Philodendron × *joepii*, a new nothospecies in section *Schizophyllum* (Araceae) from French Guiana, and *Philodendron* 'Bette Waterbury', a new cultivar name for a similar hybrid of unknown original provenance

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ABSTRACT
Philodendron × *joepii* is a hybrid found in the forests of eastern French Guiana with parentage presumed to be members of *Philodendron* sect. *Schizophyllum* (Schott) Engl. *Philodendron* × *joepii* is further compared with another putative hybrid from Brazil.

Keywords: *Philodendron*, new species, French Guiana, new cultivar.

INTRODUCTION

The genus *Philodendron* with 564 described species is the second largest genus in the family and remains one of the most poorly known, especially at the sectional level. Recent attempts at a molecular phylogeny (Vasconcelos et al., 2018; Canal, et al. 2019) indicate molecular phylogeny is certainly at odds with the classification by Krause (1913), so it is hoped that breeding studies and reports of wild hybridizations as in the case of this report, might have a bearing on the sectional classification. The person that this species was named after is a keen observer of nature and has spent many years in the forests of the Guianas. An earlier publication reported another natural hybridization event that is between Philodendron melinonii Brongn. ex Regel and P. linnaei Kunth (Croat & Moonen, 2020). *Philodendron* species are typically not easily cross-pollinated in the wild, and most are known to be pollinated by specific beetles that are cued to visit the inflorescence at a specific time owing to the timing of scent production. Moreover, many species also have different scents that have apparently evolved to attract specific pollinators (Pereira et. al., 2014; Florian Etl, pers. com.). Thus, the discovery of wild hybrids is not a particularly common event and therefore very exciting.

Figure 1. *Philodendron* × *joepii* Croat. Habit.

Philodendron × *joepii*, described in this paper, was discovered in an area where several putative parents coexist. Two members of sect. *Schizophyllum*, *Philodendron bipennifolium* Schott and *P. pedatum* (Hook.) Kunth are present in the region. Owing to the shape of the blades, the hybrid appears to be a cross between these two pinnately lobed plants. *Philodendron* × *joepii*, which shows an dissected leaf not in any way similar to any known species of *Philodendron* or to any other known hybrid.

Figure 2. *Philodendron* × *joepii* Croat. Leaf blade, adaxial surface.

Figure 3. *Philodendron* × *joepii* Croat. Stem showing internodes, roots, and base of petioles.

A cross between *Philodendron pedatum* and *P. bipennifolium* appears logical since they are both members of sect. *Schizophyllum* and the shape of the blades of the two species with the characteristic posterior lobes typical of *P. pedatum* as well as the slender shape of the leaf of *P. bipennifolium* (see images of proposed parents in **Figures 1** and **2**). On the other hand, the shape and coloration of the inflorescence is most like *Philodendron pedatum*.

Philodendron × *joepii* Croat, nothosp. nov. — TYPE: French Guiana. Rivière Mataroni, Bassin de l'Approuague, 04°17'N, 52°10'W, 5 m, 23 Mar. 2000, J.J. de Granville 14049 (holotype, CAY; isotypes, MO, P, U, US). **Figures 1–4** & **7**.

Nomadic vines; internodes longer than broad on younger plants, as broad as long or broader than long on adult plants, 2–3 cm long, 2.5–3 cm diam., dark green, weakly glossy to semi-

Figure 4. *Philodendron* × *joepii* Croat. Inflorescence.

glossy; cataphylls reddish or pinkish outside, whitish inside, 2-ribbed, apical part coiled after opening, ca. 30 cm long, deciduous. Leaves with petioles erect-spreading, 40 cm long, 1 cm diam., densely pale raised-lineate; blades deeply 3-lobed, 30–50 cm long, 25–40 cm wide,1.1–1.2 times longer than wide, equal to or up to 1.3 times longer than petioles, subcoriaceous, dark green and weakly glossy above, paler and semiglossy below, drying gray-brown and matte above, medium yellowish brown and semiglossy below; medial lobe 27–52 cm long, (8.5)14.7–22.7 cm wide at broadest point, 2.6–3.1 times longer than lateral lobes, sometimes attenuated to near the petiolar plexus and confluent onto the posterior lobes (confluent area 1.3–4 cm broad), sometimes markedly constricted slightly below middle then broadened to form a second lower more or less ovate segment near the base 8–12 cm long, 4–8 cm wide, the

Figure 5. *Philodendron bipennifolium*, putative parent of *P.* × *joepii*.

Figure 6. *Philodendron pedatum*, putative parent of *P.* × *joepii*

Figure 7. Collector Joep Moonen holding cultivated plant of *Philodendron* × *joepii.*

Figure 8. *Philodendron* 'Bette Waterbury'. Habit of cultivated plant at Missouri Botanical Garden (Croat 69686)

base of this lobe then confluent onto posterior lobes, the terminal portion of the medial lobe 14.5–22 cm wide, narrowly ovate and attenuate onto the constricted area, the lower portion of the anterior lobe, narrowly ovate to elliptic, 8–14 cm long, 4.5–11.7 cm wide, sometimes somewhat sinuate on margins, the constricted area 1.3–4.5 cm wide; posterior lobes spreading-reflexed at a 110–135° angle, often asymmetrical, (5.5) 9–16.5 cm long, (1.3) 3–3.8 cm wide in broadest area, somewhat constricted in one or more areas along its length; upper margin 1–1.8 cm wide; lower margin 1–3 cm wide; basal veins united into a posterior rib that extends to the tip of the posterior lobes, 3–4 pairs of the veins in lateral lobes acroscopic, 5–6 pairs basiscopic, only the lowermost pair of acroscopic veins free to the base; midrib rounded above, narrowly rounded below, drying sunken and darker above, narrowly rounded, several-ribbed and nearly concolorous below; primary lateral veins 12–14 pairs, arising at a 60° angle, sunken and concolorous above, narrowly rounded and paler below; minor veins moderately obscure on both surfaces on dried leaves. *Inflorescences* 1–3 per axil; peduncle greenish, matte, (4–6)10–15 cm long; spathe 18 cm long, scarcely constricted when furled, tinged pinkish outside in lower ½ post-anthesis; tube 5–8.5 cm long, 2.5–3 cm diam. at anthesis, opening to within 2 cm from the base, medium green weakly glossy outside (the margins whitish, flaring out), reddish in tube; blade whitish, markedly curved forward at anthesis, inner surface white, except tinged pinkish near its base; spadix 12–17 cm long, protruding forward moderately; staminate portion 9.5 cm long, 1 cm diam. at 1 cm from tip, 1.2 cm diam. in middle and at base; fertile portion 8 cm long, 1.2 cm diam. in distal 2/3, 1.6 mm diam. midway, 1.5 cm diam. at base, narrowly rounded at apex; sterile staminate portion 1.5 cm long, 1.2 cm diam., lowermost row of staminodia enlarged, to 1 mm diam., the remaining staminodia prismatic, 0.5–1 mm diam.; pistillate portion 7.2 cm long, 1.3 cm diam. at apex and middle, to 1 cm diam. near base; pistils 2.8 mm long; stigma 1–1.2 mm diam. with a deep medial pore and the stigmatic papillae in a narrow fringe around margin; ovary 2.1 mm long, 1.8 mm diam., 5–7-locular; placentation basal; ovules 3–5 per locule, borne in a transparent envelope to 1 mm long, 0.2 mm diam., funicles as long as or up to two times longer than ovule proper. *Infructescences* not seen.

Distribution and ecology — *Philodendron* × *joepii* is known only from French Guiana, from the type locality around the Mataroni River at less than 50 m elevation in an area of *tropical moist forest* life zone.

Etymology — The presumed hybrid is named in honor of Mr. Joep Moonen who discovered it in 1990 and has had it in cultivation for many years. Moonen, a professional photographer and naturalist, is one of the best authorities on the Araceae of the Guianas, having studied and traveled widely in the region. He is the owner of Emerald Jungle Village, tourist facility in French Guiana. Joep is also a Volunteer Research Associate of the Missouri Botanical Garden's Aroid Research Program

Discussion — The plant is believed to be a natural hybrid between Philodendron pedatum (Hook.) Kunth and *P. bipennifolium* Schott, both of which occur in the area. They are both embers of subgenus *Philodendron* section *Schizophyllum* (Schott) Engl., a small group of species with pinnately lobed leaf blades. *Philodendron* × *joepii* is very rare in nature. Plants in culture in the wet tropics regularly flower but there is no evidence that mature and viable fruits are developed. This adds to the theory that it is a natural hybrid. Since the presumed hybrid is a part of the Amazonian flora and has been collected several times, it is deemed worthy of a name.

The plant is by now somewhat widespread in cultivation and can be seen at the Botanic Gardens in Brest (France), the Jean Marie Pelt Botanical Garden in Nancy; Tonate (French Guiana), Utrecht (Holland), Sitio Burle Marx (Rio de Janeiro State, Brazil), and The Kampong in Miami, Florida (USA).

The introduced clone of this hybrid already has the cultivar name *Philodendron* 'Joep', formally established in Aroideana 33: 267. 2010. The cultivar name is often seen as "*Philodendron* 'Joepii'" (e.g., Moonen, 2014, 2017). However, this is incorrect as joepii is prohibited as a cultivar epithet under the International Code of Nomenclature for Cultivated Plants because it is Latin, which is almost entirely reserved for botanical names. The plant should now be referred to as *Philodendron* × *joepii* when the botanical name is applied, or *Philodendron* 'Joep' when the cultivar name is applied. Both are correct under their respective nomenclatural Codes.

Paratypes: French Guiana. Rivière Mataroni, Bassin de l'Approuague, 04°17'N, 52°10'W, 0 m, 27 Feb. 1998, J. Moonen 2 (CAY); 04°17'N, 52°10'W, 5 m, 16 May 1991, J. J. de Granville 11625 (CAY); 10 m, 11 Mar. 2006, J. J. de Granville 17319 (CAY); Mataroni River, collected in 1990, vouchered 26 May 2000, J. Moonen 266 (MO); Mataroni River, collected November 1990, J. Moonen JM0418 (MO).

Cultivated Plants: ca. 26 km S of Cayenne, Property of J. Moonen at jct. of Route de Tonnegrande and Route de l'Est, S. Mori, C. Gracie, J. Moonen, R. Rishel, D. Russell & F. Wright 22139 (CAY, MO, NY).

A new cultivar name for a similar hybrid

The plant named and described below was found in the collection of the late Roberto Burle Marx (1909–1994) and introduced into cultivation in the U.S. by the late Bette Waterbury (died 4 Nov. 1986), the first President of the International Aroid Society. The collection at

Figure 9. *Philodendron* 'Bette Waterbury'. Habit of cultivated plant at Missouri Botanical Garden (*Croat 69686*).

Figure 10. *Philodendron* 'Bette Waterbury'. Inflorescence in frontal view at anthesis (*Croat 69686*).

Figure 11. *Philodendron* 'Bette Waterbury'. Inflorescence in side view at anthesis (*Croat 69686*).

Figure 12. *Philodendron* 'Bette Waterbury'. Inflorescence with part of spathe removed, showing pistillate greenish spadix, sterile staminate portion and part of fertile staminate portion of spadix (*Croat 69686*).

the Missouri Botanical Garden was obtained from Waterbury and it is now relatively widespread in cultivation. The plant was vouchered at MO with the number Croat 69686 and appears to be a hybrid much like *Philodendron* × *joepii*. It has been in circulation for many years under that voucher and recently under the informal trade designation Philodendron BIG EARS. However, neither has been formally established. It remains without a formal botanical name owing to its lack of provenance, but for the convenience for those who grow it, the plant is described and formally given a cultivar name here, commemorating Bette Waterbury.

***Philodendron* 'Bette Waterbury', new cultivar. —** Nomenclatural standard: Cultivated, Missouri Botanical Garden, voucher of plant received from Bette Waterbury ex Brazil, Rio de Janeiro, collection of Roberto Burle Marx, 26 September 1988, T.B. Croat 69686 (MO). **Figures 8–12.**

Vine; internodes 1–5 cm long, 1.5–2 cm diam.; cataphylls 18 cm long, slender and long-tapered, deciduous; petioles terete, dark green, weakly glossy, weakly ribbed circumferentially, the ribs weakly and densely warty, 35 cm long, 7 mm diam. at base, 6 mm diam. midway, 5 mm diam. at apex; blades deeply 3-lobed; anterior lobe 32.5 cm long, 10 cm wide toward apex, markedly constricted toward the base to 2 cm wide at the junction with the lateral lobes, narrowly acuminate, subcoriaceous, dark green and semiglossy above, slightly paler and semiglossy below; primary lateral veins 4 pairs; lateral lobes directed at a 120° angle, markedly constricted to 1.7 cm wide at base, inequilateral, 4 cm wide on upper edge, 4.7 cm wide on lower side; primary lateral veins 4 pairs on upper side, 5 pairs on lower side; sinus nearly spathulate, 1 cm wide, acute to narrowly rounded at apex; inflorescence solitary; peduncle 10.5 cm long, 6 mm diam., medium green, densely short darker green lineate; spathe 16 cm long, narrowly long acuminate-apiculate, 1.8 × 1.5 cm diam., semiglossy outside, medium green on tube, whitish on blade; inner surface of spathe whitish throughout; resin canals weakly visible in lower half of tube; spadix 11 cm long; pistillate portion 4.6 cm long, 1 cm diam., weakly curved; staminate spadix 7.5 cm long, 1 cm diam. in distal 2/3; sterile staminate spadix 1.5 cm long, 1 cm diam., slightly paler, narrowly rounded at apex; pistils 1.8 mm long, 0.8–1 mm diam.; stigma depressed-globose, 0.6 mm thick, 1–1.2 mm diam.; ovary 6-locular; locules 0.6 mm long, ovules enveloped in a translucent envelope, 1–2 per locule, basal, the funicle ca. ½ as long as ovule proper.

Comments — *Philodendron* 'Bette Waterbury' is like *Philodendron* × *joepii* but with a somewhat less complexly lobed leaf blade and the lateral lobes are always smooth, not possessing the somewhat irregular margins so t ypical of the posterior lobes of *P.* × *joepii*. *Philodendron* 'Bette Waterbury' also differs in having only two ovules per locule instead of 2–5 ovules per locule.

It is characterized by its scandent habit, deeply 3-lobed blades with the lobed prominently attenuated at the base with the lateral lobes spreading and markedly constricted near the base and with the lamina inequilateral. Its parentage, though unknown, perhaps involved different species from the presumed parents of *Philodendron* × *joepii.*

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