 6–20 mm diam., in sicco canoviridia; cataphylla 6–

15 cm longa, acute 2-costata, decidua intacta. Folia patentia vel reflexo-patentia; petiolus adaxialiter obtuse complanatus, 5.5–14(–23) cm longus, 5–8 mm diam. in sicco; lamina elliptica usque obovata, subcordata, 25–43.5 cm longa, 7–14 cm lata. Inflorescentia solitaria; pedunculus 1.5–8 cm longus; spatha 7–18 cm longa. Pistilla ca. 2.4 mm longa; ovarium 5- vel 6-loculare, loculis 1-ovulatis.

Hemiepiphytic or terrestrial; stem appressed-climbing or scandent; internodes matte to weakly glossy, 3–16 cm × 6–20 mm, longer than broad, medium green to gray to light brown, drying gray-green, epidermis light tan, loose and cracking, drying with epidermis flaking off exposing olive-green stem underneath; roots several per node, drying reddish brown, epidermis flaky; cataphylls 6–15 cm, sharply 2-ribbed, rounded at apex, soft, medium green, drying light tan to medium olive-green, deciduous. LEAVES spreading to reflexed-spreading; petioles 5.5–14(–23) cm × 5–8 mm (dry), obtusely flattened adaxially, broadly rounded abaxially, medium green, moderately spongy, dark green-lineate, drying medium olive-green; blades obovate to elliptic, subcoriaceous, acuminate at apex, subcordate at base, 25–43.5(–66) × 7–14(–24) cm, (2.7–)3–4.1 × longer than wide, (1.9–)3.6–5.8(–7.8) × longer than petiole, broadest at or beyond middle, adaxial surface semiglossy, medium green to yellow-green, drying dull medium to dark olive-green, abaxial surface matte, paler, drying dull and paler; anterior lobe 25–42(–64) × 7–14(–24) cm, 7.8–25(–58) × longer than posterior lobe; posterior lobe 7–40 mm × 1.2–5 cm, rounded; sinus V-shaped to hippocrepiform, 4–26 mm deep; midrib broadly convex at base becoming narrowly convex at apex and paler than blade, narrowly rounded abaxially, drying darker than blade on both surfaces; basal veins 3 pairs per side, all free to base, drying lighter than blade adaxially, darker than blade abaxially; primary lateral veins 5 to 13 per side, 3–5 cm apart, departing midrib at 40°–50° angles, sharply downturned at midrib, curving upward to margins, drying lighter than blade adaxially, darker than blade abaxially; interprimary veins departing from the primary lateral veins near the base but otherwise mostly from the midrib, drying concolorous adaxially, darker than blade abaxially; minor veins obscurely visible. INFLORESCENCE erect, solitary; peduncle 1.5–8 cm, shorter than petiole, medium green, drying dark olive-green; spathe 7–18 cm, barely constricted; spathe blade 6–8 cm, outside white, inside pale green with orange resin canals in upper 2/3; spathe tube 5–7 cm, pale to light green, outside minutely speckled, inside red-violet to dark burgundy in basal 1/3; spadix cylindrical, 9–12 cm; pistillate portion 2.5–4.5 cm × 5–10 mm (dry); staminate portion slightly clavate, 6.5–8 cm × 8–10 mm at widest point (dry); sterile

staminate portion 8–15 × 5–7 mm (dry), narrower than pistillate or fertile staminate portion; pistils ca. 2.4 mm; ovary 5- to 6-locular, ovules with basal placentation, 1 per locule; sterile staminate flowers unknown. INFRUCTESCENCE unknown. JUVENILE PLANTS differ in having a deeply sulcate petiole and blades rounded or barely cordulate, drying pale green.

Distribution and habitat. *Philodendron baudoense* is endemic to Colombia and is known from the western slopes of the Cordillera Occidental in the departments of Chocó and Valle. It occurs in Tropical wet forest (T-wf) and Tropical rain forest transition to Premontane (T-rf/P) life zones (Holdridge et al., 1971), ranging from sea level to 920 m, in primary forest, older regrowth forest, or growing on steep rocky road banks.

IUCN Red List category. Conservation for *Philodendron baudoense* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is known from many collections and has been found in both Chocó and Valle departments.

Phenology. It was collected in flower in February, March, and July, and adult plants in sterile condition in February, March, and April.

Etymology. *Philodendron baudoense* is named for the Serranía de Baudó, a low mountain range in the department of Chocó, and one of the first collection sites for this species.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelyum* (Schott) Sakuragui, subsection *Glossophyllum* (Schott) Croat, series *Glossophyllum* and is characterized by its scandent habit, long gray-green internodes that dry with a very flaky pale epidermis, and sharply 2-ribbed deciduous cataphylls. It also has leaf blades that are usually elliptic to obovate and subcordate, with a midrib that is much broader at the base and narrows toward the apex. The primary lateral veins are distinctive because they are widely spaced and curve upward quickly. The inflorescence is solitary, barely constricted, pale green at the base, and white at the apex.

Philodendron baudoense can be confused with *P. ligulatum* Schott (ranging along the Atlantic slopes from Nicaragua to Panama to the Colombian departments of Antioquia and Chocó), which differs in having fewer primary lateral veins that depart from the midrib at more obtuse angles, the blades drying dark green, and the inflorescences drying blackened.

Another similar species is *Philodendron pseudoauriculatum* Croat, found in Panama and northern Colombia. That species differs, however, in having shorter internodes with a darker tan epidermis that is

not as flaky. In addition, it bears two to three inflorescences per axil (as compared to solitary inflorescences in *P. baudoense*) on peduncles generally longer than 8 cm.

Paratypes. COLOMBIA. **Chocó:** Serranía de Baudó, Quibdó–Las Animas rd., 25 km NW of Las Animas, *Croat 56021* (COL, JAUM, MO); Quebrada Antón, along Pueblo Rico–Istmina rd., 15 km W of Santa Cecilia, *Croat 70950* (MO); Bolívar–Quibdó rd., Km 137–138, *Croat 57353* (MO); Río Atrato, Tagachi, 40–50 m, 8 Apr. 1982, *Forero et al. 8998* (COL). **Valle:** Km 42–43, *Croat & Watt 70294* (COL, K, MO, NY); near Río Calima, in oil palm grove, *Croat 57523* (MO); Quebrada La Sierpe, close to Palestina, *Forero et al. 3887* (MO); Bahía Málaga, vic. Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base ca. Km 104, *Croat & Gaskin 80455* (CUVC, MO); Río Bongito, *Croat & Gaskin 80536* (CUVC, MO).

Cultivated plant. COLOMBIA. **Valle:** Calima rd., cultivated at Wilson Botanical Garden, Costa Rica, vouchered 11 Jan. 1978 as *Croat 44435* (MO).

2. *Philodendron canicaule* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Bajo Calima region, 4.5 km W of Km 28 on Buenaventura–Málaga rd., 50–80 m, 3 Aug. 1993, *D. C. Bay 251* (holotype, MO-04585213; isotypes, B, COL, CUVC, K, NY, US).

Planta hemiepiphytica aut raro terrestris; internodia 1.5–2.5 cm longa, 1–4 cm diam., canoviridia; cataphylla decidua intacta. Folia patentia; petiolus teres, 21–46 cm longus, 4–8 mm diam. in sicco; lamina ovata, profunde cordata basi, 26.5–56 cm longa, 16–32(–39) cm lata, nervis lateralibus primariis sicut basalibus utroque 4 ad 7. Inflorescentiae in quaque axilla 1 ad 3; pedunculus 5–12 cm longus; spatha 5–7.5 cm longa, lamina extus viridi-alba vel flavo-cremea, intus cremeo-flava, tubo extus virenti, intus rubro vel marronino. Pistilla ca. 0.8 × 0.8 mm; ovarium 4-loculare, loculis 1-ovulatis.

Hemiepiphytic or rarely terrestrial; stem appressed-climbing or scandent; sap pale orange to orange-brown; *internodes* long, weakly glossy, 1.5–2.5 × 1–4 cm, longer than broad, gray-green to green or light brown; epidermis scurfy, conspicuously transverse-fissured, drying yellowish tan and flaking; roots to 3 mm diam., few per node, drying dark reddish brown with loose epidermis; *cataphylls* 12–28 cm, unribbed, 1-ribbed, or sharply 2-ribbed, rounded and apiculate at apex, green or yellow-green, drying dark rusty brown, deciduous. LEAVES spreading; *petioles* 21–46 cm × 4–8 mm (dry), terete, sulcate toward base, slightly flattened and sometimes sulcate toward apex, medium green, matte, weakly striate, drying golden-tan, often longitudinally wrinkled; *blades* ovate, coriaceous to moderately coriaceous, short-acuminate at apex, deeply cordate at base, 26.5–56 × 16–32(–39) cm, 1.2–1.7 × longer than wide, 0.8–1.3(–1.6) × as long as petiole, broadest near the middle, adaxial surface semi-glossy, dark green,

drying glossy and olive-green to medium olive-tan, abaxial surface matte to weakly glossy, paler, drying slightly less glossy and barely paler than adaxially; anterior lobe 20–42 × 16–32(–39) cm, 1.9–3.1 × longer than posterior lobe; posterior lobes 8.5–16 × 7.5–15 cm, usually rounded, sometimes slightly rectangular at apex; sinus parabolic to spatulate, 5–13 cm deep; *midrib* flat and paler adaxially, round-raised and paler abaxially; *primary lateral veins* 4 to 7 per side, 2–5 cm apart, departing midrib at 50°–60°, downturned at midrib then fairly straight but curving upward to within 1.5 cm of the margin; *basal veins* 4 to 7 pairs per side, 4 coalesced 1–3 cm, 2 coalesced up to 7 cm, posterior rib not naked or naked up to 3 cm, 1 vein free to base; interprimary veins obvious but less prominent than primary lateral veins; secondary veins distinct, fine, parallel to primary lateral veins. INFLORESCENCE small, erect, 1 to 3 per axil; *peduncle* 5–12 cm × 2–3 mm (dry), much shorter than petiole, pale to medium green sometimes tinged red, drying light reddish brown; *spathe* 5–7.5 cm, barely constricted, drying rusty reddish brown; *spathe blade* 3.5–4.5 cm, greenish white to yellowish cream outside, creamy yellow inside; *spathe tube* 2–3.5 cm, green outside, rosy red to maroon inside; *spadix* cylindrical, weakly exerted from the spathe, barely constricted near base of fertile staminate portion, 5.3–5.8 cm; pistillate portion pale green becoming white, 2–2.5 cm × 3–4 mm (dry); staminate portion creamy white, 3.2–3.7 cm × 3–5 mm (dry); sterile staminate portion ca. 1 cm, ca. 5 mm diam. (dry); *pistils* ca. 0.8 × 0.8 mm; ovary 4-locular, ovules with basal placentation, 1 per locule. INFRUCTESCENCE not seen.

Distribution and habitat. *Philodendron canicaule* is endemic to Colombia, known only from the western slopes of the Cordillera Occidental, Valle Department, within the Bajo Calima region, in an area of Tropical rain forest transition to Premontane (T-rf/P), below 150 m. It has been collected in dense primary forest, regrowth forest, and in deep ravines along streams.

IUCN Red List category. Conservation for *Philodendron canicaule* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the area of the type locality, it is not yet known from other sites in Colombia. It is possible that the species is more widespread than is currently known, because much of the Pacific slope is still poorly known.

Phenology. *Philodendron canicaule* has been collected flowering in February, July, August, and November, and as sterile adult plants in February, March, and July.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelyum*, subsection *Glossophyllum*, series *Ovata* Croat and is characterized by its weakly glossy, transversely fissured, gray-green stem with fairly long internodes, hence the epithet *canicaule* (from the Latin “canus” meaning grayish white and “caulis” meaning stem). Also distinctive are the long, variably ribbed, deciduous cataphylls, the terete petioles sulcate at the base, the cordate leaf blades that are matte abaxially with well-developed posterior ribs, and the small inflorescences.

Philodendron canicaule may be confused with *P. polliciforme* Croat & D. C. Bay because their leaf blades are similar in shape and both have small spathes (4.5–8.5 cm long). They differ, however, in that the latter species usually has shorter internodes, cataphylls that are quite red and have at least the basal portion persisting, leaf blades drying dull olive-green without any red color, and an inflorescence with a red spathe.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 9, *Croat 70107* (MO); Km 11, Pulpapel, *Croat 62785A* (MO), *69305* (CUVC), *69308* (CUVC, MO), *Monsalve 1219* (CUVC, MO); Km 18, *Croat 61339* (MO, MEXU, TEX, UB); Carretera Hanz, *Croat 71078* (MO); Km 33.3, *Croat 61281* (COL, CUVC, IMB, MO, SEL), *61383* (COL, MO), *61387* (HUA, MO); Km 44, *Croat & Watt 70192* (GH, MO, QCNE, USM), *70197* (COL, F, G, JAUM, K, MO, NY, VEN); Km 50.7, *Croat & Bay 75687* (CUVC, MO).

Cultivated plant. COLOMBIA. **Valle:** Calima rd., Calima–Buenaventura, 8°49'N, 82°58'W, 1200 m, cultivated at Wilson Botanical Garden, Costa Rica, vouchered 6–7 Mar. 1984 as *Croat 57269* (MO).

3. *Philodendron chryscarpum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Bajo Calima region, Buenaventura–Málaga rd., vic. of Km 50.7, less than 100 m, 12 July 1993, *T. B. Croat & D. C. Bay 75684* (holotype, MO-04572419; isotypes, B, CAS, COL, CUVC, F, K, MEXU, NY, PMA, QCNE, SEL, TEX, US, VEN).

Planta hemiepiphytica aut terrestris; internodia interdum obtuse costata, 0.4–4 cm longa, 0.5–3 cm lata, nitida; cataphylla 14–15.5 cm longa, acute 2-costata, decidua intacta. Folia erecta vel patentia; petiolus (5.3–)6.5–9.5 cm longus, 2–4 mm diam. in sicco, profunde sulcatus usque ad medium, cum annulo purpureo apice; lamina elliptica, 23.5–30 cm longa, 5–9 cm lata, nervis lateralibus primariis utroque plus quam 30, indistinctis. Inflorescentia solitaria; pedunculus 2–4 cm longus; spatha 12–19 cm longa, viridi-alba. Pistilla 6–11 mm diam.; ovarium 5-loculare, loculis 6- ad 8-ovulatis.

Usually hemiepiphytic, occasionally terrestrial; stem appressed-climbing or scandent; *internodes* sometimes bluntly ribbed, 0.4–4 × 0.5–3 cm, longer than wide, yellow-green to dark green, sometimes tinged purple, glossy, drying smooth, with some transverse fissures, olive-tan to red-brown to brown;

roots few to several per node, highly branched, glossy, red-brown, drying smooth, red-brown to medium brown; *cataphylls* 14–15.5 cm, sharply 2-ribbed, long-tapered and acute at apex, medium green, tinged purple, drying reddish brown, deciduous while intact. LEAVES erect to spreading; *petioles* (5.3–)6.5–9.5 cm × 2–4 mm (dry), deeply sulcate so as to appear sheathed in lower 1/3–2/3, terete toward apex, obtusely flattened adaxially, medium green tinged purple or red toward apex, drying dark, red-brown to brown; geniculum marked with a narrow (1–2 mm) purple ring at the apex, drying dark brown; *blades* elliptic, subcoriaceous, acuminate at apex, attenuate at base, 23.5–30 × 5–9 cm, 3.4–4.8(–5.2) × longer than wide, 2.6–3.8 × longer than petiole; adaxial surface moderately glossy, medium green, somewhat bicolorous, drying glossy, reddish green or reddish olive-green, abaxial surface glossy and paler than adaxially fresh and dried; *midrib* broadly raised and slightly paler than blade adaxially, bluntly acute to narrowly rounded and much paler than blade or purple abaxially; *primary lateral veins* more than 30 per side, departing midrib at 45°, obscure on both surfaces; all other veins obscure adaxially and abaxially. INFLORESCENCES erect, 1 per axil; *peduncle* 2–4 cm × 5–7 mm, shorter than petiole, yellowish green to dark green, drying dark red-brown; *spathe* long-tapered, outside dark yellow-green, striate toward base, inside greenish white with orange resin canals to within 2 cm of the apex, drying dark red-brown, only slightly constricted where the pistillate portion of the spadix ends, 12–19 cm long; *spathe* blade 6–9 cm; *spathe* tube 6.5–10; *spadix* cylindrical, 8–15.5 cm; pistillate portion green turning pale yellow at anthesis, 2–6 cm × 8–10 mm (dry); staminate portion white, 6.5–9.5 cm × 8–10 mm (dry); sterile staminate portion to 2.5 cm long, narrower than other regions at anthesis; *pistils* 6–11 mm diam., ovary 5-locular, ovules with basal placentation, 6 to 8 per locule; sterile staminate flowers unknown. INFRUCTESCENCE with pistillate spadix ca. 8 × 2 cm (dry), *berries* globular, bright golden yellow-orange with red stigmas.

Distribution and habitat. *Philodendron chryscarpum* is endemic to Colombia and is known mostly from the western slopes of the Cordillera Occidental, Valle Department, within the Bajo Calima region, in an area of Tropical rain forest transition to Premontane (T-rf/P), below 150 m. One specimen (*Juncosa 2552*) was collected from Tropical wet forest (T-wf) in the department of Chocó, where it was found in disturbed forest at an elevation of 465 m. It has been collected in dense primary forest, regrowth forest, along roadsides, and growing in mangrove swamps.

IUCN Red List category. Conservation for *Philodendron chrysocarpum* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is known from both Chocó and Valle departments and is common in the Bajo Calima area.

Phenology. *Philodendron chrysocarpum* has been collected flowering in March, June, and July, and in fruit in July. Sterile adult collections have been made in February and July.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelum*, subsection *Macrobelum*, series *Macrobelum* and is characterized by its purple-tinged petioles that are sulcate in the lower 1/3 to 2/3, the narrow-elliptic blades, and midrib that is convex adaxially and often purple abaxially with other venation obscure. Also characteristic is the striated spathe that is green on both surfaces, and the golden yellow-orange fruit, hence the epithet *chrysocarpum* (“chryso” meaning golden and “carp” meaning fruit).

It is most easily confused with *Philodendron coriaceum* Croat & D. C. Bay, which also has elliptic blades with obscure veins, but a generally darker yellow-orange fruit. *Philodendron coriaceum* differs in having very coriaceous leaves 1.6–2.3(–2.6)× longer than broad, a flat midrib that is much paler adaxially and pale green abaxially, and a spathe tube that is red inside and usually also on the outside.

One specimen collected from Bay Estero de Bodegas on the south shore of Buenaventura Bay, *Killip & Cuatrecasas 38669* (CUVC, F, US), appears to be this species, but differs in having blades that are much wider (1.4–2.7× longer than wide), and truncate to slightly cordate at the base.

Paratypes. COLOMBIA. **Chocó:** Bolívar–Quibdo Hwy., Km 175–176, *Juncosa 2552* (MO). **Valle:** Buenaventura–Málaga rd., Km 11, *Croat 69300* (CUVC, MO), *Croat & Monsalve 61413* (COL, HUA, MO); Km 6.5, Carretera Hanz, *Croat 69484* (CUVC, MO), *71104* (MO); Km 44, *Croat & Watt 70237* (MO); Km 50.7, *Croat & Watt 70311* (G, JAUM, MO); Estero de Bodegas, S shore of Buenaventura, *Killip & Cuatrecasas 39215* (US, VALLE); Juanchaco Palmeras, *Gentry, Monsalve & Wolfe 47911* (CUVC); vic. of Bahía Málaga, Base Naval Málaga, Río Bongito, *Croat & J. F. Gaskin 80528* (CUVC, MO).

4. *Philodendron coriaceum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Bajo Calima region, Buenaventura–Málaga rd., vic. of Km 50.7, less than 100 m, 12 July 1993, *T. B. Croat & D. C. Bay 75696* (holotype, MO-04575796; isotypes, B, COL, CUVC, F, K, NY, PMA, US).

Planta hemiepifítica aut terrestis, scandens; internodia 1.5–13.5 cm longa, 4–8 mm diam.; cataphylla 15–18.5 cm

longa, decidua intacta. Folia erecta; petiolus 6–11 cm longus, 3–5 mm diam. in sicco, D-formis vel late sulcatus; lamina ovata, coriacea, nervis lateralibus primariis utroque 13 ad 18 utroque. Inflorescentia solitaria; pedunculus 3–5 cm longus; spatha 10.4–18 cm longa, lamina utrinque pallide viridi, tubo extus virenti interdum suffuso roseo, intus rubroviolaceo. Pistilla ca. 8 × 7–10 mm; ovarium 6- ad 9-loculare, loculis 2- ad 3-ovulatis.

Hemiepifytic or terrestrial, trailing over the ground; stems appressed-climbing or scandent; *internodes* semi-glossy, 1.5–13.5 cm × 4–8 mm, longer than broad, medium or dark green to purplish brown, drying golden to red or rusty brown with wrinkled, sometimes flaky epidermis; roots usually 2 per node, sometimes highly branching, red-brown; *cataphylls* 15–18.5 cm, unribbed or bluntly 2-ribbed, D-shaped in cross section with bluntly rounded apex, light green to yellowish green, often tinged red, drying pale reddish tan and wrinkled, deciduous. LEAVES erect; *petioles* 6–11 cm × 3–5 mm (dry), D-shaped to broadly sulcate, medium green, tinged red, semi-glossy, drying yellow-green, somewhat red with loose, wrinkled epidermis; *blades* ovate, thick and coriaceous, obtusely acuminate at the apex, obtuse at base, 12–21 × 5–12 cm, 1.6–2.3(–2.6)× longer than wide, (1.3–)2–2.5(–3.2)× longer than petiole; adaxial surface glossy, dark green, drying glossy, green or olive-green, abaxial surface paler, drying glossy and paler than adaxially; *midrib* flat and pale yellow-white adaxially, round-raised, paler than blade and tinged red abaxially; *primary lateral veins* etched adaxially, darker abaxially, 13 to 18 per side and very close together (ca. 1 cm apart), departing midrib at 30°–40° angles, drying concolorous and raised on both sides; cross veins numerous, minute, perpendicular, weakly etched adaxially, scarcely visible abaxially, drying concolorous and wrinkled on both sides. INFLORESCENCES erect, 1 per axil; *peduncle* 3–5 cm × 3–8 mm (dry), much shorter than petiole, green, drying reddish olive; *spathe* semiglossy, thin and long-tapered, 10.4–18 cm, drying red-brown; spathe blade pale green outside and inside; spathe tube medium green sometimes tinged rose outside, red-violet inside, with reddish orange resin canals inside tube; *spadix* long-tapered, white, 8–15.5 cm; pistillate portion 1.6–2.1 cm long on back, 2.3–6.5 cm long on front, 8–18 mm diam. (dry); staminate portion 5.7–9.7 cm × 6–10 mm from base to ca. 1 cm from apex where it begins to gradually taper (dry), narrower than pistillate portion, wider than sterile staminate portion; sterile staminate portion 0.5–1 cm × 5–7 mm throughout (dry), narrower than pistillate or fertile staminate portions; *pistils* ca. 8 × 7–10 mm, ovary 6- to 9-locular, ovules with subbasal placentation, 2 to 3 per locule. INFRUCTESCENCES with pistillate

spadix 8–9 cm, *berries* globular, yellow-orange with red-brown stigmas.

Distribution and habitat. *Philodendron coriaceum* is endemic to Colombia, known from the western slopes of the Cordillera Occidental from Tropical wet forest (T-wf) in the department of Chocó to Tropical rain forest transition to Premontane (T-rf/P) in the department of Valle, ranging in elevation from near sea level to 150 m. It is also known from Carchi and Esmeraldas provinces, Ecuador, in Tropical wet montane forest (TM-rf) from near sea level to 800 m of elevation. The new species has been collected growing in primary forest, regrowth forest, dense tidal forest, and montane wet forest.

IUCN Red List category. Conservation for *Philodendron coriaceum* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since the species is widespread in Colombia and Ecuador.

Phenology. *Philodendron coriaceum* has been collected in flower in June and July and in fruit in September and November. Sterile adult collections have been made in February, July, and August.

Discussion. This species is a member of subgenus *Philodendron*, section *Macrobelyum*, subsection *Macrobelyum*. It would key to series *Ecordata* Croat, but may represent a new series because the blades lack etched minor veins on the adaxial surface. The species is characterized by its scandent habit; thick, ovate coriaceous blades (hence the epithet from the Latin “coriaceus”) with a flat midrib much paler than the blade adaxially and often tinged red abaxially; and yellow-orange berries.

Philodendron coriaceum is most easily confused with *P. chrysocarpum*, which has elliptic leaves and yellow-orange berries. However, *P. chrysocarpum* differs in having subcoriaceous blades, $3.4\text{--}4.8\text{--}(5.2)\times$ longer than broad (in contrast to $1.6\text{--}2.3\text{--}(2.6)\times$ longer in *P. coriaceum*), a broadly raised midrib that is slightly paler adaxially and much paler or purple abaxially, and a yellowish green-striate spathe (in contrast to a spathe that is red-violet on the tube in *P. coriaceum*).

Paratypes. COLOMBIA. **Chocó:** Togoromá, Killip & Cuatrecasas 39098 (COL, F, US, VALLE). **Valle:** Buenaventura–Málaga rd., Km 11, Bay 271 (CUVC, MO), Croat & Monsalve 61413A (CUVC, MO), Monsalve 415 (MO); vic. of Km 11 in front of Pulpapel headquarters, Croat & Bay 75621 (MO); Km 44, Croat & Watt 70209 (HUA, JAUM, MO), 70237A (MO); Km 37, Croat 69375 (CUVC). ECUADOR. **Carchi:** El Pailon, about 45 km from Maldonado, Maldonado–Tobar Donoso, Madison & Besse 7136 (SEL). **Esmeraldas:** San Lorenzo Canton, Lita–San Lorenzo rd., 40.1 km W of Lita, Croat 72325 (MO); 1.2 km W of El

Durago, 21.1 km W of Alto Tambo, Croat, Mansell, Hannon & Whitehill 82470 (MO, QCNE).

5. *Philodendron discretivenium* Croat & D. C.
Bay, sp. nov. TYPE: Colombia. Valle: Old Buenaventura–Cali rd., 15 km S of Río Sabale-tas, 340 m, 10 Feb. 1990, T. B. Croat & J. Watt 70462 (holotype, MO-3790490; isotypes, B, COL, CUVC, K, NY, PMA, US).

Planta hemiepiphytica, raro terrestris; internodia 2–12 cm longa, 1–5.5 cm diam.; cataphylla usque ad 19 cm longa, ecostata, decidua praeter partem basalem. Folia patentia; petiolus 25–68.5 cm longus, 5–10 mm diam. in sicco, teres, leviter complanatus versus apicem; lamina ovata, profunde cordata basi, 27–64 cm longa, 23–53 cm lata, atroviridis supra, hebetata infra, nervis lateralibus primariis sicut basalibus utroque 4 ad 6, basalibus omnibus discretis usque ad costam. Inflorescentiae in quaque axilla 1 ad 4; pedunculus 5.5–9 cm longus; spatha 17–21 cm longa, lamina extus alba vel pallide viridi, dense suffusa rubroviolacea, purpurascenti margine, tubo extus viridi-albo vel roseo, intus intense rubro. Pistilla ca. 2 mm longa; ovarium 5-loculare, loculis 5- vel 6-ovulatis.

Hemiepiphytic, rarely terrestrial; stem appressed-climbing or scandent over the ground; *internodes* weakly glossy, white-streaked, $2\text{--}12 \times 1\text{--}5.5$ cm, usually longer than broad, medium to dark green becoming brown, drying pale tan on older portion to reddish brown on younger stem, epidermis somewhat transversely fissured, drying loosely wrinkled and flaky; roots reddish brown, few per node, to 4 mm thick; *cataphylls* to 19 cm, unribbed, rounded at apex, pale-lineate, medium to dark green, drying olive-green, deciduous except for mushy basal part. LEAVES spreading; *petioles* $25\text{--}68.5$ cm \times $5\text{--}10$ mm (dry), terete, obtusely sulcate in lower 1/3, slightly flat toward apex, dark green, semi-glossy, finely pale streaked, drying dark olive-green to medium reddish brown to dark brown; geniculum 2–5 cm, 1–3 mm wider than petiole, drying darker than petiole; *blades* ovate, coriaceous to subcoriaceous, acuminate at apex, deeply cordate at base, rounded at margins, $27\text{--}64 \times 23\text{--}53$ cm, $1.1\text{--}1.5\times$ longer than wide, $0.6\text{--}1.3\times$ as long as petiole; adaxial surface semiglossy to glossy, dark green, drying dull medium to pale olive-green; abaxial surface matte, paler than adaxially, drying barely paler than adaxially, brownish olive-green; anterior lobe $26\text{--}47.5 \times 23\text{--}53$ cm, $2.5\text{--}3.3\text{--}(4.6)\times$ longer than posterior lobe; posterior lobe $6\text{--}18.5 \times 9.5\text{--}23.5$ cm, rounded at apex; sinus arcuate to spatulate, 5–12 cm deep; *midrib* broadly convex, pale green adaxially, convex and darker abaxially; *primary lateral veins* 4 to 6 per side, 1.5–4 cm apart, none within 8–10 cm of apex, spreading from midrib at $40^\circ\text{--}60^\circ$ angles, gradually curving upward to margin, downturned at midrib, obtusely to

narrowly sunken adaxially, convex and darker than blade abaxially; *basal veins* 4 to 6 pairs per side, all free to midrib; interprimary veins all parallel, obscure adaxially, visible abaxially; minor veins obscure; veins all drying nearly concolorous with blade on both surfaces. INFLORESCENCE erect, 1 to 4 per axil; *peduncle* 5.5–9 cm × 7–10 mm (dry), much shorter than petiole, pale to medium green, finely striate, drying dark brown; *spathe* gradually tapering, rounded at apex, scarcely constricted above tube, 17–21 cm; spathe blade, outside white to greenish white, becoming heavily tinged red-violet, purple at margin, inside green to white at very tip of apex; spathe tube outside greenish white to pink, often finely white-streaked, inside suffused with burgundy or deep cherry-red to upper 3/4 inside, drying dark brown; *spadix* 13–18 cm; pistillate portion yellowish to creamy white, cylindrical, 5–8 cm × 8–18 mm (dry), narrower than staminate portion; staminate portion 7.5–10 cm, 10–16 mm diam. at widest point (dry), somewhat clavate; sterile staminate portion not apparent, *pistils* ca. 2 mm, ca. 1 mm diam. at base, tapering slightly to apex; ovary 5-locular, ovules with basal placentation, 5 to 6 per locule. INFRUCTESCENCE unknown. JUVENILE plants differ in having leaf blades barely cordate, and sinus (when present) to 8 mm deep.

Distribution and habitat. *Philodendron discretivenium* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental, Valle Department, in an area of Tropical rain forest transition to Premontane (T-rf/P), up to 340 m. The new species has been collected in dense primary forest, regrowth forest, and along roadsides.

IUCN Red List category. Conservation for *Philodendron discretivenium* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is widespread on the Pacific slopes of Colombia.

Phenology. *Philodendron discretivenium* has been collected flowering in February and July. Sterile adult collections have been made in March and July.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelum*, subsection *Macrobelum*, series *Macrobelum* and is characterized by its scandent habit, blades that are ovate and matte abaxially, and basal veins all completely free to the midrib, none of them coalesced, hence the epithet *discretivenium* (“discretus” meaning distinct and “vena” meaning vein). Also characteristic are the large, barely constricted inflorescences that have a distinctive pale greenish white spathe with purple margins.

Paratypes. COLOMBIA. **Chocó:** Quibdó–Medellín at Km 207.5, *Croat 52279* (MO). **Nariño:** La Planada, Tuquerres–Ricaurte, Reserva Nat. La Planada, 7 km above Chucunés, along trail to Pialapí, 150–200 m past entrance to La Planada Field Station, *Croat 70464* (COL, HUA, JAUM, MO, NY, VEN). **Valle:** Buenaventura–Málaga rd., Km 11, *Gentry, Juncosa & Mazuera 40295* (MO), *Croat 69326* (CUVC, MO), *Juncosa 2139* (CUVC, MO); Km 14, *Croat 57559* (MO); Km 33.3, *Croat 61274* (CUVC, MO); Km 35.2, *Croat & Bay 75739* (CUVC, MO); Km 50.7, *Croat & Bay 75702* (CUVC, MO); Km 65–66, *Croat 71052* (COL, F, HUA, JAUM, MO, NY, VEN); Bahía Málaga, vic. Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base, ca. Km 104, *Croat & Gaskin 80470* (CUVC, MO); along trail along the edge of the bay W of base headquarters, *Croat & Gaskin 80597* (CUVC, MO).

6. *Philodendron dryanderæ* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Bajo Calima region, Buenaventura–Málaga rd., Km 12.5, regrowth forest about 4 m tall, 4 Feb. 1990, *T. B. Croat 70137* (holotype, MO-3784814; isotypes, B, CAS, CM, COL, CUVC, F, HUA, K, M, MEXU, NY, PMA, QCNE, S, SEL, TEX, US, VEN).

Planta hemiepiphytica, scandens; internodia 3–9 cm longa, 4–50 mm diam.; cataphylla 13–18 cm longa, acute 1-costata, niveo-alba, decidua intacta. Folia patentia; petiolus 15–21 cm longus, teres; lamina ovata, cordata basi, 14.5–25 cm longa, 11–19 cm lata; nervis lateralibus primariis utroque 2 ad 4. Inflorescentiae in quaque axilla 3 ad 6; pedunculus 3.5–6.5 cm longus; spatha 4–5 cm longa, lamina extus alba vel flavido-alba, intus albida, tubo extus rubromarronino, intus albo. Pistilla ca. 0.6 mm diam.; ovarium 4- vel 5-loculare, loculis 1-ovulatis.

Hemiepiphytic; stem scandent; *internodes* 3–9 × 0.4–5 cm, longer than broad, green to olive to light brown, striate, epidermis with longitudinal ridges, flaking, drying yellowish tan, sap red; roots few per node, reddish brown; *cataphylls* 13–18 cm, sharply 1-ribbed, sometimes with a second weak rib, bright white, drying reddish brown, deciduous when intact. LEAVES spreading; *petioles* 15–21 cm × 3–5 mm (dry), terete, obtusely flattened adaxially, broadly sulcate at base for 2–4 cm, light to medium green, drying dark olive-green; geniculum ca. 1 cm, drying dark brown and shrivelled; *blades* ovate, coriaceous to subcoriaceous, slightly bicolorous, mucronate or sometimes acuminate at apex, cordate at base, 14.5–25 × 11–19 cm, 1.3–1.5× longer than wide, 0.9–1.2(–1.4)× longer than petiole, margins rounded, adaxial surface semiglossy, medium green, drying glossy dark olive-green, abaxial surface paler, drying glossy and paler; anterior lobe 11.5–19 × 11–19 cm, 2.4–2.7× longer than posterior lobe, broadest close to middle; posterior lobe 4.3–8 × 5–8.5 cm, rounded; sinus parabolic to spatulate, 3–5.5 cm deep; *midrib* broadly convex and paler than surface adaxially,

convex and paler than surface abaxially; *primary lateral veins* 2 to 4 per side, 2–3.8 cm apart, spreading from midrib at 60° angles, downturned at midrib, curving broadly out to margins, weakly sunken adaxially, weakly pleated-raised abaxially; *basal veins* 3 to 4 pairs per side, with 1 free to base, 2 to 3 coalesced to 2.5 cm, posterior rib naked to 1 cm; minor veins moderately obscure, arising from midrib. INFLORESCENCES 3 to 6 per axil; *peduncle* 3.5–6.5 cm × 3–6 mm (dry), shorter than petiole, light green, sometimes speckled with red, clearly demarcated from spathe; *spathe* 4–5 cm, semiglossy, constricted above tube; spathe blade 2–2.5 cm, outside white to yellow-white, inside white; spathe tube 2–3 cm, outside reddish maroon, inside white to cream; *spadix* protruding forward at anthesis, sessile, 3–4.8 cm; pistillate portion pale green, cylindrical to slightly clavate, 1.3–2 cm × 7–8 mm at widest point (dry); staminate portion oblong, creamy white, 2.3–3.2 cm long, narrower than pistillate portion; sterile staminate portion ca. 3 mm; *pistils* ca. 0.6 mm diam.; ovary 4- to 5-locular, ovules with basal placentation, 1 per locule. INFRUCTESCENCE unknown.

Distribution and habitat. *Philodendron dryanderae* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental, in the departments of Cauca, Chocó, and Valle, in areas of Tropical wet forest (T-wf), Tropical rain forest (T-rf), and Tropical rain forest transition to Premontane (T-rf/P). It occurs from sea level to 150 m, and has been collected in primary and regrowth forest, cloud forest, and along stream banks.

IUCN Red List category. Conservation for *Philodendron dryanderae* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is widespread on the Pacific slope of Colombia and common in the Bajo Calima area.

Phenology. *Philodendron dryanderae* has been collected in flower in January, February, March, June, July, August, September, and October.

Etymology. *Philodendron dryanderae* is named in honor of Editha Ida Dryander, who made the earliest collection (1932) of this species that was examined.

Discussion. The species belongs to subgenus *Philodendron*, section *Macrobelyum*, subsection *Macrobelyum*, series *Macrobelyum* and is distinguished by scandent stems with long internodes, bright snowy white cataphylls, terete petioles, and blades that are ovate and mucronate at the apex with few primary lateral veins. Also characteristic are the small inflorescences in axillary clusters that have spathes with reddish maroon tubes, and creamy white blades.

Another species occurring at Bajo Calima, *Philodendron hederaceum* (Jacquin) Schott, might easily be mistaken for *P. dryanderae*, especially when sterile. The former species differs in having a smooth stem epidermis, green cataphylls, a leaf blade margin that often becomes slightly concave toward the apex, and large (9–17 cm long), solitary, green inflorescences.

Philodendron dryanderae also could be confused with *P. purpureoviride* Engler, which has not been collected at Bajo Calima, but is known from the departments of Chocó and Nariño, Colombia. The latter species is similar in habit, blade shape, and venation, but differs in having cataphylls that are generally green and heavily tinged with maroon, and large (11–15 cm long), solitary inflorescences.

Another species that could be confused with *Philodendron dryanderae* is *P. sulcicaule* Croat & Grayum, although this species is known only from Costa Rica and Panama. It is similar to *P. dryanderae* in habit, stem characteristics, leaf blade shape, and small, clustered inflorescences. However, it differs in having green to pink cataphylls, a leaf blade that is more triangular than ovate, obscure primary lateral veins, and inflorescences with spathe tubes that are red or purple inside.

Paratypes. COLOMBIA. **Chocó:** on an island near Buenaventura, *Dryander 24* (MO); along the banks of the Río San Juan, Agua Negra–Palestina, *Cuatrecasas 21575* (F); Río Condoto–Río Iró, *Idrobo & Kyburz 1973* (COL); Quebrada Taparal, near Taparalito, *Forero et al. 4285* (COL); Quibdó–Tutunendo, Carmen de Atrato rd., *de Escobar et al. 2191* (HUA). **Valle:** Buenaventura–Málaga rd., Km 11, *Bay 227* (CUVC, MO), *Monsalve 1967, 3140* (CUVC, MO), *Croat 69298* (CUVC, MO); Km 11.5, *Croat & Gaskin 79779* (CUVC, MO); Km 14, *Croat 57553* (MO); Km 33.3, *Croat 61369A* (MO), *61370* (G, JAUM, MO); Km 27, Juanchaco Palmeras, *Gentry, Monsalve & Wolfe 47909* (CUVC, MO); Juanchaco Palmeras, *Bernardi 10649* (G, MO); San Isidro, camp Conifinderena, S sector, *Devia & Prado 2724* (TULV, US); N shore of Buenaventura Bay, *Killip & Cuatrecasas 38725* (F, US, VALLE); along old Cali–Buenaventura rd., near Sabaletas, *Croat 38573* (MO); at Km 18.5 across rd. from Finca Santa Elena, *Croat 38506* (MO); at Km 20.5 beyond summit of rd. W of Dias y Ocho, *Croat 38552* (COL); Río Cajambre, Guapécito, *Cuatrecasas 17687* (F, US).

7. *Philodendron furcatum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Bajo Calima region, vic. of Bahía Málaga, Base Naval Málaga, Río Bongito, 40 m, 04°00'44"N, 77°20'04"W, 29 July 1997, *T. B. Croat & J. F. Gaskin 80526* (holotype, MO-04940447; isotypes, B, COL, F, G, GH, HUA, JAUM, K, NY, US, VEN).

Planta terrestris, scandens; internodia breviter; cataphylla usque ad 10 cm longa, ecostatata, in fibras pallidas fatiscentia. Folia erecta; petiolus 43.5–55 cm longus, teres; lamina ovata vel triangulari-ovata, 32.5–48 cm longa, 16–27 cm lata, nervis primariis lateralibus utroque 5 vel 7,

atroviridibus. Inflorescentia in quaque axilla 1 ad 2; pedunculus 6–7 cm longus; spatha 12.5–13 cm longa, 2.1–2.3 cm lata, tubo viridi, lamina alba; spadix 11.5–12 cm longus, parte staminata 6–6.5 cm longa, 1.3–1.4 cm diam., parte pistillata 4–5 cm longa, 1.4–1.6 cm diam. Pistilla 1.8–2 mm longa; ovarium 5- vel 6-loculare, loculis 8- ad 10-ovulatis.

Terrestrial; stem scandent; *internodes* short, 2–2.5(–6) cm wide; *cataphylls* to 10 cm, unribbed, pale green to greenish white, promptly weathering to pale disorganized or semi-organized fibers with pieces of epidermis attached, drying as pale fibers with reddish brown epidermis, weakly persisting at upper nodes. LEAVES erect; *petioles* 43.5–55 cm long, 3–8 mm diam., terete, matte, flattened adaxially toward apex, with a narrow, weak, medial sulcus, medium to dark green, sparsely short-streaked, drying medium olive-green; *blades* ovate to triangular-ovate, moderately thin, bullate-quilted, drying chartaceous, markedly bicolorous, narrowly long-acuminate at apex, deeply sagittate at base, 32.5–48 × 16–27 cm, (1.6–)1.7–2 × longer than wide, 0.7–0.8 × as long as the petiole, broadest near the middle or at petiole attachment, sometimes weakly constricted at or about the petiole attachment; margins somewhat undulate; adaxial surface semiglossy, dark green, drying dull olive-green to grayish with the major veins usually drying much darker; abaxial surface paler than adaxially and matte, drying pale olive-green; anterior lobe 22.5–33 × 16–27 cm, 1.7–1.8 × longer than posterior lobes; posterior lobes 12.5–18 × (6.3–)8–11.5 cm, narrowly rounded at apex, directed downward and outward; sinus hippocrepiform, 10–11.5 cm deep; major veins drying raised, concolorous with surface but with very dark margins adaxially, round-raised and darker than surface abaxially; *midrib* darker than surface, flat or slightly raised within deep valleys, marginally dark green adaxially, round-raised and thicker than broad abaxially; basal veins 3 per side, with 1 to 2 free to base, posterior rib highly branched, naked 2–3 cm; *primary lateral veins* 5 to 7 per side, 2.5–3.5 cm apart, departing midrib at 50°–60° angles, curving gradually out to margin, darker than blade and deeply quilted-sunken, dark green along the margin of the vein and otherwise medium to pale green adaxially, narrowly raised, matte and darker or paler than blade surface abaxially, those in the lower 1/2 of the blade branched 1 to 2 ×; *interprimary veins* nearly equal to primary lateral veins; tertiary veins obvious, especially abaxially, arising from basal veins and primary lateral veins; numerous cross veins obvious on both sides, darker than surface; *basal veins* 8 to 12 pairs, the 1st pair often free to the base, the remainder variously coalesced and branching off the ± straight posterior rib, the 4 to 5 acroscopic pairs branched 1 to 2 ×

before merging with the margin; cross veins usually prominulous even on fresh material; *sinus* narrowly obovate, naked along the posterior rib 3–5 cm. INFLORESCENCE 1 to 2 per axil; peduncle medium green, weakly glossy, 6–7 cm, 3.5–4 mm diam. on drying; *spathe* 12.5–13 × 2.1–2.3 cm on tube, moderately dark green and matte outside, paler and weakly glossy within; blade white on both surfaces; *spadix* 11.5–12 cm; staminate portion 6–6.5 cm, 1.3–1.4 cm diam., drying ca. 7 mm diam. midway; sterile portion ca. 2.5 cm, ca. 1.5 cm diam. at base, ca. 1.5 cm diam. at apex; pistillate portion 4–5 cm, 1.4–1.6 cm diam.; *pistils* pale yellow-green, 5- to 6-locular, 1.8–2 mm, 1.4–1.8 mm diam; placentation basal; ovules 8 to 10 per locule, ca. 0.15 mm, contained within an oblong opaque envelope, the envelope ca. 1 mm, attached at base of locule; funicle shorter than ovule; style irregularly 5- to 6-sided with rounded edges, minutely papillate, matte, drying bowl-shaped with 5 to 6 deep depressions, 0.5–0.7 mm wide; stigma consisting of 1 brush-like cluster for each locule, the entire width of the collective stigma 0.8–1 mm diam., drying flattened to saucer-shaped, irregularly angular, 1–1.5 mm diam. *Berries* not seen.

Distribution and habitat. *Philodendron furcatum* is known from the western slopes of the Colombian Cordillera Occidental, in the Bajo Calima region, and in Ecuador in the region of Lita–Alto Tambo, occurring in areas of Tropical rain forest transition to Premontane (T-rf/P), below 150 m. It has been found in regrowth forest on stream banks in dense shade.

IUCN Red List category. Conservation for *Philodendron furcatum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001), since it is known from only the type specimen.

Discussion. This species is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Achyropodium* (Schott) Engl. in Mart. It is characterized by its terrestrial habit; scandent stems; cataphylls that are unribbed, pale green, and that weather to pale fibers; and ovate to triangular-ovate, bullate, markedly bicolorous blades that are deeply cordate with lobes directed downward and outward forming a hippocrepiform sinus. The venation is particularly striking because the major veins are pale green but are sunken in dark green valleys adaxially, and the primary lateral veins are prominently forked (hence the epithet “*furcatum*”). Other unusual characteristics for the species are the peculiar branched styles emerging from each locule and the fact that the ovules

are enclosed within a cylindroid envelope in each locale.

Philodendron furcatum was known only in sterile condition when the junior author finished her Ph.D. thesis, and it was listed as species #5 in her thesis. The type specimen was later found in flower.

The species is closest to another new species from western Ecuador in the provinces of Carchi (*Madison & Besse 7024* from El Pailon, 45 km below Maldonado at 800 m) and Esmeraldas (*Croat 83373* from the Lita–San Lorenzo rd., 13.2 km SE of El Durango at 735 m, as well as *Croat 77233* and *Croat et al. 82216* from the Río Chuchubí, 6.4 km W of Río Lita at 609 m). That species differs in having petioles conspicuously scaly near the apex and having the primary lateral veins scarcely or not at all branched between the midrib and the margin. In contrast, *Philodendron furcatum* has glabrous petioles and the primary lateral veins are markedly branched between the midrib and the margin. In addition, the primary lateral veins of *P. furcatum* are markedly discolored dark green along their borders, which is not the case with the other new species from Ecuador.

A sterile collection from Chocó Department of Colombia (*Croat 70899* on the Pueblo Rico–Istmina rd., at Quebrada Antón, 15 km W of Santa Cecilia, 240 m) is very close to *Philodendron furcatum* in the coloration of the blade and in having some branched primary lateral veins, but it differs in having scaly petioles. The scales on that collection are not like those of the new species from Carchi and Esmeraldas because they are longer than broad, not broader than long. It may represent another new species.

Paratype. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 51.3, 9 Feb. 1990, *Croat & Watt 70407* (AAU, CUVC, K, M, MO, QCA, RSA, UB, VEN).

8. *Philodendron heterocraspedon* Croat & D. C.

Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 40, 100 m, 5 Feb. 1990, *T. B. Croat & J. Watt 70170* (holotype, MO-3780906; isotypes, B, COL, CUVC, F, K, NY, PMA, QCNE, TULV, US).

Planta hemiepiphytica, interdum terrestris; internodia 1–13 cm longa, 1.5–5 cm diam.; cataphylla 6–29 cm longa, acute 1- vel 2-costata, basi intacta persistentia. Folia reflexopotentia vel pendentia; petiolus late sulcatus basi, anguste complanatus apice, margine uno argute acuto, altero obtuse rotundato; lamina oblongo-elliptica, truncata vel interdum subcordata basi, 38–79 cm longa, 6–16 cm lata, supra subnitida vel velutina, nervis basalibus utroque 1 ad 3, omnibus liberis usque ad basim. Inflorescentiae in quaque axilla 1 ad 5; pedunculus 2.5–7 cm longus; spatha 16–22 cm longa, extus pallide viridis, lamina intus viridi-alba, tubo intus rubroviolaceo. Pistilla ca. 1.6 × 1.6–1.8 mm; ovarium 7- ad 9-loculare, loculis 5- ad 8-ovulatis.

Usually hemiepiphytic, occasionally terrestrial; stem appressed-climbing or scandent; internodes short, semiglossy, 1–13 × 1.5–5 cm, longer than broad, dark green, drying dark reddish brown or dark tan, epidermis coarsely white-ridged becoming brown scurfy ridged and finely transversely fissured, drying longitudinally wrinkled; roots few per node, drying medium brown; cataphylls D-shaped, 6–29 cm, sharply 1- to 2-ribbed, medium green, sometimes red, drying dark reddish brown, persisting intact at base. LEAVES reflexed-spreading to pendent, mostly clustered at apex of stem; petioles 12–49 cm × 1.5–5 mm (dry), C-shaped in cross section, broadly sulcate at base with one margin sharply acute and the other bluntly rounded, becoming narrowly flattened at apex, dark green, finely striate, drying dark brown; geniculum terete, swollen, 1–2 cm, drying dark and slightly scurfy; blades oblong-elliptic, subcoriaceous, moderately bicolorous, long-acuminate at apex, truncate to obtuse or sometimes slightly cordulate at base, 38–79 × 6–16 cm, 4.5–6.5(–8.9) × longer than wide, 1.4–2.4(–3.1) × longer than petiole, adaxial surface semiglossy to velvety, dark green, drying dull dark reddish brown, abaxial surface semiglossy, paler, drying glossy and paler; midrib convex and paler adaxially, bluntly acute and darker abaxially, drying concolorous or lighter adaxially, darker and raised abaxially; primary lateral veins 19 to 47 per side, 18–20 mm apart, spreading from midrib at 45° angles near the base becoming more acute distally (to 20°–25°), downturned at midrib then curving gradually out to margin, narrowly sunken adaxially, convex and darker than blade abaxially, drying concolorous or paler than blade adaxially, darker than blade and raised abaxially; basal veins 1 to 3 pairs per side, all free to base; interprimary veins often nearly as prominent as primary lateral veins; minor veins obscurely visible. INFLORESCENCE erect, 1 to 5 per axil; peduncle 2.5–7 cm × 4–6 mm, much shorter than petiole, white to medium green, finely striate, drying dark brown; spathe 16–22 cm, matte to weakly glossy, pale green to greenish white outside, long-tapered, not constricted; spathe blade 7–10 cm, greenish white inside; spathe tube 8–10 cm, glossy, cherry-red to red-violet to magenta inside; spadix cylindrical, 11–15 cm; pistillate portion pale green, cylindrical, 3.3–4 cm long on one side, 5.5–8 cm long on the other side, 7–9 mm diam.; staminate portion cylindrical, pale green, 7–10.2 cm × 7–8 mm; sterile staminate portion not apparent; pistils ca. 1.6 × 1.6–1.8 mm; ovary 7- to 9-locular, ovules with subbasal placentation, 5 to 8 per locale. INFRUCTESCENCE unknown.

Distribution and habitat. *Philodendron heterocraspedon* is endemic to Colombia and is known only

from the western slopes of the Colombian Cordillera Occidental, Valle Department, within the Bajo Calima region, and along the old Buenaventura–Cali rd. near the Río Aguacalara, in areas of Tropical rain forest transition to Premontane (T-rf/P), from 50 to 270 m. It has been collected from areas of regrowth forest, primary forest, and steep forested road banks.

IUCN Red List category. Conservation for *Philodendron heterocraspedon* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the area of the type locality, it is not yet known from other sites in Colombia.

Phenology. *Philodendron heterocraspedon* has been collected in flower in February and July, and in fruit in February and March. Sterile adult collections have been made in February, March, and July.

Discussion. The species is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Philodendron*, series *Fibrosa* Croat and is characterized by its habit of growth, usually with most of the leaves clustered near the top of the stem, and long pendent leaf blades that have many arching primary lateral veins, markedly sunken adaxially. In addition, the petioles are deeply sulcate with one margin very acute and the other bluntly rounded (hence the epithet from the Greek compound “hetero” for differing and “craspedon” meaning edge or border). The distinctive long-tapered inflorescences are erect and nearly sessile, pale green or white.

This species is most easily confused with *Philodendron rhodospathiphyllum* Croat & D. C. Bay, especially in the dried state. However, *P. rhodospathiphyllum* differs in having shorter, wider leaf blades held in a spreading or slightly reflexed position and not pendent. It also has primary lateral veins that are farther apart and curve more gradually, and smaller inflorescences that are green outside and inside.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 9, *Croat 70120* (MO), *70121* (MO), *70130* (MO), *70131* (CUVC, MO), *70132* (MO); Km 11, *Croat 69295* (CUVC, MO); Km 14, *Croat 57543* (MO); Km 17.5, *Croat & Bay 75628* (CUVC, MO); Dindo area, *Gentry & Monsalve 48442A* (CUVC, MO); 1 km W of Carretera Gasolina and 6 km S of Buenaventura–Málaga rd., *Croat 69431* (CUVC, MO); Km 65–66, *Croat 71054* (MO); old Buenaventura–Cali rd., 2 km above Río Aguacalara, *Croat 57567* (MO); 14 km SE of Río Sabaletas, *Croat & Watt 70459* (MO); vic. of Bahía Málaga, near Base Naval Málaga, along trail along the edge of the bay W of base headquarters, *Croat & Gaskin 80583* (CUVC, HUA, MO).

Cultivated plants. COLOMBIA. **Valle:** Calima rd., cultivated at Wilson Botanical Garden, Costa Rica, accession #74–579, vouchered as *Croat 57254* (MO); cultivated by Marta Posada de Robledo, vouchered 1 July 1986 as *Croat 62766* (MO).

9. *Philodendron hiberisiccans* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: vic. of Bahía Málaga, near Base Naval Málaga, along trail along the edge of the bay W of base headquarters, 20 m, 30 July 1997, *T. B. Croat & J. F. Gaskin 80584* (COL, CUVC, HUA, K, MO, PMA, US).

Planta hemiepiphytica; internodia 5–10 cm longa, usque ad 1.7 cm diam., obtecta fibris cataphyllorum; cataphylla usque ad 4 cm longa, ecostata, in fibras fatiscientia. Folia erecta; petiolus 10–15.5 cm longus, teres, complanatus adaxialiter marginibus acutis; lamina oblongo-elliptica, basi rotundata vel truncata, 20.5–47.5 cm longa, 4–9.5 cm lata, nervis lateralibus primariis utroque 5, basalibus utroque 3, omnibus liberis usque ad basim. Inflorescentiae in quaque axilla 1 ad 3; pedunculus 3.5–6 cm longus; spatha 6.8–8 cm longa, extus viridi-alba, intus alba. Ovarium 5- ad 6-loculare, loculis 20- ad 30-ovulatis.

Hemiepiphytic; stem appressed-climbing; internodes 5–10 mm, to 1.7 cm wide, wider than long, drying dark brown, epidermis obscured by cataphyll fibers; roots several per node, drying medium brown; *cataphylls* to 4 cm, unribbed, tapered at apex, medium green, drying dark brown to black, semi-intact at first node, weathering to thin pale brown fibers. LEAVES erect; *petioles* 10–15.5 cm × 3–4 mm (dry), terete, slightly flattened adaxially with moderately acute margins, medium green, weakly glossy, finely striate, drying dark brown to black, *blades* oblong-elliptic, subcoriaceous, slightly bicolorous, short-acuminate at apex, rounded to truncate at base, 20.5–47.5 × 4–9.5 cm, 2.8–5.4× longer than wide, 1.6–3× longer than petioles; adaxial surface semiglossy, drying dark reddish black; abaxial surface darker; *midrib* sunken and paler than blade adaxially, convex and darker abaxially; posterior veins 3 per side, free to midrib; *primary lateral veins* 5 per side, 3–4 cm apart, departing midrib at 20°–40° angles, gradually curving upward and outward to margins, weakly sunken adaxially, convex and darker abaxially, drying darker than blade; minor veins arising mostly from midrib, drying with a stitched appearance. INFLORESCENCES erect, 1 to 3 per axil; *peduncle* 3.5–6 cm × 3–4 mm, shorter than petiole, pale green, drying dark brown to black; *spathe* 6.8–8 cm; *spathe* blade greenish white outside, white inside; *spathe* tube yellow-green outside, white inside, drying dark reddish black; *spadix* cylindrical, barely tapered at apex, white throughout (pre-anthesis), ca. 5.8 cm; pistillate portion 1.8–2 cm long on one side, 2.4–3 cm long on the other side, 4–7 mm diam., drying medium brown; staminate portion ca. 3.5 cm × 5 mm (dry), drying dark brown; fertile staminate portion ca. 4.8 cm × 8 mm; sterile staminate portion 5–8 mm, drying dark reddish brown; *pistils* length and width unknown; ovary 5- to 6-locular, ovules

with basal placentation, 20 to 30 per locule. INFRUCTESCENCE unknown.

Distribution and habitat. *Philodendron hiberisiccans* is endemic to Colombia and is known only from the western slopes of the Colombian Cordillera Occidental, Valle Department, within the Bajo Calima region. It occurs in Tropical rain forest transition to Premontane (T-rf/P), below 150 m, and has been collected from two areas of regrowth forest.

IUCN Red List category. Conservation for *Philodendron hiberisiccans* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the area of the type locality, it is not yet known from other sites in Colombia.

Phenology. *Philodendron hiberisiccans* has been collected in flower in February and March.

Discussion. *Philodendron hiberisiccans* is a member of subgenus *Philodendron*, section *Macrobelyum*, but further classification is unknown. Having basal placentation and a large number of ovules is not previously known to the senior author. The species is characterized by its short unribbed cataphylls that weather to pale fibers, and oblong-elliptic leaf blades, truncate or rounded at the base, drying reddish black (hence the epithet, “hiberus” meaning reddish black and “siccans” meaning dry) with the minor veins having a stitched appearance. Also characteristic are the small yellow-green inflorescences.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 11, *Monsalve 893* (MO); vic. of Bahía Málaga, near Base Naval Málaga, along trail along the edge of the bay W of base headquarters, *Croat & Gaskin 80584* (COL, CUV, HUA, K, MO, PMA, US).

10. *Philodendron monsalveae* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 52.4, 14 July 1993, *T. B. Croat & D. C. Bay 75734* (holotype, MO-04577522; isotypes, B, COL, CUV, K, US).

Planta hemiepiphytica; internodia 2–17 cm longa, 5–30 mm diam.; cataphylla usque ad 35 cm longa, interdum 2-costata basi, plerumque acute 1-costata, decidua intacta. Folia patentia; petiolus 21–33 cm longus, 5–8 mm diam. in sicco, teres, obtuse sulcatus basi, subteres apice; lamina oblongo-elliptica, truncata basi, 35–57 cm longa, 13.5–25 cm lata, hebetata infra. Inflorescentiae in quaque axilla 3 ad 9; pedunculus 2–10 cm longus; spatha 4.3–7.5 cm longa, extus cerasina, lamina intus cremea, tubo intus rubro vel marronino. Pistilla 0.8–1 mm diam.; ovarium 5- vel 6-loculare, loculis 1-ovulatis.

Hemiepiphytic; stem appressed-climbing; sap creamy yellow to light tan; internodes smooth, 2–17 ×

0.5–3 cm, longer than broad, usually dark green becoming gray-green, occasionally medium green to light reddish brown or tan, epidermis sometimes slightly scurfy and somewhat transversely fissured, drying yellowish tan and flaking; roots several per node, to 33 cm × 3–4 mm (dry), drying dark reddish brown; cataphylls to 35 cm, sometimes 2-ribbed at base but more usually sharply 1-ribbed, obtuse and apiculate at apex, pale green at base, rosy toward apex with pale margins, drying pale tan with light brown mottling, deciduous. LEAVES spreading; petioles 21–33 cm × 5–8 mm (dry), obtusely sulcate at base, becoming terete midway, subterete at apex, dark to olive-green, firm, semiglossy, drying olive-green with longitudinally wrinkled, flaking epidermis; geniculum slightly swollen, to 3 cm, darker than petiole, drying medium to dark brown; blades oblong-elliptic, moderately coriaceous, acuminate at apex, attenuate to truncate at base, 35–57 × 13.5–25 cm, 2.1–2.9(–4)× longer than broad, 1.6–1.9× longer than petiole; adaxial surface semi-glossy, dark green, often bicolorous, drying dull pale olive-green; abaxial surface matte, paler than adaxially, drying pale olive-green or tan; midrib flat, pale white, sometimes striate adaxially, narrowly to broadly round-raised and darker abaxially; primary lateral veins 5 to 14 per side, 2.5–4 cm apart, spreading from midrib at 55°–65° angles, acutely downturned at midrib, proceeding straight out toward margin, becoming very weak within 1 cm of margin, sunken adaxially, convex and darker than blade abaxially, drying paler than blade adaxially, paler than blade and raised abaxially; minor veins obscure. INFLORESCENCES pendent, enclosed in persistent rosy red prophyll, 3 to 9 per axil alternating with prophylls; peduncle curved, 2–10 cm × 2–4 mm (dry), much shorter than petiole, pale olive to medium green, glossy, somewhat striate, drying dark reddish brown; spathe cherry-red, bluntly rounded, white-apiculate at apex, barely constricted above tube, 4.3–7.5 cm; spathe blade 3–4.5 cm, cream-colored inside; spathe tube 2–3 cm, cherry-maroon outside, green becoming cherry-red to dark maroon inside, drying medium tan outside, with obvious resin lines above tube inside; spadix exerted at anthesis, tapered at apex, 4–7.7 cm; pistillate portion green to yellow-green with golden stigmas, cylindrical, 1.9–3 cm × 4.5–8 mm; staminate portion creamy white becoming yellowish brown, ellipsoid to clavate, 3–4.7 cm × 8–10 mm at widest point; sterile staminate portion ca. 0.7 × 10–11 mm, slightly paler than fertile staminate portion; pistils 0.8–1 mm diam.; ovary 5- to 6-locular, ovules with basal placentation, 1 per locule; sterile staminate flowers 2 mm, irregular. INFRUCTESCENCE unknown. JUVENILE PLANTS with narrow-elliptic, often falcate leaf blades, white cataphylls, and obscure primary lateral veins.

Distribution and habitat. *Philodendron monsalveae* is endemic to Colombia, known only from the western slopes of the Colombian Cordillera Occidental, in the Bajo Calima region. It occurs in Tropical rain forest transition to Premontane (T-rf/P), below 150 m, usually growing in dense forest.

IUCN Red List category. Conservation for *Philodendron monsalveae* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron monsalveae* has been collected in flower in July and in fruit in February, and from July to October. Sterile collections have been made in February, March, and July.

Etymology. *Philodendron monsalveae* is named in honor of Miryam Monsalve, a Colombian botanist and illustrator, who has undertaken the tremendous task of producing and illustrating a complete flora of the Bajo Calima area in collaboration with the Missouri Botanical Garden and Smurfit Cartón de Colombia. She collected many of the earliest specimens of this species in the 1980s.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelyium*, subsection *Glossophyllum*, series *Glossophyllum* and is characterized by its smooth olive to gray stems, narrow-elliptic blades with few primary lateral veins widely spaced and becoming very weak within 1 cm of the margin, and clusters of small, cherry-red inflorescences wrapped in a persistent rosy red prophyll.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Río Calima, in forestry concession of Cartón de Colombia, 6.5 km beyond the Porton Tomar at Km 27, 22.3 km beyond Camp Portada Pulpapel, 33.3 km beyond main Calí–Buenaventura hwy., *Croat 61303* (HUA, MO); Buenaventura–Málaga rd., Km 11, *Croat 62774* (CUVC, MO), *70104* (CUVC, MO), *70112* (MO), *69303* (CUVC, MO), *Croat & Monsalve 61407* (MO, NY), *Bay 219* (CUVC, MO), *276* (CUVC, MO), *Monsalve 187* (MO), *364* (CUVC, MO), *1067* (CUVC, MO), *2005* (CUVC, MO); Km 12.5, *Croat 70148* (MO); Km 14, *Croat 57529* (MO); Km 17.5, *Croat & Bay 75627* (CUVC, MO); Km 33.3, *Croat 61275* (CUVC, F, G, GH, MO, QCNE, USM, VEN), *61303* (HUA, MO); Km 37, *Croat & J. F. Gaskin 79788* (MO); 1 km W of Carretera Gasolina, *Croat 69406* (CUVC, MO); Km 65–66, *Croat 71053* (JAUM, MO, UB); rd. to Juanchaco Palmeras, *Gentry et al. 48018* (CUVC, MO); Zaragosa, *Ramos 4140* (CUVC); vic. of Bahía Málaga, near Base Naval Málaga, along trail along the edge of the bay W of base headquarters, *Croat & J. F. Gaskin 80598* (CUVC, MO).

11. *Philodendron ninoanum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 9, 150 m, 3 Feb. 1990, *T. B.*

Croat 70128 (holotype, MO-3789763; isotypes, B, CUVC, K, US).

Planta hemiepiphytica aut raro terrestris; internodia 1.5–19 cm longa, 2–6 cm diam., interdum costata; cataphylla 15–35 cm longa, ecostata aut acute 2-costata, decidua intacta. Folia erecta vel patentia; petiolus 15–76 cm longus, 8–18 mm diam., obtuse complanatus adaxialiter, juventute late alatus; lamina elliptica vel ovata, profunde cordata basi, 25.5–83.5 cm longa, 11–54 cm lata, nervis lateralibus primariis utroque 4 ad 6, basalibus utroque 5 vel 6. Inflorescentiae in quaque axilla 1 ad 5; pedunculus 8–14 cm longus; spatha apiculata, 9–11 cm longa, lamina extus rubra, intus alba, tubo extus virenti, intus rubro. Pistilla 2.5–3 × ca. 1.4 mm; ovulum (4)5- vel 6-loculare, loculis 1- ad 2-ovulatis.

Hemiepiphytic or rarely terrestrial; stem appressed-climbing or scandent, sap copious, brownish red to purple; *internodes* semiglossy, sometimes ribbed, 1.5–19 × 2–6 cm, longer than broad, dark green to gray-green to gray, becoming light brown to brown to gray, often scurfy, drying pale yellowish tan with flaky epidermis; roots few per node, drying medium tan or reddish brown, epidermis flaky; *cataphylls* 15–35 cm, unribbed or sharply 2-ribbed, medium green, pale green-lineate, drying pale white with wavy lineations, deciduous. LEAVES erect to spreading; *petioles* semiglossy, 15–76 × 0.8–1.8 cm (dry), obtusely flattened adaxially, medium green, pale green-lineate, drying olive-green; *blades* elliptic to ovate, moderately coriaceous, acuminate to long-acuminate at apex, deeply cordate at base, 25.5–83.5 × 11–54 cm, 1.5–2.7(–3.4)× longer than wide, (1.1–)1.5–1.8× longer than petiole, broadest at point of petiole attachment, margins rounded, adaxial surface semiglossy, dark green to yellowish green, drying dull grayish olive-green, abaxial surface semiglossy, paler than adaxially, drying semiglossy and paler than adaxially, sometimes slightly red, anterior lobe 23–61 × 11–54 cm, 2.2–3.9(–6.9)× longer than posterior lobe; posterior lobes 2–23 × 2.5–27 cm, rounded to obtuse at apex; sinus arcuate to parabolic or spatulate, 2–24 cm deep; *midrib* broadly sulcate and paler than blade adaxially, bluntly acute to narrow-rounded or convex abaxially, drying nearly concolorous on both sides; basal veins 5 to 6 per side, with 1 free to base, 4 to 5 coalesced for 1–6 cm, posterior rib not naked or naked up to 3 cm; *primary lateral veins*, 4 to 6 per side, 3–3.5 cm apart, spreading from midrib at 60°–65° angles, sharply downturned at midrib, proceeding straight out to margin, bluntly concave to sunken adaxially, convex and paler abaxially, drying concolorous to darker; minor veins moderately obscure, drying moderately visible and raised. INFLORESCENCE erect, 1 to 5 per axil; *peduncle* glossy, 8–14 cm, 4–8 mm diam. (dry), shorter than petiole, medium to pale green, thinly striate, drying olive-

green; *spathe* bluntly rounded with an apiculum 3–5 mm long at apex, 9–11 cm long, semiglossy, slightly constricted above tube; *spathe* blade 5.5–8 cm, pale green becoming white, then rosy red outside (at anthesis), white inside; *spathe* tube 3–6 cm, medium green outside, deep cherry-red to white inside; *spadix* barely exerted, extending slightly beyond *spathe* at anthesis, sessile, 9–11 cm; pistillate portion yellow-green to cream, cylindrical, 3–4 cm, to 1 cm diam. (dry); staminate portion white, clavate, 5.5–6.5 cm, to 1.5 cm diam. at widest point, 6–8 mm diam. at base (dry), broader than pistillate and sterile staminate portions; sterile staminate portion not obvious; *pistils* 2.5–3 × ca. 1.4 mm; ovary (4 to) 5- to 6-locular, locules 1.8–2 × ca. 1.4 mm, ovules with basal placentation, 1 to 2 per locule. INFRUCTESCENCE with olive-green berries. JUVENILE PLANTS with petioles that are deeply sulcate, appearing winged, and blades that are elliptic and rounded to cordulate at base.

Distribution and habitat. *Philodendron ninoanum* is endemic to Colombia and is known from the western slopes of the Cordillera Occidental in Valle Department. It occurs in Tropical rain forest transition to Premontane (T-rf/P), ranging in elevation from 40 to 150 m. It has been collected in disturbed or degraded forest, dense primary forest, and along stream banks.

IUCN Red List category. Conservation for *Philodendron ninoanum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron ninoanum* has been collected flowering in February, July, and August, and in fruit in July, August, and November. Sterile collections with petioles both winged and wingless have been made in March, April, July, and December.

Etymology. *Philodendron ninoanum* is named in honor of Julio Niño, an official of the lumber company, Cartón de Colombia, who was extremely helpful in facilitating fieldwork at Bajo Calima. He was killed by guerrillas in August 1993 at Buenaventura.

Discussion. The species belongs to subgenus *Philodendron*, section *Macrobelyum*, subsection *Glossophyllum*, series *Ovata* characterized by its deciduous cataphylls, deeply sulcate petioles appearing winged when young or juvenile, and elliptic to ovate and deeply cordate adult leaf blades with few widely spaced primary lateral veins. Also characteristic are the inflorescences that are green when young, then become rosy red on the *spathe* blade when mature, and are distinctly apiculate.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Río Calima, within forestry concession of Cartón de Colombia, 6.3 km N of Frente La Brea, Km 18 on main rd., ca. 6 km SE of village of San Isidro on Río Calima, *Croat 61324A* (MO); Km 11, *Croat 56354A* (MO), 62780 (CUVC, MO), 69326A (CUVC, MO), *Monsalve 911* (CUVC, MO), 1092 (CUVC, MO); Km 17.5, *Croat & Bay 75632* (CUVC, MO), 75641A (MO); Km 18, *Croat 61340* (CUVC, MO); 6 km S of Buenaventura–Málaga rd. on Carretera Gasolina, *Croat 69408* (CUVC, MO); 6 km N of Km 22, on Carretera Hanz, *Croat 69540* (CUVC, MO), 71086 (GH, MO, QCNE, USM); 4.5 km W of Km 28, *Bay 241* (CUVC, MO); Km 50.7, *Croat & Bay 75689* (CUVC, MO); Km 65–66, *Croat 71052* (MO); transect 5, *Gentry 35566* (MO); Zaragosa, *Ramos 3983* (CUVC).

12. *Philodendron oblanceolatum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: ca. 18 km E of Buenaventura, 50 m, 14 Feb. 1939, *E. P. Killip & F. García 33250* (holotype, US-1770207; isotypes, B, G, K).

Planta hemiepiphytica, raro terrestriis; internodia 1–5.5 cm longa, 4–35 mm diam., obiecta fibris cataphyllorum; cataphylla usque ad 12 cm longa, acute 1- vel 2-costata apice, persistentia basi. Folia patentia; petiolus 1.5–11 cm longus, 5–10 mm diam. in sicco, teres; lamina oblongo-ovata, anguste rotundata basi, hebetata infra, nervis lateralibus primariis utroque 20 ad 29. Inflorescentia solitaria; pedunculus 1–4 cm longus; spatha 12–18 cm longa, virens, lamina intus albidula, tubo intus atomarronino. Pistilla ca. 1.3 × 0.8 mm; ovarium 4- vel 5-loculare, loculis 20- ad 30-ovulatis.

Hemiepiphytic, rarely terrestrial; appressed-climbing or scandent; *internodes* short, obscured by cataphyll fibers and roots, 1–5.5 cm × 0.4–3.5 cm, longer than broad, drying medium brown with flaky epidermis; roots several per node, drying light to medium brown; *cataphylls* to 12 cm, sharply 1- to 2-ribbed near apex, flattened on one side, pale green, drying medium tan or pale brown, bases persisting somewhat intact at upper nodes. LEAVES spreading; *petioles* firm, 1.5–11 cm × 5–10 mm (dry), terete, broadly rounded adaxially, narrowly rounded abaxially, medium green, matte, drying dull, medium olive-green; *blades* upright to spreading, clustering at the top of the stem, subcoriaceous, oblong-ovate, acuminate at apex, narrowly rounded at base, 24.5–78 × 5.5–21.5 cm, (3.1)–3.3–3.9(–4.4) × longer than wide, (4.2)–6.6–11.8(–25) × longer than petiole, broadest at or above middle, margins rounded in distal half, concave in proximal half, adaxial surface semiglossy, dark green, drying dull and dark olive-green, abaxial surface matte, paler than adaxially, drying glossy and reddish brown; *midrib* broadly convex at base to narrowly sunken at apex, marginally discolored, drying darker than blade adaxially, bluntly angular and drying darker than blade abaxially; *primary lateral veins* 20 to 29 per side, 5–23 mm

apart, spreading from midrib at 50°–60° angles, slightly downturned at midrib, proceeding straight out to within 1.5 cm of margin, then curving sharply toward apex, sunken adaxially, raised abaxially, drying concolorous or darker than blade adaxially, darker than blade abaxially; minor veins and minute cross veins clearly visible abaxially, departing from both midrib and primary lateral veins, drying obscure adaxially, darker than blade abaxially, with many, often interrupted, secretory canals clearly visible abaxially. INFLORESCENCE erect, solitary; *peduncle* 1–4 cm × 4–8 mm (dry), shorter than petiole, drying medium brown; *spathe* long-tapered, 12–18 cm, medium green, not constricted; *spathe* blade 6.5–11 cm, white inside; *spathe* tube 4–7 cm, dark maroon inside, drying dull medium brown; *spadix* sessile, 10–14 cm, white; pistillate portion 1.5–4 cm, slightly ellipsoid, to 1.1 cm diam. at widest point; staminate portion oblong, 5–9 cm, to 1.3 cm diam. near middle (dry), narrower than pistillate portion; sterile staminate portion not apparent; *pistils* ca. 1.3 × 0.8 mm; ovary 4- to 5-locular, ovules with axile placentation, 20 to 30 per locule. INFRUCTESCENCE unknown. JUVENILE PLANTS creeping, internodes 1–4 cm, 4 mm diam.

Distribution and habitat. *Philodendron oblanceolatum* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental, in the Bajo Calima region. It occurs in Tropical rain forest transition to Premontane (T-rf/P), below 150 m, and has been collected from primary forest and regrowth forest.

IUCN Red List category. Conservation for *Philodendron oblanceolatum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron oblanceolatum* has been collected in flower in February, and in fruit in February and March.

Discussion. The species is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Canniphyllum* (Schott) Mayo and is characterized by its hemiepiphytic habit, short internodes obscured by cataphyll bases, and leaves that cluster at the top of the stem. It also has rather large leaf blades with a distinctive oblanceolate shape for which it is named. The leaf blades are also distinctive in showing obvious secretory canals below when dry and in being held erect or spreading on very short petioles, and the inflorescences are long, tapered, green and maroon within the spathe tube. One collection, *Cuatrecasas 16406*, noted that the spadix had an intense, unpleasant odor.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 9, *Croat 70110* (K, MO, US); Km 11, *Croat & Monsalve 61393* (COL, CUV, MO), *Croat 69290* (CUVC, MO); Km 14, *Croat 57544* (MO); 6 km S of Buenaventura–Málaga rd. on Carretera Gasolina, *Croat 69419* (CUVC, MO); La Trojita, *Cuatrecasas 16406* (F, US).

13. *Philodendron polliciforme* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 11, 3°56'N, 77°00'W, 130 m, 17 July 1988, *T. B. Croat 69342* (holotype, MO-3623098; isotypes, B, COL, CUV, K, NY, US).

Planta hemiepiphytica, raro terrestri; internodia 1–6 cm longa, 8–45 mm diam., obtecta basibus cataphyllorum; cataphylla 4–12(–17) cm longa, ecostata, rubra vel rubroviolacea, persistentia basi. Folia patentia; petiolus 30.5–85.5 cm longus, 0.55–1.8 cm diam. in sicco, obtuse complanatus adaxialiter, interdom leniter costatus in medio; lamina triangulari-ovata, cordata basi, nervis lateralibus primariis sicutbasalibus utroque 5 ad 9. Inflorescentiae in quaque axilla 2 ad 6; pedunculus 3–10 cm longus; spatha 4.5–8.5 cm longa, polliciformis, lamina extus rubra vel marronina et viridi vel alba apice, intus albida, tubo extus rubro vel marronino, intus albido. Pistilla ca. 1.4 mm longa; ovarium 5-loculare, loculis 1-ovulatis.

Hemiepiphytic, rarely terrestrial; stem appressed-climbing or scandent; *internodes* short, semiglossy, usually obscured by cataphyll bases, 1–6 cm × 8–45 mm, longer than broad, medium brown, drying medium brown to tan, with transversely fissured flaking epidermis; *cataphylls* 4–12(–17) cm, unribbed, rounded at apex, red to red-violet, especially dark red at base becoming lighter and green at apex, persisting at base, becoming mushy, drying dark reddish brown. LEAVES spreading; *petioles* 30.5–85.5 cm × 0.5–1.8 cm (dry), obtusely flattened adaxially, sometimes with slight medial rib, medium green, pale-striate, moderately glossy, drying reddish brown; geniculum slightly swollen, 1–1.5 cm, tan, drying darker than petiole and somewhat shrivelled; *blades* triangular-ovate, moderately coriaceous, moderately bicolorous, long-acuminate at apex, cordate at base, margins rounded, 28.5–68.5 × 15–49 cm, 1.4–1.6(–1.9) × longer than wide, 0.8–1.1(–1.5) × as long as petiole, adaxial surface semiglossy, medium to dark green, drying dull olive-green, often tearing between primary lateral veins, abaxial surface paler than adaxially, drying dull and paler than adaxially; anterior lobe 24–54 × 15–49 cm, 1.8–2.8(–3.3) × longer than posterior lobes, broadest at point of petiole attachment; posterior lobes 7.5–23.5 × 7.5–23 cm, rounded; sinus spatulate to rhombic, 4.5–18 cm deep; *midrib* flat and paler than blade adaxially, drying olive to medium tan, narrowly rounded and paler than blade abaxially, drying light tan; *primary lateral veins* 5 to 9 per side, 2–4 cm apart, spreading from midrib at 65° angles, downturned at midrib, then curving gradually upward

to margin, obtusely sunken adaxially, convex and paler than blade abaxially, drying lighter than blade; *basal veins* 5 to 9 per side, with 2 free to base, 3 coalesced to 8 cm, 5 coalesced to 6 cm, 7 coalesced to 4 cm, well-developed posterior rib not naked or naked up to 3 cm, paler than blade adaxially and abaxially, drying light tan and raised abaxially; minor veins moderately obscure, arising from midrib. INFLORESCENCE erect or spreading, 2 to 6 per axil, enclosed in a persistent prophyll; *peduncle* 3–10 cm × 2–3 mm (dry), much shorter than petiole, white in the lower 1/3, red to apex, drying dark reddish tan; *spathe* thumb-shaped, often caudate-acuminate when immature, 4.5–8.5 cm, slightly constricted; *spathe blade* 2–3 cm, red to maroon becoming green to white at apex outside, white inside; *spathe tube* 2.5–5 cm, red to maroon outside, white inside, drying dark rusty tan; *spadix* cylindrical, 3.5–6 cm; pistillate portion pale green, 2–3 cm × ca. 2.6 mm; staminate portion creamy white, 2–3 cm × ca. 2.5 mm at base, ca. 3.2 mm diam. at apex; sterile staminate portion not apparent; pistils ca. 1.4 × 0.6 mm at base, ca. 0.3 mm diam. at apex; *ovary* 5-locular, ovules with basal placentation, 1 per locule. INFRUCTESCENCE with orange *berries*. JUVENILE PLANTS differ in having internodes that are much longer than broad, leaf blades long-triangular, shallowly cordate at base, and lacking posterior rib.

Distribution and habitat. *Philodendron polliciforme* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental, Valle Department, within the Bajo Calima region. It occurs in Tropical rain forest transition to Premontane (T-rf/P), below 150 m, and has been collected from primary forest, regrowth forest, and from stream banks in deep ravines.

IUCN Red List category. Conservation for *Philodendron polliciforme* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron polliciforme* has been collected in flower in June, July, and December.

Discussion. The new species is a member of subgenus *Philodendron*, section *Macrobelyum*, subsection *Glossophyllum*, series *Ovata* characterized by stems with short internodes obscured by persistent cataphyll bases, red cataphylls, large triangular-ovate leaf blades with a highly developed posterior rib, and long petioles. The small thumb-shaped, red to maroon inflorescences with white apices (hence the epithet

from the Latin “pollex” meaning thumb and “forma” meaning shape) are most distinctive.

This species may sometimes be confused with *Philodendron canicaule* because they have similar growth habits and leaf blades with similar shapes and proportions. In addition, they both have small inflorescences on short peduncles. However, *P. canicaule* differs in having longer internodes that are distinctively gray-green, green deciduous cataphylls, leaf blades that are usually matte abaxially and dry slightly red, and inflorescences with green and white spathes (as opposed to red).

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 9, *Croat 70111* (MO); Km 11, *Croat & Monsalve 61400* (F, HUA, JAUM, MO), *Croat 61411A* (CUVC), *69317* (MO), *69342* (CUVC, MO), *Monsalve 184* (MO), *Juncosa 2120* (CUVC, MO), *Gentry 35276* (MO), *van Rooden et al. 438* (MO); Lijal–Gasolina rd. bifurcation, *Gentry et al. 62927* (CUVC, MO); Dindo area, *Gentry & Monsalve 48433* (CUVC, MO), *Gentry et al. 53302* (CUVC, MO); Carretera Hanz, *Croat 71085* (MO); Buenaventura–Málaga rd., Km 33, *Croat 61386* (MO); Km 44, *Croat & Watt 70215* (MO); Km 49, *Croat & Bay 75813* (CUVC, MO), *75825* (MO, USM); Km 50.5, *Croat & Watt 70341* (MO), *Croat & Bay 75700* (MO); Zaragosa, *Ramos 4031* (CUVC).

14. *Philodendron rhodospathiphyllum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 11, 3°56'N, 77°00'W, 130 m, 5 Feb. 1990, *T. B. Croat & J. Watt 70201* (holotype, MO-3780810; isotypes, B, CUVC, K, US).

Planta hemiepiphytica; internodia 0.5–3 cm longa, 1–3.5 cm diam., dense obtecta fibris cataphyllorum; cataphylla usque ad 20 cm longa, ecostata, in fibras pallidas fatiscientia et persistentia. Folia patentia vel reflexo-patentia; petiolus 14–46 cm longus, 4–8 mm diam. in sicco, acute et anguste sulcatus adaxialiter, leniter costatus in medio; lamina oblongo-elliptica, rotundata vel truncata et plerumque inequalis basi, 33.5–63 cm longa, 10.5–16 cm lata, nervis lateralibus primariis utroque 14 ad 48, basalibus utroque 2. Inflorescentiae in quaque axilla 1 ad 4; pedunculus 1–4 cm longus; spathe 8–13 cm longa, virens, lamina intus virenti vel flavoviridi, tubo intus virenti. Pistilla 3.2–3.4 × 2.3–3 mm; ovarium 6- vel 7-loculare, loculis ca. 22-ovulatis.

Hemiepiphytic; stem appressed-climbing; *internodes* short, densely covered with cataphyll fibers, 0.5–3 × 1–3.5 cm, thicker than broad, pale green, drying medium tan with longitudinal wrinkles; roots several per node, reddish brown, drying medium brown; *cataphylls* to 20 cm, unribbed, rounded at apex, soft, medium green, drying as pale fibers with reddish brown epidermis, persisting intact at upper nodes, then weathering to pale fibers. LEAVES clustered near apex of stem, spreading to reflexed-spreading; *petioles* 14–46 cm × 4–8 mm (dry), thicker than broad, sharply and narrowly sulcate adaxially

with a faint medial rib, narrowly rounded abaxially, olive-green, firm, drying dark olive-green; geniculum swollen, 5–15 mm, darker in color, drying darker and sometimes wrinkled; *blades* oblong-elliptic, subcoriaceous, moderately bicolorous, long-acuminate at apex, rounded to truncate, often asymmetric at base, 33.5–63 × 10.5–16 cm, (2.7–)3–4.9× longer than wide, 1.3–2.6(–2.9)× longer than petiole, broadest close to middle, adaxial surface semiglossy, dark green, drying dull olive-green to olive-brown, abaxial surface semiglossy, paler than adaxial surface or yellowish green, drying glossy, light to medium reddish brown; *primary lateral veins* 14 to 48 per side, 1–3.5 cm apart, spreading from midrib at 45°–65° angles, downturned at midrib, curving upward out to margin, narrowly sunken adaxially, convex and darker than blade abaxially, drying lighter or concolorous adaxially, darker than blade abaxially; *basal veins* 2 per side, all free to base; interprimary veins often nearly as prominent as primary lateral veins, drying equal in color to primary lateral veins, sometimes with a stitched appearance abaxially; minor veins moderately obscure. INFLORESCENCE erect, 1 to 4 per axil; *peduncle* 1–4 cm × ca. 5 mm, much shorter than petiole, pale green to white, striate at apex, drying medium brown; *spathe* 8–13 cm, semiglossy, pale to dark green, white-streaked at base outside, long-tapered at apex when immature, constricted above tube; spathe blade 6–8 cm, medium green to yellow-green inside; spathe tube 2–5 cm, dark green outside, medium green inside; *spadix* cylindrical, 7–9 cm; pistillate portion pale yellow-green, 3.7 cm long on one side, 4.5 cm long on the other side, 1.6 cm diam. midway (dry); staminate portion white, slightly ellipsoid, 6–8 cm, to 11 mm diam. (dry); sterile staminate portion to 1 cm, 6–8 mm diam. (dry), slightly narrower than pistillate and fertile staminate portions; *pistils* 3.2–3.4 × 2.3–3 mm; *ovary* 6- to 7-locular, ovules with axile placentation, about 22 per locule. INFRACTESCENCE with white (immature) berries.

Distribution and habitat. *Philodendron rhodospathiphyllum* is endemic to Colombia and is known from the western slopes of the Cordillera Occidental, in the Bajo Calima region, from 40 to 100 m, and from the valley of the Río Dagua up to 710 m. It occurs in Tropical rain forest transition to Premontane (T-rf/P) and has been collected in older regrowth and primary forest.

IUCN Red List category. Conservation for *Philodendron rhodospathiphyllum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in

the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron rhodospathiphyllum* has been collected in flower and fruit in February and July. Adult plants have been collected sterile in July.

Discussion. The species is a member of the subgenus *Philodendron*, section *Philodendron*, subsection *Canniphyllum* and is characterized by its hemiepiphytic habit with leaves clustered near the top and usually held in a reflexed-spreading position, very short internodes obscured by pale cataphyll fibers, and oblong-elliptic leaf blades, truncate or rounded at the base, appearing very similar to those of the genus *Rhodospatha*, hence its epithet. Also characteristic is the long-tapered inflorescence with a white-striate spathe, green inside and out.

Philodendron rhodospathiphyllum can be confused with *P. heterocraspedon* especially as a dried herbarium specimen. The latter species differs in having pendent longer and narrower blades usually drying much darker reddish brown. It also has more, closer primary lateral veins that curve upward at more acute angles. In addition, its inflorescences are longer (16–22 cm long as compared to 8–13 cm long in *P. rhodospathiphyllum*) and very pale green to white with the inside of the tube cherry-red.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 11, *Croat 69322* (CUVC, MO); Km 33.3, *Croat 61292* (COL, HUA, JAUM, MO, UB, VEN); Km 44, *Croat & Watt 70201* (MO); Km 65–66, *Croat 71050* (MO), *71056A* (CUVC); Yatacué, valley of Río Dagua, *Gentry & Monsalve 48269* (MO); Bahía Málaga, vic. of Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base ca. Km 104, *Croat & Gaskin 80484* (CUVC, MO).

15. *Philodendron rubromaculatum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 11, 11 July 1993, *T. B. Croat & D. Bay 75621* (holotype, MO-04583379; isotype, CUVC).

Planta hemiepiphytica; internodia 3–6 cm longa, 5–10 mm diam., interdom leniter complanata in latere uno; cataphylla 6–8.5 cm longa, acute 2-costata, decidua intacta. Folia patentia; petiolus 3.5–6 cm longus, 2–4 mm diam. in sicco, late sulcatus; lamina elliptica, attenuata vel truncata basi, 10–14.4 cm longa, 3.5–6 cm lata, infra rubro-punctata, nervis omnibus indistinctis. Inflorescentia solitaria; pedunculus 6–9.2 cm longus; spatha 4.2–5.5 cm longa, lamina extus alba vel flavida, tubo extus flavoviridi. Pistilla 2–2.4 × 1.4–1.8 mm; ovarium 5-loculare, loculis 2-ovulatis.

Hemiepiphytic; stem appressed-climbing; *internodes* 3–6 cm × 5–10 mm, sometimes weakly flattened on one side, light yellow-green, epidermis semiglossy, drying smooth, reddish tan to red-brown;

roots few at each node, smooth, drying dark brown; *cataphylls* 6–8.5 × ca. 1.5 cm, sharply 2-ribbed, rounded at apex, light yellow-green, drying reddish tan or red-brown, deciduous. LEAVES spreading; *petioles* 3.5–6 cm × 2–4 mm (dry), broadly and bluntly sulcate, light green, drying yellowish tan to reddish tan with loose wrinkled epidermis; *blades* elliptic, subcoriaceous, acuminate at apex, attenuate to truncate at base, 10–14.4 × 3.5–6 cm, 2–3× longer than wide, 1.9–2.5(–3.2)× longer than petiole; adaxial surface dark green, semiglossy, drying dull olive-green; abaxial surface pale yellow-green, drying reddish tan or reddish brown with minute red punctations; *midrib* broadly rounded (almost flat), paler than blade, drying light tan adaxially, narrowly rounded and paler abaxially, drying much paler; all other veins obscure on both surfaces. INFLORESCENCES solitary; *peduncle* terete, 6–9.2 cm × ca. 2 mm (dry), slightly longer than petiole, semi-glossy, light green, drying olive-green; *spathe* curved, apiculate, not constricted, 4.2–5.5 cm, uniform in width, 8–11 mm wide (dry), drying light reddish tan; *spathe* blade white to yellow outside; *spathe* tube yellow-green outside, *spadix* cylindrical, 4.2–4.4 cm; pistillate portion yellow, 1.8–2 cm, fairly uniform in width, 3–4 mm wide (dry); staminate portion 2–3.5 cm; sterile staminate portion 4–6 mm, slightly narrower than pistillate portion and fertile staminate portion; *pistils* 2–2.4 × 1.4–1.8 mm, *ovary* 5-locular, ovules with basal placentation, 2 per locule. INFRUCTESCENCE unknown.

Distribution and habitat. *Philodendron rubromaculatum* is endemic to Colombia and is known only from the type locality on the western slopes of the Cordillera Occidental, in the Bajo Calima region, an area of Tropical rain forest transition to Premontane (T-rf/P), below 150 m, growing in dense regrowth forest.

IUCN Red List category. Conservation for *Philodendron rubromaculatum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). There is no reason to assume that it is exceedingly rare because only a tiny fraction of the Bajo Calima region has been studied, but it has not been collected elsewhere from other sites in Colombia.

Phenology. *Philodendron rubromaculatum* has been collected in flower in January, February, and July.

Discussion. *Philodendron rubromaculatum* is a member of subgenus *Philodendron*, section *Macrobilium*, subsection *Glossophyllum*, series *Glossophyllum* characterized by its appressed-climbing hemiepiphytic habit, deciduous cataphylls, and small

elliptic blades that are pale yellow-green abaxially and dry reddish tan with red punctations (hence the epithet from the Latin “ruber” meaning red and “maculatus” meaning spotted). Also distinctive are its small, yellow-green inflorescences with yellow female flowers.

Philodendron rubromaculatum is somewhat similar to *P. longipes* Engler as they both have elliptic blades with obscure veins and small, slender, cylindrical inflorescences. However, *P. longipes* has much larger blades that are never punctate and dry light olive-green on both sides, cataphylls that persist at the bases, and inflorescences that are green on the spathe tube and yellow-green on the spathe blade, with green female flowers.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 11, *Croat & Bay 75621* (CUVC, MO), *Kennedy & Andrews 1315A* (SEL), *Kennedy 754* (F).

16. *Philodendron striatum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 35.2, 100 m, 15 July 1993, *T. B. Croat & D. C. Bay 75751* (holotype, MO-04588392; isotypes, B, COL, CUVC, F, K, NY, PMA, QCNE, US, VEN).

Planta terrestris, interdum hemiepiphytica; internodia 2–7 cm longa, 2–6 cm diam., grosse albo-striata; cataphylla usque ad 13 cm longa, ecostata, persistentia intacta. Folia erecta vel patentia; petiolus 23–125 cm longus, 5–10 mm diam. in sicco, teres, obtuse subcomplanatus adaxialiter, grosse albo-striatus; lamina ovata, profunde cordata basi, 27–60 cm longa, 18.5–44 cm lata, hebetata infra, nervis lateralibus primariis utroque 8 ad 11, basalibus utroque 5 ad 7. Inflorescentiae in quaque axilla 1 ad 5; pedunculus 13–16 cm longus, grosse albo-striatus; spathe 15–18 cm longa, lamina untrinque alba, tubo extus viridi vel flavoviridi, intus albo. Pistilla ca. 2.2 mm longa; ovarium 4- vel 5-loculare, loculis ca. 20-ovulatis.

Terrestrial or sometimes hemiepiphytic; *internodes* short, semiglossy, 2–7 × 2–6 cm, shorter than long, medium green with coarse white striations, drying dark tan or medium brown with longitudinally wrinkled slightly flaky epidermis; *cataphylls* to 13 cm, unribbed, gradually tapered at the apex, yellow-green, drying with dark brown pieces of epidermis over thin pale fibers, persisting intact but becoming mushy and dark brown. LEAVES erect to spreading; *petioles* 23–125 cm × 5–10 mm (dry), terete, obtusely flattened adaxially, spongy, medium green with coarse white striations, semiglossy, drying dark brown, often with a darker brownish black geniculum; *blades* ovate, moderately coriaceous, obtuse-acuminate at the apex, deeply cordate at base, 27–60 × 18.5–44 cm, 1.2–1.6× longer than wide, 0.5–0.8× as long as petiole; adaxial surface semiglossy, dark green, drying glossy and very dark olive-

green to black; abaxial surface matte to weakly glossy, paler than adaxially, drying weakly glossy; anterior lobe 22–45.5 × 18.5–44 cm, 2–2.6× longer than posterior lobes; posterior lobes 8.5–21.5 × 9–24.5 cm, rounded to rectangular; sinus spatulate to rhombic, 4–15 cm deep; *midrib* flat and paler than blade adaxially, narrow-rounded, matte, darker than blade abaxially; *primary lateral veins* 8 to 11 per side, spreading from midrib at 50°–60° angles, curving gradually toward apex, more abruptly so at margin, downturned at midrib, narrowly sunken and paler than blade adaxially, convex and darker than blade abaxially, drying dark brown; *basal veins* 5 to 7 per side, 2 to 3 veins free, 4 to 5 coalesced for 2–4 cm, not to barely naked, drying dark brown; interprimary veins obvious; secondary veins numerous, fine, drying with a stitched appearance; cross veins numerous, indistinct, minute. INFLORESCENCES erect; 1 to 5 per axil; *peduncle* 13–16 cm × 3–5 mm (dry), much shorter than petiole, medium green with coarse white striations, drying dark brown to black; *spathe* long-tapered, constricted above tube, semiglossy, 15–18 cm, drying dark brown; spathe blade white on both surfaces; spathe tube pale green to medium yellow-green with white margins outside, white-speckled inside; *spadix* weakly exerted from the spathe at anthesis, 9–13 cm; pistillate portion greenish white, cylindrical, 3.8–5 cm × 9–11.5 mm; staminate portion 6–8.5 cm; fertile staminate portion white, ellipsoid, 4–6 cm × 7.5–11 mm at widest point, barely tapering at apex, narrower than pistillate portion; sterile staminate portion 1–2.5 cm × 9–10.5 mm, narrower than pistillate and fertile staminate portion; *pistils* 2.2 mm; ovary 4- to 5-locular, ovules with axile placentation, about 20 per locule. INFRUCTIONESCENCE to 13 cm, pistillate portion 5–6.5 cm.

Distribution and habitat. *Philodendron striatum* is known only from the western slopes of the Colombian Cordillera Occidental, Valle Department, within the Bajo Calima region. It occurs in Tropical rain forest transition to Premontane (T-rf/P), below 150 m. All collections are from dense forest, usually on steep hillsides.

IUCN Red List category. Conservation for *Philodendron striatum* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although locally common in the Bajo Calima region, it is not yet known from other sites in Colombia.

Phenology. *Philodendron striatum* has been collected in flower in February and July, and in fruit in February.

Discussion. The species is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Philodendron*, series *Philodendron* and is characterized by its terrestrial habit; the coarse white striations found on the internodes, petioles, peduncles, and inside the spathe (hence its epithet); unribbed cataphylls that weather to thin fibers; and greenish black–drying cordate blades with few primary lateral veins and a matte abaxial leaf blade surface. Also characteristic are the inflorescences with white spathe blades outside and inside, and spathe tubes yellow-green outside and white within.

A species that can be mistaken for *Philodendron striatum* is *P. venulosum* Croat & D. C. Bay. These two species can both occur as terrestrials and have similarly shaped blades. The latter species differs by more often growing as a hemiepiphyte, its 2-ribbed cataphylls that persist as thick coarse fibers with reddish brown bases, its leaf blades that are semiglossy below drying dark reddish green, and its bluntly rounded inflorescences with pale green blades and rose-colored tubes.

Paratypes. COLOMBIA. **Valle:** Buenaventura–Málaga rd., Km 35.2, *Croat & Bay 75751* (CUVC, MO); Km 50.7, *Croat & Bay 75698* (MO); Km 51.3, *Croat & Watt 70360* (G, GH, HUA, JAUM, MEXU, MO, QCNE, TEX, UB, USM); old Buenaventura–Cali rd., 12 km S of Sabaletas (Río Sabaletas), *Croat 70446* (CUVC, MO); Bahía Málaga, vic. of Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base ca. Km 104, *Croat & Gaskin 80452* (CAS, COL, IMB, MO, P, SEL).

17. *Philodendron suberosum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 11, 4 July 1986, *T. B. Croat 62785* (holotype, MO-3435782; isotypes, B, COL, CUVC, F, K, NY, PMA, QCNE, US).

Planta hemiepiphytica, interdum epiphytica; internodia 3–25 cm longa, 1–3 cm diam.; epidermis suberosa; cataphylla usque ad 20 cm longa, ecostata, interdum 2-costata apice. Folia patentia; petiolus 15–42(–58) cm longus, 5–10 mm diam. in sicco, teres, obtuse sulcatus basi; lamina ovato-elliptica vel ovata, cordata basi, hebetata infra, 29–54 cm longa, 12–37 cm lata, nervis basalibus utroque 6 ad 8, omnibus liberis usque ad basim. Inflorescentiae in quaque axilla 3 ad 6(10); pedunculus 3–10.5 cm longus; spatha 5.5–11 cm longa, ad marginem apiculumque albo, lamina extus cerasina, intus cremeo-alba, tubo extus viridi, suffuso rubro apice. Pistilla ca. 1.5 × 1.6–2 mm; ovarium 6- vel 7-loculare, loculis 2- vel 3-ovulatis.

Usually hemiepiphytic, sometimes epiphytic; stem appressed or climbing; sap brown with fruity odor; *internodes* 3–25 × 1–3 cm, longer than broad, medium brown to reddish brown; epidermis scurfy to deeply reticulate-fissured appearing corky, drying medium brown and deeply reticulate-fissured; roots few per node, drying red-brown with flaky epidermis;

cataphylls to 20 cm, unribbed to sometimes 2-ribbed near apex, bluntly rounded at apex, medium green, tinged red or purple-spotted at base, drying reddish brown with paler margins, becoming soft with thin brown epidermis, then deciduous. LEAVES spreading; *petioles* 15–42(–58) cm × 5–10 mm (dry), terete, medium green, firm, obtusely to broadly sulcate at base, weakly striate at apex, drying dull dark olive-green with many longitudinal wrinkles; geniculum striate, to 5 cm, usually drying dark brown to black, often wider than petiole; *blades* ovate-elliptic to ovate, coriaceous, acuminate at apex, cordate at base, rounded along margins, 29–54 × 12–37 cm, 1.3–1.8(–2.4)× longer than wide, 0.9–1.2(–2.1)× as long as petiole; adaxial surface moderately glossy, dark green, drying glossy pale gray-green; abaxial surface matte, paler than adaxially, drying dull and barely paler than adaxial surface; anterior lobe 39.5–46 × 12–37 cm, 4.2–6.6(–8.1) cm longer than posterior lobes; posterior lobes 5–10.5 × 7–11.5 cm; sinus arcuate to parabolic, 1.3–6 cm deep; *midrib* flat, medium green adaxially, convex and sometimes purple-spotted abaxially; *primary lateral veins* 14 to 20 per side, spreading from midrib at 60°–75° angles, downturned at midrib, 5 mm apart near base widening to 4 cm apart near apex; *basal veins* 6 to 8 per side, all free to base; minor veins distinct; all veins drying concolorous and sunken adaxially, darker than blade or sometimes paler than blade and raised abaxially. INFLORESCENCE erect to spreading, 3 to 6(to 10) per axil, often enclosed in a persistent pink prophyll that dries reddish brown; *peduncle* 3–10.5 cm, 3–5 mm diam. (dry), much shorter than petiole, pale green, sometimes faintly striate, drying dark brown, moderately flattened; *spathe* 5.5–11 cm, rounded and slightly apiculate at apex, barely constricted above the tube, margins and apiculum white, drying dark to medium brown, sometimes reddish brown; spathe blade brick to cherry-red, sometimes with purple ring-like or pale spots, or green speckles outside, creamy white with orange resin canals in lower 2/3 inside; spathe tube pale green at base, upper part tinged red to cherry-red, sometimes pale spotted outside; *spadix* exerted from spathe at anthesis, clavate, 7.4–8.5 cm; pistillate portion yellow-green becoming pink, 1.5–3 cm, 8–10 mm diam. at base (dry), 6–8 mm diam. at point where it meets the staminate portion (dry); staminate portion creamy white, 4–5.5 cm, somewhat constricted above the pistillate portion; fertile staminate portion clavate, 4.5–5 cm × 5–7 mm at base, 8–12 mm wide 1 cm from apex; sterile staminate portion not obvious; *pistils* ca. 1.5 × 1.6–2 mm; *ovary* 6- to 7-locular, ovules with subbasal placentation, 2 to 3 per locule; sterile staminate flowers ca. 4 × 9–10 mm. INFRUCTESCENCE unknown. JUVE-

NILE PLANTS differ in having ecordate, broadly elliptic leaf blades.

Distribution and habitat. *Philodendron suberosum* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental in the Chocó and Valle departments. It occurs in Tropical wet forest (T-wf) and Tropical rain forest transition to Premontane (T-rf/P), at elevations below 150 m, in dense primary or regrowth forests.

IUCN Red List category. Conservation for *Philodendron suberosum* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is known from six collections and has been found in both Chocó and Valle departments and many separate localities.

Phenology. *Philodendron suberosum* was collected in flower in February, July, August, and November, and in fruit in August. Sterile adult collections were made in March, July, and December. The inflorescence was noted as being sweetly aromatic.

Discussion. The species is a member of subgenus *Philodendron*, section *Macrobelyum*, subsection *Macrobelyum*, series *Macrobelyum* and is characterized by its reticulate-fissured stem internodes with a corky appearance for which it is named, from the Latin “suber” or cork (cork tree); elliptic to barely cordate blades with basal veins that do not coalesce; primary lateral veins becoming wider apart toward the apex; and large clusters of inflorescences, with peduncles that are much shorter than the petioles, and with spathes that are pale green on the tube and have cherry-red blades.

Philodendron suberosum is somewhat similar to *P. trojitanense* Croat & D. C. Bay; however, that species differs in having stem epidermis that is only transversely fissured (not appearing corky), and blades that are longer and narrower (2–3.5× longer than wide) with fewer primary lateral veins consistently widely spaced (3–7.5 cm apart). In addition, the inflorescences are long-apiculate and pale yellow with red-violet spots, not solid dark red like *P. suberosum*.

The only other *Philodendron* with which this species might be confused is *P. discretivenium*, but the latter species does not have a corky stem epidermis, the blades have coalesced basal veins, and the inflorescences have spathes that are greenish white on the tubes, with paler blades.

Paratypes. COLOMBIA. **Chocó:** Quibdó–Istmina rd., S of Río Rancherita, Km 31 and 32, *Croat 57364, 57371* (MO). **Valle:** Buenaventura–Málaga rd., Km 9, *Croat 70108* (MO); Km 11, *Croat 62785* (CUVC, MO), *69296* (COL, CUVC, MO), *Monsalve 163* (CUVC, MO), *3180* (CUVC, MO); Km 12.5, *Croat 70145* (MO); Km 14, 4 km from Río Calima,

Croat 57556 (MO); Km 22, Carretera Hans, *Croat 69420* (MO, CUV), *69483* (CUVC, MO); Km 40, Canaleta area, *Gentry et al. 59602* (CUVC, MO); 4 km W of Km 28, *Bay 253* (CUVC, MO); San Isidro–Juanchaco rd., near San Isidro, *van Rooden et al. 325* (MO); Dindo area, *Gentry et al. 65525* (CUVC, MO), *Gentry & Monsalve 48437* (CUVC, MO); transect 3, *Gentry 35438* (MO); transect 4, *Gentry 35513* (MO); transect 6, rd. to Juanchaco Palmeras, *Gentry et al. 47944* (CUVC, MO); Bahía de Buenaventura, Quebrada de San Joaquín, *Cuatrecasas 19934* (F); cultivated at Wilson Botanical Garden, Costa Rica, *Croat 57267* (MO).

18. *Philodendron tricostatum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Málaga rd., Km 52.4, 4°03'N, 77°05'W, 140 m, 14 July 1993, *T. B. Croat & D. C. Bay 75727* (holotype, MO-4577535; isotypes, B, COL, CUVC, K, US).

Planta hemiepiphytica, raro terrestris; internodia 1–10 cm longa, 1–5 cm diam., interdum 1-costata, obtecta fibris cataphyllorum; cataphylla 8–20 cm longa, acute 2-costata, plerumque suffusa rubra, in fibras crassas fatiscientia et persistentia. Folia erecto-patentia; petiolus 13.5–70 cm longus, 3–8 mm diam. in sicco, subteres, anguste sulcatus, marginibus obtusis basi, subcomplanatus adaxialiter 3-costata apice; lamina triangulari-ovata, profunde cordata basi, 18–59 cm longa, 10–31 cm lata, nervis lateralibus primariis utroque 4 ad 6, basalibus utroque 5 ad 10. Inflorescentiae in quaque axilla 2; pedunculus 3–6.2 cm longus; spathe 16–17.5 cm longa, lamina extus alba, intus nitida, tubo extus roseovineo, intus rubroviolaceo. Pistilla ca. 2 mm longa; ovarium 6-loculare, loculis 10- ad 20-ovulatis.

Hemiepiphytic, rarely terrestrial; stem appressed-climbing or scandent; *internodes* semiglossy, sometimes 1-ribbed, 1–10 × 1–5 cm, longer than broad, medium green to brown, drying gray-brown, obscured by cataphyll fibers; roots few per node; *cataphylls* 8–20 cm, sharply 2-ribbed, red or green, tinged red, persisting semi-intact at upper nodes, weathering to thick, matted, pale fibers with much of the epidermis intact, drying reddish brown. LEAVES erect-spreading; *petioles* firm, flexible, 13.5–70 cm × 3–8 mm (dry), subterete, narrowly sulcate with thick, blunt, erect margins at base, becoming flattened with 3 ribs toward apex adaxially, rounded abaxially, dark green, faintly striate, semiglossy, drying dark reddish brown; geniculum 3-ribbed, to 1 cm, darker than petiole, drying darker than petiole, almost black, somewhat shrivelled; *blades* triangular-ovate, subcoriaceous, moderately bicolorous, abruptly acuminate at apex, deeply cordate at base, 18–59 × 10–31 cm, 1.4–1.9(–2.3) × longer than wide, 0.7–1.1(2.1) × longer than petiole, broadest ± at the middle, margins sometimes slightly concave at point of petiole attachment, otherwise rounded, adaxial surface semiglossy, dark green, drying dull, pale to dark red-brown, abaxial surface glossy, paler than adaxially,

drying semiglossy, paler than adaxially; anterior lobe 16.5–41.5 × 10–31 cm, 2.3–4.3(–5.5) × longer than posterior lobes; posterior lobes 3–17 × 3.5–15 cm, rounded to obtuse, often bluntly acute at apex, directed downward, rarely slightly outward; sinus parabolic to spatulate to hippocrepiform, 1.5–16.5 cm deep; *midrib* broadly convex to flat to sunken, paler than blade, or matte and olive-green with short pale lineations adaxially, convex or round-raised and darker than blade abaxially, drying darker than blade on both surfaces; *primary lateral veins* 4 to 6 per side, 2–3.5 cm apart, spreading from midrib at 50°–60° angles, downturned at midrib, straight out to margin, drying nearly concolorous adaxially, darker or lighter than blade abaxially; interprimary veins sometimes nearly as prominent as primary lateral veins, more often obscure; *basal veins* 5 to 10 per side, with 1 to 4 free to base, 4 to 6 coalesced for 6.5 cm, posterior rib barely naked or naked to 2 cm, drying darker or lighter than blade abaxially; minor veins moderately obscure. INFLORESCENCE 2 per axil, erect or curved downward; *peduncle* 3–6.2 × 2–5 cm (dry), shorter than petiole, white and coarsely streaked at apex; *spathe* long-tapered, apiculate, 16–17.5 cm, slightly constricted above tube; spathe blade white outside, paler and glossy inside; spathe tube rosy burgundy, white-speckled toward blade outside, red-violet inside; *spadix* sessile, 12–15 cm; pistillate portion pale green, cylindrical, ca. 3.5 cm × 8 mm (dry); staminate portion ellipsoid, ca. 10 cm × 12 mm at widest point (dry), wider than pistillate and sterile staminate portions; sterile staminate portion cylindrical, to 4 cm × 7–8 mm (dry); *pistils* ca. 2 mm; *ovary* 6-locular, ovules with axile placentation, 10 to 20 per locule. INFRUCTESCENCE unknown. JUVENILE PLANTS differ in having leaf blades with smaller, less well-developed lobes.

Distribution and habitat. *Philodendron tricostatum* is endemic to Colombia and is known only from the western slopes of the Cordillera Occidental in the departments of Chocó and Valle. It occurs in Tropical wet forest (T-wf) and Tropical rain forest transition to Premontane (T-rf/P), at elevations below 150 m in dense primary or regrowth forests.

IUCN Red List category. Conservation for *Philodendron tricostatum* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is known from six collections and has been found in both Chocó and Valle departments and many separate localities.

Phenology. *Philodendron tricostatum* has been collected in flower only in July.

Discussion. *Philodendron tricoatum* is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Philodendron*, series *Fibrosa* and is characterized by the short internodes to 10 cm usually obscured by long, thick, matted, pale cataphyll fibers with large pieces of epidermis intact, and the triangular-ovate, deeply cordate leaf blades on slender petioles to 70 cm long. In addition, the inflorescences are stout, with a long apiculum, burgundy red on the spathe tube and white on the spathe blade. The light red-brown color when dry is also distinctive.

Paratypes. COLOMBIA. **Chocó:** Quibdó–Istmina rd., 14 km S of Quibdó, *Croat & Cogollo 52215* (MO); Km 31–32, S of Quibdó, *Croat 57370* (MO). **Valle:** Buenaventura–Málaga rd., Km 11, *Croat 69317A* (CUVC, MO); 6 km N of Km 22, Carretera Hanz, *Croat 69539* (CUVC, MO); Km 31.5, *Croat & Watt 70285* (CAS, G, GH, IMB, MEXU, MO, P, PMA, QCNE, SEL, TEX, UB, USM); Km 33.3, *Croat 61282* (COL, CUVC, F, MO, VEN), *61369* (HUA, JAUM, MO), *61372* (CUVC, MO, NY), *61388* (MO); Km 44, *Croat & Watt 70207* (MO); Km 52.4, *Croat & Bay 75727* (CUVC, MO); transect 4, *Gentry 35510* (MO); transect 6, *Gentry 35613* (MO); Bahía Málaga, vic. of Base Naval Málaga, along rd. to Buenaventura, ca. 1 km from base ca. Km 104, *Croat & J. F. Gaskin 80469* (CUVC, MO).

19. *Philodendron trojitense* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Old Buenaventura–Cali rd., 14 km SE of Río Sabaletas, 53 km ESE of Querebral, steep rd. banks, 3°42'N, 77°51'W, 270 m, 10 Feb. 1990, *T. B. Croat & J. Watt 70457* (holotype, MO-3790223; isotypes, COL, K, US).

Planta terrestris aut hemiepiphytica; internodia 4–12 cm longa, 2–3.5 cm diam.; cataphylla usque ad 30 cm longa, acute 1-costata, decidua intacta. Folia erecto-patentia vel patentia; petiolus 17–52 cm longus, 5–9 mm diam. in sicco, subteres; lamina anguste triangulari-ovata, subcordata basi, 28–73 cm longa, 8–30 cm lata, hebetata infra, nervis lateralibus primariis utroque 9 vel 10, basalibus utroque 2, liberis usque ad basim. Inflorescentiae in quaque axilla usque ad 7; pedunculus 7–8 cm longus; spatha 8–13 cm longa, apiculata, lamina extus alba, suffusa rubra vel rubroviolacea, intus alba, tubo extus flavido-albo, intus atroviolaceo. Pistilla ca. 2 mm longa; ovarium 7- ad 9-loculare, loculis 1-ovulatis.

Terrestrial or hemiepiphytic; stem scandent or appressed-climbing; internodes 4–12 × 2–3.5 cm, longer than broad, medium green, transversely fissured, becoming brown and scurfy, drying brownish tan, transversely fissured; roots few per node, drying medium brown; cataphylls to 30 cm, sharply 1-ribbed, green, drying dark reddish brown, deciduous. LEAVES erect-spreading to spreading; petioles 17–52 cm × 5–9 mm (dry), subterete, dark green, short dark-lineate, drying olive-green to light brown; geniculum to 3 cm, drying darker than petiole and somewhat shrivelled; blades narrow triangular-ovate, moderately coriaceous, long-acuminate at apex, shal-

lowly cordate at base, 28–73 × 8–30 cm, 2–3.5 × longer than wide, 1.3–1.6 × longer than petiole, adaxial surface semiglossy, dark green, drying semiglossy and olive-green, abaxial surface matte and much paler than adaxially, drying dull and barely paler than adaxially; sinus triangular to spatulate, 0.5–5 cm deep; midrib flat and yellowish white adaxially, narrowly rounded, paler than blade, short dark-lineate abaxially; primary lateral veins 9 to 10 per side, 3 cm apart toward base to 7.5 cm apart toward apex, spreading from midrib at 60°–70° angles, downturned at midrib, curving gradually out to margins, sunken and paler than blade, drying concolorous adaxially, convex and paler than blade, drying darker than blade, yellowish brown abaxially; basal veins 2 per side, both free to base; minor veins moderately distinct, arising mostly from the midrib. INFLORESCENCES to 7 per axil, enclosed in a prophyll; peduncle 7–8 cm × 2–5 mm (dry), medium green, faintly lineate; spathe apiculate (apiculum to 5 mm), 8–13 cm, slightly constricted above tube; spathe blade 5–6 cm, white, often with red to red-violet spots and tinged red along margin outside, burgundy toward base and white in upper 2/3 inside; spathe tube 3–5 cm, yellowish white outside, tinged red along margin, deep burgundy inside; spadix somewhat exerted at anthesis, sessile, slightly clavate, 9–11 cm; pistillate portion pale green, cylindrical, 1.5–2 cm long on one side, 2.4–3.5 cm long on the other side, 5–6 mm diam. (dry); staminate portion cream, clavate, 6.8–7.5 cm × 8–12 mm at widest point (ca. 1 cm from apex) (dry), broader than pistillate portion; sterile staminate portion not apparent; pistils ca. 2 mm; ovary 7- to 9-locular, ovules with basal placentation, 1 per locule. INFRUCTESCENCE unknown.

Distribution and habitat. *Philodendron trojitense* is endemic to Colombia and is known only from the Cordillera Occidental, in Valle Department. It occurs in Tropical rain forest transition to Premontane (T-rf/P), ranging in elevation from sea level to 270 m, growing along stream banks, road banks, or clambering over rocks.

IUCN Red List category. Conservation for *Philodendron trojitense* must be considered as Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001). Although reasonably common in the area of the type locality, it is not yet known from other sites in Colombia. It is possible that the species is more widespread than is currently known because much of the Pacific slope is still poorly known.

Phenology. *Philodendron trojitense* was collected in flower from the Bajo Calima region in February and March.

Etymology. The species is named for the village of La Trojita, where the oldest known specimen was collected.

Discussion. *Philodendron trojitense* is a member of subgenus *Philodendron*, section *Macrobelyum*, subsection *Glossophyllum*, series *Ovata* and is characterized by its scandent terrestrial habit; stems that are scurfy, brown, and transversely fissured; and long, narrow triangular-ovate leaf blades that are matte abaxially and have relatively few, widely spaced, primary lateral veins. In addition, the yellowish white, red-violet-spotted inflorescences grow in a cluster enclosed in a persistent prophyll.

Philodendron trojitense is somewhat similar to *P. suberosum* in that the epidermis of the stems of both species is highly fissured and they both have shallowly cordate leaf blades with all the basal veins free to the base. The latter species differs, however, in having leaf blades that are wider (1.3–1.8× longer than wide as compared to 2–3.5× longer than wide for *P. trojitense*) with more primary lateral veins much closer together. The inflorescences also differ because in *P. suberosum* they are shorter, more blunted at the apex, and solid dark red outside.

Paratypes. COLOMBIA. **Valle:** Bajo Calima region, La Trojita, *Cuatrecasas 16466* (F); old Buenaventura–Cali rd. via Queremal, 38 km beyond main hwy., Buenaventura–Cali, *Croat 57590* (CAS, MO, US); 14 km SE of Río Sabaletas, 53 km ESE of Queremal, *Croat & Watt 70457* (CAS, F, MO, NY).

20. *Philodendron venulosum* Croat & D. C. Bay, sp. nov. TYPE: Colombia. Valle: Buenaventura–Río Calima rd., 6.3 km N of Frente La Brea, Km 18, 6 km SE of San Isidro on Río Calima, 50 m, 4°02'N, 77°03'W, 7 July 1986, *T. B. Croat 61324* (holotype, MO-3490653; isotypes, COL, CUVC, K, US).

Planta hemiepiphytica aut terrestri; internodia 0.5–4 cm longa, 3–6 cm diam., in parte inferiore obtecta fibris cataphyllorum; cataphylla 16–35 cm longa, acute (raro obtuse) 2-costata, marronina vel rubroviolacea, in fibras robustas fatiscientia et persistentia. Folia erecta; petiolus 26.5–108 cm longus, teres vel obtuse subcomplanatus adaxialiter, interdum 1- vel 2-costata; lamina ovata, profunde cordata basi, 23–58.5 cm longa, 15–50 cm lata, nervis lateralibus primariis utroque 4 ad 8, basalibus utroque 7 vel 8, venulis transversalibus multis prominentibus. Inflorescentiae in quaque axilla 1 vel 2; pedunculus 17.5–23.5 cm longus; spatha 10–13.5 cm longa, lamina utrinque virenti, tubo extus virenti, interdum suffuso rubro. Pistilla 2.2–2.4 mm longa; ovarium 5- vel 6-loculare, loculis ca. 20-ovulatis.

Hemiepiphytic or terrestrial; stem appressed-climbing or scandent, sometimes upright to 80 cm; sap spicy; internodes 0.5–4 × 3–6 cm, usually longer

than broad, medium green, semiglossy, drying golden tan to tan with flaking epidermis, lower portions obscured by cataphyll fibers; roots few to several per node, often highly branching, drying medium to reddish brown; *cataphylls* 16–35 cm, sharply 2-ribbed, rarely bluntly 2-ribbed, maroon to reddish violet or at least red at base, drying with very pale fibers and reddish brown epidermis attached, persisting semi-intact as robust sometimes wavy fibers with pieces of attached epidermis. LEAVES erect; *petioles* 26.5–108 cm, tapering from base to apex, from 0.4–1.3 cm diam. at the base to 2–5 mm diam. at the apex (dry), firm, terete to obtusely flattened adaxially, sometimes with 1 or 2 blunt ribs, slightly sulcate near base, pale to medium green, sometimes striate, drying dark olive-green, geniculum not obvious living or dried; *blades* ovate, subcoriaceous, obtuse, short-apiculate at apex, deeply cordate at base, 23–58.5 × 15–50 cm, 1.2–1.7× longer than wide, 0.5–0.8(–1)× as long as petiole, adaxial surface glossy, dark green, slightly bicolorous, drying glossy, dark reddish green, abaxial surface semiglossy, moderately paler than adaxially, drying shiny and barely paler than adaxially; anterior lobe 22.2–43 × 15–50 cm, 1.9–2.4(–2.8)× longer than posterior lobes; posterior lobes 6.5–22.5 × 7.5–27 cm, rounded on inside margin to rectangular on outside margin; sinus usually spatulate, 2.5–10.5 cm deep; *midrib* flat to sunken, paler or concolorous adaxially, narrowly rounded or convex, sometimes matte and darker than blade abaxially, usually drying darker than blade; basal veins 7 to 8 per side, 1 to 2 free to base, the remainder coalesced for 6 cm; posterior rib naked 1–2 cm; *primary lateral veins* 4 to 8 per side, 2–4 cm apart, spreading from midrib at 35°–55° angles, proceeding straight toward margin to within 1–2 cm then curving toward apex, downturned at midrib, obtusely sunken adaxially, convex abaxially; interprimary veins prominent but still less obvious than primary veins, drying darker than blade to concolorous, raised abaxially; cross veins numerous, drying with a stitched appearance toward margins. INFLORESCENCES erect, 1 to 2 per axil; *peduncle* 17.5–23.5 cm × 5–10 mm (dry), much shorter than petiole, medium green with a red base, somewhat white-streaked, drying dark to medium brown, somewhat red, longitudinally wrinkled; *spathe* 10–13.5 cm, moderately glossy, bluntly rounded at apex, somewhat constricted above tube; *spathe blade* 6–7.5 cm, medium green outside, paler inside; *spathe tube* 3.5–5.5 cm, dark green becoming greenish pink or tinged with red outside; *spadix* 9.5–11.5 cm; pistillate portion 2.3–4.5 cm, ca. 1.2 cm diam., white; staminate portion 7.5–10.5 × ca. 1.4 cm at base, ca. 1.7 cm diam. 1 cm from apex; sterile staminate portion 2.5–3.5 cm; *pistils* 2.2–2.4 mm;

ovary 5- to 6-locular, ovules with axile placentation, about 20 per locule. INFRUCTESCENCE to 13 cm, pistillate portion ca. 5 cm. JUVENILE PLANTS differ in having leaf blades that are oblong, rounded and not cordate at base, acuminate at apex, but soon developing a lobe at the base.

Distribution and habitat. *Philodendron venulosum* is endemic to Colombia and is known from the Cordillera Occidental, in the departments of Chocó and Valle. It occurs in Tropical wet forest (T-wf) and Tropical rain forest transition to Premontane (T-rf/P), ranging in elevation from 40 to 500 m, in dense forest.

IUCN Red List category. Conservation for *Philodendron venulosum* must be considered as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001), since it is known from six collections and has been found in both Chocó and Valle departments and many separate localities.

Phenology. Both flowering and sterile specimens of *Philodendron venulosum* have been collected in March and July in the Bajo Calima region. A fruiting specimen was collected in July.

Discussion. The species is a member of subgenus *Philodendron*, section *Philodendron*, subsection *Philodendron*, series *Fibrosa* and is characterized by its large 2-ribbed cataphylls weathering to coarse fibers with pieces of attached epidermis, its long-tapered petioles, and glossy ovate-cordate blades with few primary lateral veins, but especially by the numerous fine cross veins for which it is named (“venulosum” from the Latin “venosus” meaning having many branched veins). Also characteristic are the bluntly rounded inflorescences with pale green spathe blades and rose-colored spathe tubes.

The species most likely to be mistaken for *Philodendron venulosum* is *P. striatum* because these two species can both grow terrestrially and have

similarly shaped blades, few primary lateral veins, and short peduncles. The latter species, however, differs in having coarse white striations on the internodes, petioles, peduncles, and inside the spathe, as well as unribbed cataphylls that weather to thin fibers. *Philodendron striatum* also differs in having blades that are matte on the abaxial surface (rather than glossy) and long-tapered inflorescences with spathe tubes that are yellow-green outside.

Paratypes. COLOMBIA. **Chocó:** Quibdó–Bolívar, 97 km E of Quibdó, *Croat 57284* (MO). **Valle:** Buenaventura–Río Calima rd., 6.3 km N of Frente La Brea, Km 18, 6 km SE of San Isidro on Río Calima, *Croat 61341* (COL, MO); Buenaventura–Málaga, Carretera Hanz, Km 6.5, *Croat 71132* (B, MO, NY); Dindo area, *Gentry & Monsalve 48428* (CUVC, MO); Buenaventura–Málaga rd., Km 49, *Croat & Bay 75806* (CUVC, MO); Km 51.7, *Croat & Bay 75782* (MO); old Buenaventura–Cali rd., 20 km beyond turnoff from main Cali–Buenaventura hwy., *Croat 57566* (MO); 12 km S of Sabaletas, *Croat & Watt 70446* (MO); Yatacué, Alto Anchicaya, *Gentry & Monsalve 48215* (CUVC); vic. of Bahía Málaga, Base Naval Málaga, Río Bongito, *Croat & Gaskin 80561* (CUVC, HUA, MO), *80562* (CUVC, MO).

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