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Two New Species of Araceae for the Guianas

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ABSTRACT. Two species of Araceae from the Guianas are described. *Philodendron billietiae*, known from Guayana, French Guiana, and Brazil, is most closely related to *P. acutatum*. *Xanthosoma granvillei*, known only from French Guiana, is distinguished mainly by its large, blackish-drying blades.

In order to complete the Araceae treatment for the *Flora of Saül* and the *Flora of the Guianas* it has become necessary to describe a number of new species. Descriptions of other new species of Araceae will follow.

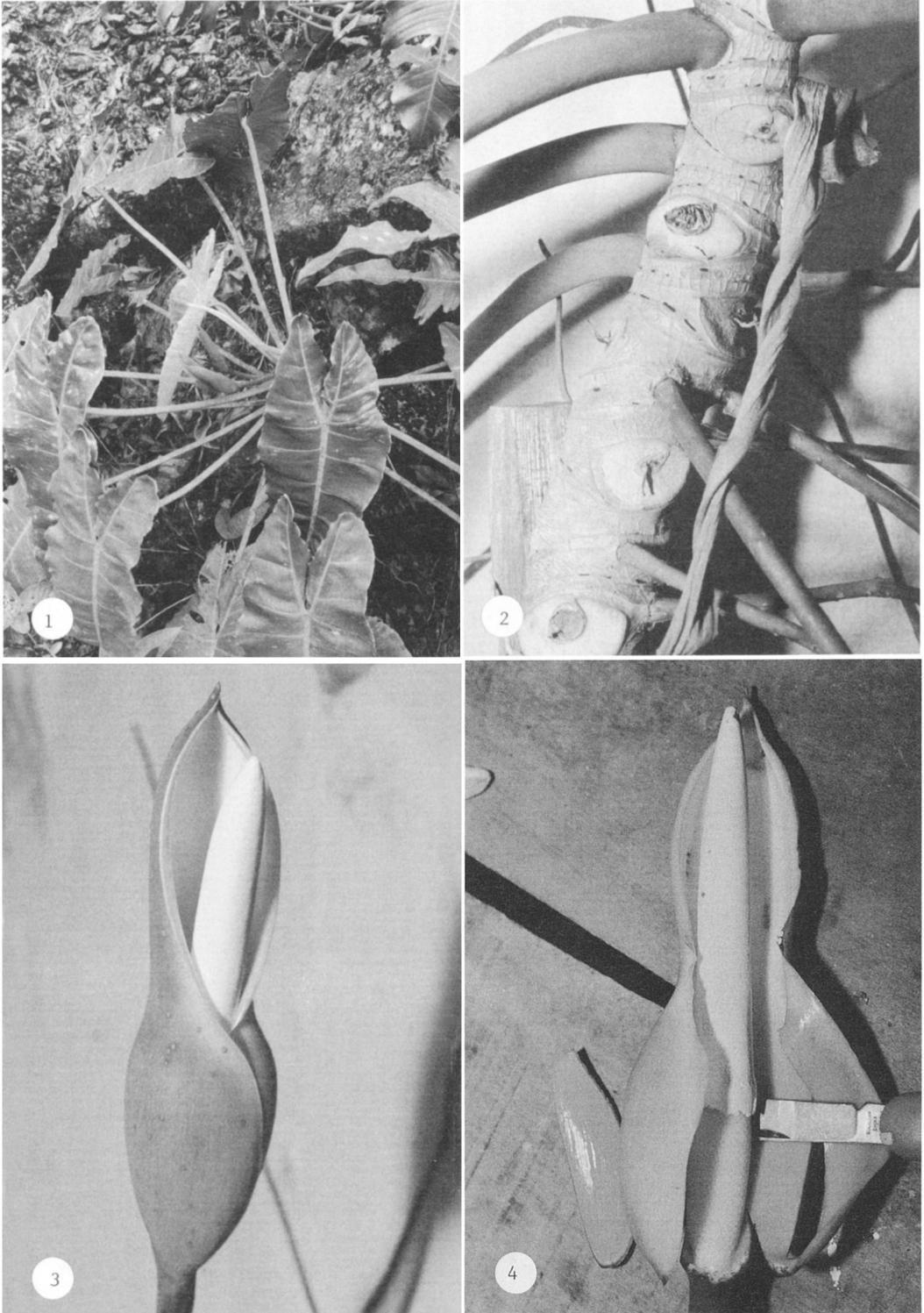
Philodendron billietiae Croat, sp. nov. TYPE: French Guiana. National Hwy. 2, Cayenne–Regina, vic. km 93, 100–150 m, 4°18'N, 52°10'W, Croat 74321 (holotype, MO 4343643-5; isotypes, B, BBS, BR, BRG, CAS, CAY, CM, F, G, GH, INPA, K, M, MG, NY, P, US, VEN). Figures 1–4.

Planta hemiepiphytica; internodia brevia, usque 2.5–5 cm diam.; petiolus subteres, 25–57 cm longus, pallide aurantiacus-flavus vel viridi-flavus; lamina plus minusve anguste triangularis et sagittata, 30–85 cm longa, 8.1–21 cm lata; nervis lateralibus primariis 3–5 utroque; pedunculus 9.4–27 cm longus; spatha 17.5–18.5 cm longa, extus viridis; lamina intus alba; tubus intus purpurascens; spadix 16.5–18 cm longus; ovaria 6–11 locularia cum ovulis plus quam 10 in quoque loculo; affinis *P. acutato* Schott sed internodis proportione brevioribus, petiolo in vivo flavido vel ochraceo versus constanter viridi, lamina proportione angustiore basique lobis 35–40° versus 60–75° divergentibus differt.

Appressed-climbing hemiepiphyte, sometimes on rocks; stems about 1 m long, sometimes longer; internodes shorter than broad, 2.5–5 cm diam., light brown with irregular, weak, reticulate to mostly transverse fissures, turning yellow-brown; petiole scars to 4.5 cm diam.; cataphylls sharply D-shaped near apex, otherwise terete and unribbed or sometimes bluntly 2-ribbed, green to pale orange (sometimes brown, orange at base) or reddish, promptly caducous; roots moderately few, stout, ca. 5 mm diam., purplish brown, drying smooth, semiglossy, the epidermis often fissured; leaves usually clustered near the end of the stem, with erect spreading petioles and pendent blades; petioles broadly spreading, 25–57 cm long, averaging 40 cm long, broadly

sulcate at base, obtusely flattened toward the apex, weakly angular near the apex, sheathed 4–8 cm at the base, firm, olive green to golden-yellow, pale yellow-orange or greenish yellow, when fresh, somewhat asperous and rather densely purplish-lineate, drying light yellow-brown to dark brown, typically closely fissured; blades pendent, narrowly triangular to narrowly ovate-triangular to oblong-triangular, 30–85 cm long, 8.1–21 cm wide (averaging 52 × 15 cm), 2.7–4 times longer than wide, averaging 3.4 times longer than wide, broadest at the base or near the petiole attachment, sometimes weakly constricted above the petiole attachment, 0.85–1.4 times as long as the petioles (averaging 1.07 times longer than petioles), moderately coriaceous, dark green and semiglossy above, much paler and matte to weakly glossy below; the margins often weakly undulate, hyaline or reddish; posterior lobes directed at about 170° from the midrib (the two lobes separated by an angle of 35–40°), sometimes directed up slightly at an angle to the midrib, 8–22 cm long, 3–10 cm wide, about twice as long as wide; sinus much longer than wide, acute at apex, usually barely naked along the margin, but sometimes weakly naked up to 2.5 cm (the leaf tissue merging almost imperceptibly with the posterior rib); midrib flat to very broadly raised and paler (sometimes orange-yellow) with purplish dots above, narrowly raised and convex, yellow-brown to yellow-red or yellow-green below; primary lateral veins 3–5, widely spaced and usually not prominent, weakly sunken to flat and yellow-green above, convex to weakly raised and sometimes reddish to purplish below, arising at 70–105° angle, mostly at nearly 90° angle, sometimes prominently down-turned at the midrib, sometimes splayed out at the midrib; minor veins numerous, moderately distinct when fresh, weakly raised above, flat and distinctly visible below, drying prominent on both surfaces, with alternate veins frequently turned to join another minor vein just before the margin; cross veins inconspicuous; young leaves reddish. Inflorescences 1–3 per axil, erect; peduncle 9.4–27 cm long, ca. 1 cm diam., somewhat flattened, ribbed on one side, medium yellow-green, green-lineate to purplish-lineate; spathe 17.5–18.5 cm long, yellow-green to dark green outside, slightly paler toward apex, densely pale purplish-lineate on

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Figures 1–4. *Philodendron billietiae* Croat. —1. Habit, plant creeping over rocks in full sun; *Croat* 74230. —2. Close-up of stem showing old intact cataphyll and leaf scars, roots, and petioles; *Moonen* s.n., cultivated in Cayenne. —3. Inflorescence at anthesis showing male portion of spadix barely emergent; *Moonen* s.n. —4. Open inflorescence; *Moonen* s.n.

tube, dark purplish-lineate on blade, the outer margin of the tube slightly paler, the blade white to greenish white within, the margins weakly turned back at anthesis; tube sometimes reddish-spotted outside, mauve to maroon within, becoming dark maroon-purple within after anthesis with conspicuous, closely spaced resin canals restricted to the area of the constriction, blending in with the red of the tube and the white of the blade; spadix 16.5–18 cm long; staminate portion white, to 9 cm long, to 11 mm diam. at base, weakly constricted to ca. 9 mm somewhat above the sterile portion, tapered to the narrowly rounded apex; pistillate portion pale green, to 7.2 cm long on front side, 5.3 cm long on back side; pistils ca. 3 mm long, pale yellow-green, turning pale yellow post-anthesis; ovaries 6–11-locular; ovules more than 10 per locule; sterile male flowers broader than the pistillate portion, scalloped and undercut at base, 2.2 cm diam., 10–11 mm long; fertile portion constricted 8.5 cm above base, creamy white, bluntly pointed at apex.

Philodendron billietiae is known from Guyana, French Guiana, and Brazil (Pará) in tropical rainforest at 140 to 340 m elevation; certainly it is to be expected in Suriname as well. In Brazil it has been collected only near Belém, and only a live collection cultivated at the Moscow Main Botanical Garden has been seen.

The species is a member of *Philodendron* subg. *Philodendron* (formerly *Polyspermium*) and is characterized by its long, mostly triangular leaf blades with a very narrow sinus, elongated posterior lobes, relatively few, widely spaced primary lateral veins, and especially by its greenish yellow or pale orange petioles, which are about as long as the blade.

Philodendron billietiae was first collected by H. A. Gleason of the New York Botanical Garden in 1921 in Guyana, where it has not been collected subsequently. It is named in honor of Frieda Billiet of the Jardin Botanique National de Belgique, Meise, who studied the species at several localities in French Guiana, brought it into cultivation, and first brought it to my attention. The species is in cultivation in the botanical garden at Meise, as well as at the Missouri Botanical Garden and the Moscow Main Botanical Garden.

Philodendron billietiae is most easily confused with and probably most closely related to *P. acutatum* Schott, a similar species with which it may occur. *Philodendron acutatum* differs in having proportionately longer internodes, consistently medium green petioles, and proportionately wider, mostly narrowly ovate blades that often have the posterior lobes divergent from one another at an

angle of 60° or more. In addition, *P. acutatum* is ecologically different from *P. billietiae* in French Guiana, occurring principally in the coastal swamp forests with *Avicennia*.

Paratypes. FRENCH GUIANA. Pic Coudreau-Mont Bakra, Région des Emérillons, 670 m, 3°18'N, 52°57'W, *de Granville & Cremers 11833* (CAY, MO, P, U, US); Savane Roche de Virginie-Approuague River basin, 140 m, 4°11'N, 52°9'W, *Cremers & Petronelli 11683* (CAY, K, MO, P, U); Montagnes de Kaw, 4°33'N, 52°09'W, *Cremers 12718* (CAY); Montagnes de Kaw, along road to Montagne Favard, vic. jct. to Fourgrassie, 200 m, 4°38'N, 52°17'W, *Croat 74335* (CAY, K, MO, US); Route Nationale, RN 2, 4°35'N, 52°20'W, *Cremers 12723* (CAY); km 95.5, *Prevost 1739* (CAY); km 67, Crique Tibourou, along old route for RN 2, 5 m, 4°29'N, 52°19'W, *Billiet & Jadin 5740* (B, BR, CAY, K, MO, NY); km 93, 100–150 m, 4°18'N, 52°10'W, *Croat 74321* (B, BR, CAY, K, NY, MG, P, US, VEN); road to Montagnes de Kaw, km 34, 4°33'N, 52°09'W, 340 m, *Billiet & Jadin 4600* (BR); La Compté River, vic. km 40 on RN 2, 4°N, 52°21'W, *Billiet & Jadin 4714* (BR, CAY, MO); between La Compté & Cacao, S of Cayenne, 1981, *Billiet 81-0879* (BR), *Croat 76441* (MO); Saül, vic. Eaux Claires, Sentier Botanique near headwaters of St. Eloi River, 350 m, *Croat 74230* (CAS, CAY, CM, M, MO, W). GUYANA. Rockstone, *Gleason 846* (GH).

In addition to the localities listed above, the species has been seen in French Guiana on the road to Petit Saut, km 20 (F. Billiet, pers. comm.).

Xanthosoma granvillei Croat & Thompson, sp. nov. TYPE: French Guiana. Saül, vic. Eaux Claires, along road between Eaux Claires and Bélizon, 230 m, 3°37'N, 53°12'W, *Croat 74131* (holotype, MO-4342303; isotypes, B, CAY, CM, K, NY, P, US). Figures 5–8.

Planta terrestris; caulibus 15–30(–50) cm longis; internodia usque 6(–15) cm diam.; petiolus teres, 39–75(–100) cm longus; lamina ovato-hastata, 19–70 cm longa, (16–)21–50 cm lata, 2.1–2.3 plo longior quam lata, in sicco subdenigrata; cum costa postica nuda 1.0–5.5 cm; nervis primariis lateralibus 3–6 utroque; inflorescentiae 3–6 per axila; pedunculus 8–30 cm longus; spatha 11.5–20 cm longa; tubus 4.5–6.5 cm longus, extus viridus, intus atropurpureus; lamina 8–8.5 cm longa, extus et intus albida; spadix usque 18 cm longus, parte pistillata plus minusve aurantiaca; ovaria 2–3 locularia, loculi 2–3 ovulati; fructus aurantiacus.

Terrestrial; stems rhizomatous, the older portion creeping over ground, the younger portion erect, 15–30(–50) cm long; internodes short, to 6(–15) cm diam.; cataphylls to 25 cm long, persistent, turning dark brown, the uppermost persisting semi-intact; petioles 39–75(–100) cm long, terete but somewhat flattened near apex, succulent and juicy, tinged purplish at base, sheathed usually less than ¼ its length (up to 20 cm when subtending an inflorescence); blades ovate-hastate, 19–70 cm long,



Figures 5–8. *Xanthosoma granvillei* Croat & Thompson; Croat 74131. —5. Habit showing an inflorescence and an emerging new leaf. —6. Stem with old persistent leaf sheaths. —7. Leaf blade. —8. Close-up of inflorescence showing an unopened spathe.

(16–)21–50 cm wide, 2.1–2.3 times longer than broad, prominently lobed at base, acuminate at apex, dark green and semiglossy above, moderately paler and weakly glossy below, drying somewhat blackened, dark olive-green above, dark brownish green below; the lateral margins usually convex, rarely concave; posterior lobes 1.2–1.8 times longer than wide, subacute at apex, sometimes turned weakly outward, often held somewhat upward at an angle to the midrib; sinus hippocrepiform or sometimes obovate, 9–19 cm deep; posterior rib straight and extending outward at ca. 60° angle to the midrib, naked 1–5.5 cm along sinus; basal veins 6–9 pairs, the uppermost free, the remainder pinnately arranged along the posterior rib; primary lateral veins 3–6 pairs, arising at 40–60° angle; minor veins weakly etched above, flat and darker than surface below. Inflorescences 3–6 per axil; peduncle greenish, 8–30 cm long, longer than or shorter than the spathe; spathe 11.5–20 cm long, constricted at lower $\frac{1}{3}$, the tube 4.5–6.5 cm long, the blade white, sometimes lined with pink, the tube green outside, sometimes tinged purplish, dark purple within, sometimes becoming deep red outside; spathe blade 8–8.5 cm long, whitish on both surfaces; spadix to 18 cm long, several centimeters shorter than spathe, female portion bright orange to yellow-orange; ovaries 2–3-locular; locules usually 2–3-ovular. Inflorescences with peduncles to 22 cm long, fruiting spathe to 7 cm long, fruiting spadix 3.5–4.5 cm long, 2–2.5 cm diam. Fruits orange; immature seeds 1.6–1.8 mm long, 1 mm diam., obtuse at apex, cordulate at base, ca. 10-ribbed longitudinally. Very common and conspicuous in wet season but surviving as an underground stem during the dry season.

Xanthosoma granvillei is known only from French Guiana, mostly between 200 and 500 m, but rarely to nearly sea level; it is to be expected in adjacent Suriname. The species was first collected in 1966 by Oldeman at Cacao, south of Cayenne. It is named for Jean Jacques de Granville from ORSTOM, in Cayenne, who collected more well-prepared specimens of the species than any other collector.

Xanthosoma granvillei is recognized by its short stems emerging usually only a short distance above the ground level, its ovate-cordate, blackish-drying blades with triangular posterior lobes, sunken minor veins, and a partly naked, usually hippocrepiform sinus. Additionally, the cluster of 3–6 inflorescences with peduncles about as long as the spadix, with orange female spadices, distinguish it from other species of *Xanthosoma*.

Xanthosoma granvillei is most easily confused

with another blackish-drying species that also appears to be new to science. That species differs by having tuberous growth, smaller, more hastate leaf blades, and an inflorescence with slender peduncles that are 3–4 times longer than the spathe. It is represented by collections from the Montagnes de Kaw (*Cremers* 2719, 8702) and from the nearby region at Crique Armontabo, a tributary of the Oya-pock River (*Cremers* 7055). It will be described later.

Xanthosoma granvillei might also be confused with *X. undipes* K. Koch & Bouché, which differs in having a longer stem, foul-smelling sap, and blades that dry greenish rather than blackened. Superficially, *X. granvillei* is very similar to *X. bolivarianum* Bunting from the El Dorado–Gran Sabana area of Venezuela. That species, described from sterile material, has similar stems and blades but differs in having obtusely sulcate petioles sheathed to about the middle (versus merely obtusely flattened and usually less than $\frac{1}{4}$ its length for *X. granvillei*), and leaf blades that dry gray-green above and light yellow-green below (not at all blackened). In addition, *X. bolivarianum* lacks any obvious lateral veins directed off the posterior rib toward the base, whereas *X. granvillei* has 2–3 prominent lateral veins branched off the posterior rib and directed toward the base.

Paratypes. FRENCH GUIANA. Cacao, 60 km S of Cayenne, *Oldeman* B-450 (P); Montagne Cacao, SE of Cayenne, *Cremers* 13031 (CAY, MO), *Feuillet* 548 (CAY); Basin de la Comté River basin, 4°34'N, 52°27'W, *Cremers* 12728 (CAY); Région de Paul Isnard, Citron Petite piste Boeuf Mort, *Feuillet* 653 (CAY, K); Mont Atachi Bacca–Inini River region, 9 km SE of Gobaya Soula, 420 m, 3°33'N, 53°55'W, *de Granville et al.* 10649 (CAY, K); E of Gobaya Soula, 440 m, 3°33'N, 53°55'W, *de Granville et al.* 10482 (B, CAY, FTC, K, US); Montagnes de Kaw, road to Montagne Trésor, side trail to Placer Trésor, 4°35'N, 52°18'W, 150 m, *Croat* 74283 (CAY, MO); Montagnes de Kaw, Cascade de Fourgassié, 4°37'N, 53°18'W, *Cremers* & *Feuillet* 12968 (CAY, MO); Montagnes de Kaw, road to Dégrad Lalanne, 300 m, 4°34'N, 52°10'W, *Hoff et al.* 6308 (CAY); Station des Ouragues, *Prevost* 2503 (CAY); Saül, Mont Galboa, 550 m, 3°36'N, 53°17'W, *de Granville et al.* 8608 (B, CAY, K, NY, P, U, US), 500 m, *de Granville et al.* 8837 (CAY, K, US); Saül, in village, jardin de Richard, *Capus* 2 (CAY); 10 km SSW of village, *de Granville* 5420 (BR, CAY, K, P); 18 km S of village, *de Granville* 5531 (BR, CAY, K, P); Saül, Pied de Mont Galboa, 200 m, 3°37'N, 53°16'W, *de Granville et al.* 9042 (CAY); Mont La Fumée, 3°37'N, 53°12'W, *Mori & Pipoly* 15575 (NY); Saül, Fumée, *Prevost* 1798 (MO); Saül, La Fumée Mountain trail, 250 m, *Mori & Gracie* 18865 (NY); Mont Galboa, 10 km SW of Saül, 650 m, *de Granville* 2401 (CAY, P); Saül, road to Eaux Claires, 250 m, *Mori & Gracie* 21083 (NY); Saül, vic. Eaux Claires, along road between Eaux Claires and Bélizon, 220–240 m, 3°37'N, 53°12'W, *Croat* 74131 (B, CAY, CM, K, MO, NY, P,

US), *de Granville 4480* (K); Saül, road to Bélizon, 0–2 km S of Eaux Claires, *Mori et al. 22194* (MO, NY); Saül, Grand Boeuf Mort trail, 300 m, *Mori & Gracie 18935* (CAY, NY); vic. Saül, trail to Mont Galboa, *de Granville 4486* (CAY, K); Rte. de Bélizon, km 7.7, 4°20'N, 52°23'W, *Billiet & Jadin 4424* (BR, CAY); Saül, ENE of village, Pic Matecho, *Cremers 6184* (CAY,

K); Saül Region, Saut Quaimicouaré, Yaroupi River (tributary of the Oyapock), *de Granville 345* (P); Bassin du Sinnamary, Crique Kourcibo, Saut Kawène, 12 m, 4°53'N, 53°3'W, *Hoff et al. 6475* (CAY, MO); Chemin de fer Gare-Tigre-St. Elie, km 0–5, 20 m, 4°57'N, 53°8'W, *Hoff et al. 6585* (CAY, MO).