

New species of *Philodendron* subgen. *Philodendron* (Araceae) from Central America

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ABSTRACT

Three new species of *Philodendron* subgen. *Philodendron* are described as new from Central America: *P. marcarlsoniae* Croat, *P. monroi* Croat & O.Ortiz and *P. trisectifolium* Croat. These remain the balance of the undescribed species of *Philodendron* in Central America needed to complete the treatment of the Araceae for the Flora of Mesoamerica.

Keywords: Araceae, *Philodendron*, subgen. *Philodendron*, New Species.

INTRODUCTION

The genus *Philodendron* with 487 published species and an estimated total of 1500 species (Boyce & Croat, 2011), has 128 species which occur in Central America and Mexico, including those described here and one additional species to be published by Pedro Diaz in Mexico. Of this total, 21 species are members of subgen. *Pteromischum* and the remainder are members of subgen. *Philodendron*. Both groups were revised in the late 1990's with the revision of those species from Pacific and Caribbean Tropical America in subgen. *Pteromischum* being published in 1996 (Grayum, 1996) and subgen. *Philodendron* of Mexico and Central America published in 1997 (Croat, 1997). Since the time of those revisions, seven other new species were published (Ortiz et al., 2022). Four additional species, including the three in this paper and one to be published soon by Pedro Diaz of Mexico.

Methods and Materials

New species confirmation was made using the author's 50-year experience with work in Central America and confirmation was affirmed with the Lucid *Philodendron* Key which contains a detailed database on all new species in the genus. Collections were studied in most

Mexican and Central American herbaria including CHIP, CSAT, ENCB, MEXU and UJAT in Mexico, AGUAT, BIGU, GUAT and UVAL in Guatemala, EAP and TEFH in Honduras, HNMN and HULE in Nicaragua, CR in Costa Rica and PMA, SCZ and UCH in Panama. Descriptions were made according to standards established by Croat & Bunting (1979). Ecological parameters were based on the Holdridge life zone system (Holdridge, 1979). Conservation status was based on Redbook values (IUCN-2021)].

Taxonomy

Philodendron marcarlsoniae Croat, **sp. nov.** — Type: MEXICO Chiapas: Los Lagos, 8 miles NW of Rancho San José, [34 mi. SE of Comitán,] 1648 m, 15–20 Apr. 1949, M.C. Carlson 1846 (holotype, EAP-52848). **Figure 1.**

Diagnosis: *Philodendron marcarlsoniae* is a member of *Philodendron* series *Macrobelyium* and it is characterized by its hemiepiphytic vining habit, elongate internodes, deciduous cataphylls long-petiolate leaves, subterete petioles, narrowly ovate-sagittate brown-drying, narrowly acuminate leaf blades with broadly concave lateral margins, slightly spreading posterior lobes, a parabolic sinus, four pairs of basal veins, a short posterior rib which is naked for 1–1.5 cm, as well as by a single inflorescence per axil, a short peduncle and a green unconstructed spathe which is crimson inner surface of the tube.

Hemiepiphytic vine; internodes longer than broad, probably less than 2 cm diam. *Leaves* with petioles 31.5 cm long, drying light brown, 3.5 mm diam.; blades narrowly ovate-triangular-sagittate, 29.5–31.5 cm long, 16.3–17.5 cm wide, 1.68–1.93 times longer than wide, broadest across the posterior lobes or near petiole attachment, about as long as the petioles, narrowly long-acuminate at apex, deeply lobed at base, drying medium yellowish brown and weakly glossy above, slightly paler and weakly glossy below; anterior lobe 22.7–24.5 cm long, broadly concave to nearly straight along margins; posterior lobes 9–10.5 cm long, 5.8–7.2 cm wide, narrowly rounded at apex; sinus parabolic, 6.5–7 cm deep, 3.3–4.3 cm wide; basal veins 4–5 pairs; 1st pair sometimes free to base; 2nd pair fused 1.3–1.7; 3rd pair fused 2.5–2.8 cm; 4th–5th pairs fused 2.5–3.8–5 cm; posterior ribs 3.5–4 cm long, naked 1–1.5 cm; midrib broadly rounded and concolorous above, narrowly rounded and slightly paler below; primary lateral veins 3–5 pairs, arising at 50–55°, drying weakly raised and slightly paler above; upper surface smooth with minor veins weakly and irregularly ridged, the intervening area close and minutely areolate-ridged; lower surface with the minor veins as above but more widely spaced with the intervening area somewhat blistered and minutely reddish brown-speckled; laticifers not apparent. *Inflorescences* two per axil; peduncle 10–14 cm long, 0.75–1.4 times longer than spathe, 7 mm diam.; spathe 15 cm long, 1.5 cm diam., lacking a constriction



Figure 1. *Philodendron marcarlsoniae* Croat, Herbarium type specimen, Margery C. Carlson 1846.

above the tube, green outside; tube crimson on inner surface; spadix (one only studied) to 7.5 cm long; staminate portion 1 cm long, 1 cm diam.; sterile staminate portion 4.5 cm long, 1.3 cm diam.; fertile staminate portion 4.2 cm long, 1.3 cm diam. at widest portion; pistillate spadix 3.5 cm long, 1.7 cm diam.; pistils 2 mm long, 0.8–1 mm diam.; ovary 5-locular; placentation basal; ovules 1–2 per locule, 0.5 mm long, the funicle shorter than ovule. Infructescence not known.

Distribution and ecology — *Philodendron marcarlsoniae* is known only from the type locality in Mexico, in Chiapas at 1648 m at Los Lagos in a Subtropical montane dry forest life zone. Flowering is known only from April.

Etymology — The species was named in honor of America botanist Margery Claire Carlson (1892–1985) who collected the only specimen of the species. She was the first woman to receive a degree in botany at Northwestern University and went on to teach there for more than 30 years. She was a plant anatomist, morphogeneticist and taxonomist (specializing in the genus *Russelia* Jacq.) and was also an adjunct staff member at the Field Museum. She was a frequent correspondent with Thomas B. MacDougall (1895–1964), another well-known collector of Mexican plants. In addition to her collections from Southern Mexico (1922–1924), she also collected plants in Illinois and Wisconsin.

Comments — In Central America, the species would be most easily confused with *Philodendron verapazense* Croat which is also a vine with blades of similar size and shape. That species differs in having prominently longitudinally ribbed stems, a proportionately narrower blades (2.7 times longer than broad versus 1.68–1.93 times longer than broad for *A. marcarlsoniae*) with a narrower sinus, proportionately narrower posterior lobes, as well as by having more obscure primary lateral veins, an upper blade surface which is conspicuously granular and the lower blade surface with the minor veins more conspicuous and paler with the intervening area finely ridged (in contrast the upper surface of *P. marcarlsoniae* has a blade which is smooth, aside from being irregularly ridged and the lower surface has more widely and more irregularly spaced minor veins with the intervening area somewhat blistered and minutely dark-speckled).

In addition to the differences in vegetative parts of the plant, the inflorescences are different with *Philodendron marcarlsoniae* having 2 inflorescences per axil, proportionately longer peduncles which are 0.75 to 1.4 times longer than the spathe and a non-constricted spathe, in contrast *P. verapazense* has only 1 inflorescence per axil, has proportionately shorter peduncles (spathe 2.3 times longer than peduncle) and the spathe is constricted above the tube.



Figure 2. *Philodendron monroi* Croat & O.Ortiz, Monro et al. 5922.
Habit of flowering plant (displaced from tree and laying on ground).

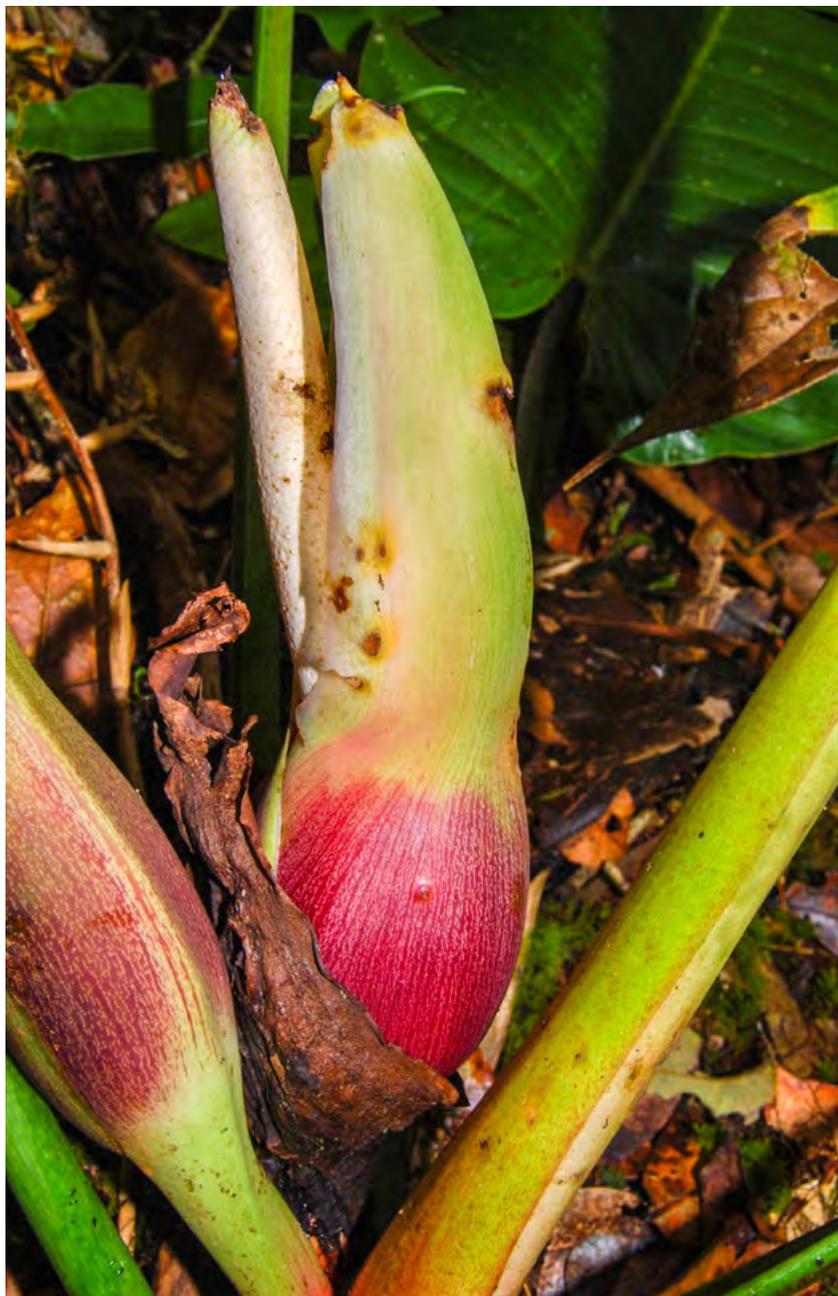


Figure 3. *Philodendron monroi* Croat & O.Ortiz, Monro et al. 5922. Stem showing two inflorescences, one at anthesis. Photo credit: P. Monro.

Since the species is known from only a single specimen, its classification in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species should be DD (Data Deficient) (IUCN, 2021).

Philodendron monroi Croat & O.Ortiz, **sp. nov.** — Type: PANAMA. Bocas del Toro: Changuinola, PILA, Point 12, ca. 3 km from estación de Alto Urí, ridgetop, canopy 25 m, dbh range 30–60 cm, large outcrops, very steep slopes, 09°04'13"N, 82°42'11.8"W, 1700 m, 15 Apr. 2008, A.K. Monro, D. Santamaria & J. Lezcano 5922 (holotype, PMA-70533; barcode, 68455). Figures 2 & 3.

Diagnosis: The species is member of *Philodendron* ser. *Glossophyllum* and is characterized by its epiphytic climbing habit, short internodes, weakly 2-ribbed promptly deciduous cataphylls, subterete, obtusely flattened petioles with a dark green ring at the apex, oblong-ovate cordate-sagittate acuminate blades which are deeply lobed at base with short rounded posterior lobes, a narrowly triangular or narrowly parabolic sinus, 5–6 pairs of basal veins, two pairs of which are free to the base with a short or obsolete posterior rib, 12–15 weakly quilted-sunken primary lateral veins, as well as by a pair of inflorescences, a short-pedunculate spathe which is violet-purple on tube outside, maroon inside and the blade medium green outside, cream-maroon inside towards the apex.

Epiphytic climber; flowering at 2 m above ground, the stem pendulous; internodes 5–5.5 cm long, 4–4.5 cm diam., greenish gray and semiglossy; cataphylls weakly 2-ribbed, 39 cm long, green, promptly deciduous. Leaves erect-spreading, 8–10 clustered toward apex of stem; petioles 58–60 cm long, 1.3–1.5 cm diam., subterete, obtusely flattened towards the apex, broadly and deeply sulcate toward the middle and base, dark green, weakly glossy; geniculum not apparent; blades narrowly ovate cordate-sagittate, 58–60 cm long, 22.5–33.7 cm wide, (0.82)1.1–2.5 times longer than petioles, acuminate at apex, deeply lobed at base, subcoriaceous, dark green and weakly glossy above, slightly paler below; anterior lobes 49–50 cm long, broadly rounded on margins; posterior lobes short and rounded, 9–10.3 cm long, 9–11.2 cm wide; sinus 5.4–8 cm deep, 2.2–3 cm wide, narrowly triangular or narrowly parabolic; basal veins 5–6 pairs, all but the lowermost free to base; posterior rib lacking or short, to ca. 1 cm long, not at all naked; primary lateral veins 12–15 pairs, arising at 0–80°, weakly quilted-sunken and concolorous above. *Inflorescences* two per axil; peduncle 6 cm long, 2.5 cm diam., cylindrical cream-green, turning dark green, clearly demarcated from colored spathe tube; spathe 22.5–34.6 cm long, 6.5 cm diam. across tube, tube violet-purple at base and white-pink where exposed along margins, semiglossy outside with darker striations, moderately constricted above tube, maroon inside; blade medium green and semiglossy outside, inside cream-maroon towards the apex, releasing latex when cut, fragrant; spadix slightly shorter than spathe; staminate portion white; pistillate portion pale green, no further details determinable. Infructescence not known.

Distribution and ecology — *Philodendron monroi* is known only from the type locality in Panama in Bocas del Toro at 1700 m in a Premontane rain forest life zone. The type locality is very near large regions of a Lower montane rain forest life zone so the species might occur there as well. Flowering is known only for mid-April.

Etymology — The species was named for British botanist Alex Monro from the Royal Botanic Gardens, Kew. Alex formerly worked at the Natural History Museum, London, and was responsible for collecting the type specimen. He is a specialist on the family Urticaceae.

Comments — The species is close to *Philodendron auriculatum* Standl. that differs in having conspicuous two-ribbed thick spongy petioles, proportionately longer yellow-green-drying blades that are auriculate or cordate, not subcordate, at base.

Philodendron monroi can be confused with *P. brenesii* Standl. with which it shares a V-shaped sinus with little or no development of the posterior rib and moderately close and numerous primary lateral veins, but that species differs in drying more greenish and in having the major veins on the upper surface sunken on drying, as well as having a green spathe in contrast to a maroon spathe for *P. monroi*.

In the Lucid *Philodendron* Key, the species also tracks to *Philodendron cotonense* Croat & Grayum, differing by having thinner leaf blades with a naked posterior rib, more prominently spreading posterior lobes with a parabolic sinus, the posterior rib naked at least near the base and by having longer peduncles (to more than 10 cm long); to *P. grayumii* Croat, differing by prominently persistent cataphylls, larger and more prominently ovate-sagittate blades with a naked posterior rib and up to 5 inflorescences per axil; to *P. morii* Croat, differing by having leaf blades thinner and greenish drying with leaf blade sinus that is arcuate and somewhat decurrent on petiole; and to *P. panamense* K.Krause, differing by having persistent cataphyll fibers, much larger leaf blades with a prominent naked posterior rib, and a much longer peduncle that is markedly curved just below the spathe tube. Since the species is known from only a single specimen, the Red Book status (IUCN, 2021) of the species is DD (Data Deficient).



Figure 4. *Philodendron trisectifolium* Croat. Habit with leaves, adaxial surface, Croat 56108.



Figure 5. *Philodendron trisectifolium* Croat. Stem, leaf bases & cataphylls, *Croat 56108*.



Figure 6. *Philodendron trisetifolium* Croat. Close up of leaves, adaxial surface, *Croat 56108*

Philodendron trisectifolium Croat, **sp. nov.** — Type: COLOMBIA, Chocó: 4 km S of Quibdó, 50 m, 9 Jan. 1979, A. H. Gentry & E. Rentería 23858 (holotype, MO-2714293!; isotypes, CHOCO, HUA). Figures 4–8.

Diagnosis: The species belongs to subgen. *Philodendron* sect. *Tritomophyllum* and is characterized by its long stems, long internodes, deeply 3-lobed blades which are divided nearly to the base and weakly confluent at the base with prominently quilted major veins mostly aggregated near the base of the lateral lobes, markedly asymmetrical posterior lobes with a parabolic or hippocrepiform sinus and with the base of the blade decurrent on the petiole, as well as having by 1–6 inflorescences per axil with the spathe tube pinkish to light magenta on both surfaces and the spathe blade light green to whitish outside, white inside.

Appressed-climbing hemiepiphyte or sometimes terrestrial on steep road banks, stem often very elongated, sap watery, with a strong odor to turpentine; internodes (3–)6–15 cm long, 1.6–3.5(–5) cm diam., shorter toward the apex of stem, somewhat glossy, promptly grayish green; cataphylls 16–28(45) cm long, unribbed to 1-ribbed, thin, light green to whitish, semi-glossy, deciduous; roots 2–10 per node, yellow or brown. Leaves spreading; petioles 37–74 cm long, 0.5–0.9 cm diam. at apex, 1.4 cm at base, cylindrical to subcylindrical, somewhat firm and fleshy, obtusely angular adaxially, medium green, with dark purple ring at apex, semiglossy; blades deeply 3-lobed, almost to the base (ca. 1 cm of the base), weakly coriaceous, somewhat bicolorous, to glossy above, glossy below, drying brown above and olive-green below; median lobe 24–48(63) cm long, 10–18 (26.5) cm wide, elliptic to obovate-elliptic, gradually long-acuminate at apex, prominently constricted at the base, the area of confluence less than 1 cm wide; lateral lobes 20–34(–43.5) cm long, 8–16(–21) cm wide, conspicuously inequilateral, acute at the apex, the inner margin always narrower than the outer margin and weakly confluent with medial lobe, the outer margin rounded at the base and forming a parabolic to hippocrepiform sinus, base of the blade decurrent on the petiole; sinus (2.5)6–13 cm deep, 1–2.3(6) cm wide midway; midrib of the lobes narrowly raised in valleys and paler than surface above, thicker than broad and more or less concolorous below; primary lateral veins of the anterior lobe (6–)10–16 pairs, departing midrib at 50–65°, quilted-sunken and paler than surface above, narrowly raised and concolorous below, sometimes giving the base of the blade a pleated appearance; primary lateral veins of the lateral lobes up to 17 pairs, closely aggregated toward the base near the petioles; minor veins visible, drying moderately fine and distinct, densely and minutely granular on the upper surface (under magnification). *Inflorescences* 1–6 per axil; peduncle 4–9(15) cm long, 0.9–1.0 cm diam., light green; spathe (11)14–21 cm long weakly constricted above tube; blade light green with purple mottling and whitish margins outside, whitish, glossy, with orange resin canals inside; tube 2–3.8 cm diam., light green tinged pinkish to light magenta outside, dark magenta to rosy red inside; spadix 9.5–17 cm long, sessile or shortly stipitate, more or less erect; staminate portion 5.5–10.5 cm long;

fertile portion 1.3 cm diam., broadest at the middle, white to cream; sterile staminate portion ca 1.2 cm diam., usually broader than pistillate portion; pistillate portion 4–6.5 × 0.8 cm diam., greenish, pistils 6–8-locular with sub-basal placentation; locules to 2.3 mm long; ovules 1–2 per locule contained within a gelatinous matrix, longer than the funicle; stigma subdis-coid, truncate, covering center of style apex. *Infructescence* with whitish fruits 4 mm × 2–2.7 mm diam.; seeds ca. 1.5 mm long, usually 6–8 per fruit, cylindrical, sticky.

Distribution and ecology — *Philodendron trisectifolium* occurs along the Pacific Coast of Darién Province in Panama and in Colombia in the Department of Choc to considerably south of Quibó from sea level to 200 m in *Tropical wet forest* and *Tropical rain forest* life zones. In the Cabo Corrientes region of Chocó Department, it is very abundant in the forest and it is usually found climbing on trees less than 3 m above the ground. Flowers December to February, June and August. Fruiting Dec.-Feb., June, August.

Etymology — The specific epithet refers to the deeply three-lobed leaf blades appearing to be trisect.

Comments — *Philodendron trisectifolium* was confused with *P. tripartitum* (Jacq.) Schott in the Revision of *Philodendron* subgen. *Philodendron* for Mexico and Central America (Croat, 1999) but has since proven to be quite distinct. In that publication, the species was represented by Figures 412 and 424 (Croat 56108).

Philodendron trisectifolium is similar to *P. tripartitum* but that species has appreciably smaller leaves and usually a solitary inflorescence that is green on the tube (vs. pinkish to light magenta).

Four collections (Croat 35342, Croat 35248, Croat 43438 and Morales & Abarca 6371) determined as *Philodendron tripartitum* from Costa Rica in the San José Province, are morphologically very similar to material of *P. trisectifolium* from Chocó, Colombia. However, these collections differ by having leaf blades with a narrower anterior lobe with primary lateral veins that depart midrib at a narrower angle (<65° vs. >70°), a spathe predominantly green (vs. pinkish to maroon or light magenta on the tube), and they occur in higher elevations (680–1650 m vs. 0–100 m).

The species is also similar to *Philodendron cotobrusense* Croat & Grayum, a species endemic from Costa Rica, but the later species has leaf blades that are deeply lobed (vs. almost, trisect) with the area of confluence usually more than 1.5 cm wide (vs. less than 1 cm), a



Figure 7. *Philodendron trisectifolium* Croat. Cataphyll with new emerging leaf, Croat 56108. All photos: Croat.



Figure 8. *Philodendron trisetifolium* Croat. Herbarium specimen, Juncosa 1596 (MO-125898).

higher number of primary lateral veins, and more conspicuous interprimary and secondary veins.

Philodendron trisectifolium was first discovered by Al Gentry and Enrique Renteria in the Chocó Department of Colombia on January 9, 1979 and again on Jan. 12th (*Gentry & Renteria 23858 & 24078*, respectively). It was first collected in Panama along the Río Cocalito on the Pacific coast near the Colombian border by *Caroline Whitefoord and Alan Eddy (223)* in February 1982.

The Red Book status (IUCN, 2021) of the species is LC (Least Concern) since it has a broad range extending from southern Panama to at least as far south as southern Chocó Department in Colombia.

Paratypes: COLOMBIA. **Chocó**: Serranía de Baudo, along road between Las Animas and Pato, on Río Pato ca. 1 km from Pato, 05°32'N, 76°48'W, 150 m, T. B. Croat 56108 (COL, MEXU, MO, SEL). PANAMA. **Darién**: Río Cocalito, 17 Feb. 1982, Caroline Whitefoord & Alan Eddy 223 (BM, MEXU, MO); 4 km S. Quibdó, 9 Jan. 1979, A. H. Gentry & E. Renteria 23858 (CHOCO, MO); 5 km W of Istmo de San Pablo (Río San Pablo = Río Quito) on Pan American Highway (under construction), ca. 25 km W of Las Animas. 12 Jan. 1979, A. H. Gentry & E. Renteria 24078 (CHOCO, MO).

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