
Passiflora sandrae (Passifloraceae), a New Species from Panama

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ABSTRACT. The new species *Passiflora sandrae* from Panama is described and illustrated from living and herbarium material. It is placed in subgenus *Decaloba* supersection *Decaloba* on the basis of the plicate operculum, cernuous shoot tip, transversely sulcate testa, and variegated bilobed leaves. This vine previously has been confused with *P. biflora*.

Key words: Mesoamerica, Panama, *Passiflora*, Sandra Knapp.

While preparing a revision of the Passifloraceae of Mesoamerica, it became clear that a relatively common Panamanian species of passionflower had never been described. Despite its presence on Barro Colorado Island and the existence of specimens dating from the early part of the 20th century, only now is it shown to be new, thanks particularly to careful collections and field notes made by Sandra Knapp and James Mallet.

Passiflora sandrae J. MacDougal, sp. nov. TYPE: Panama. Panamá: foothills and summit of Cerro Caracoral, near La Mesa N of El Valle de Anton, cloud forest and elfin forest, 800–1100 m, 12 Sep. 1981 (bud, fl, imm fr), S. Knapp & J. Mallet 1156 (holotype, MO-3034806). Figures 1 and 2.

Haec species *Passiflorae biflorae* Lamarck similis, sed ab ea prophylo solitario ad gemmam axillarem vegetativam posito, lamina foliari secus costam pallide vittata, nectariis laminaribus ocellatis marginibus hebetatis atque bracteis obscuris distinguitur.

Small to medium non-woody vine, minutely puberulent to puberulent throughout, except the laminae adaxially glabrous, and the stem sometimes glabrescent below; stems ca. 5-angled and strongly grooved-striate, often purple or reddish purple, the shoot tip cernuous; prophyll of the vegetative bud 1, 0.8–2 mm long, narrowly lanceolate to linear-triangular. Stipules 1.5–3.5 × 0.15–0.35 mm, linear-narrowly triangular, subfalcate, dark red to purple; petioles eglandular; laminae (2.3–)3.5–6.5 cm long along central vein, 4–9.5 cm wide, variegated adaxially along the lateral veins and sometimes on the center vein (rarely not variegated), often lustrous, abaxially often flushed red-purple, this often very dark on young leaves, in

outline obovate to very widely obovate (sometimes shallowly obdeltate or obtriangular) in outline, 2-lobed (rarely sub-3-lobed) 1/4 to 1/2 the distance to the base (or rarely slightly deeper than 1/2), the apices of the lateral lobes very variable, mostly acute to obtuse, but occasionally acuminate, rounded, or even truncate, the central lobe obsolete (rarely present as an obtuse cusp), the angle between the lateral lobes (28°–)40°–55°(–67°), the ratio of lamina width to (central vein) length (0.9–)1.1–2(–3.2); lamina margin entire, minutely ciliolate with trichomes 0.15–0.25 mm long; leaves on new shoots near base of established plant (“runners”) very deeply bilobed, dark red-purple abaxially; seedling leaves very shallowly 3-lobed, the lobes rounded to truncate, subequal; juvenile leaves 3-lobed, the lobes rounded to truncate, the central lobe shorter; laminae nectaries borne between the main veins, usually edged with dark purple and thus ocellate, with 2 to 4 conspicuously enlarged nectaries at junction of main veins. Peduncles (1)2 per node, 0.8–2(–2.8) cm long not including floral stipe, uniflorous; bracts 0.8–2.9 × 0.08–0.25 mm, setaceous, linear-triangular, at least 2 of the 3 bracts at or within 2 mm of the apex of the peduncle, purple, not necrotic. Buds characteristically much constricted distal to hypanthium (“shape of Gemini space capsule”), pale green-yellow to nearly white. Flowers oriented about 45°–65° below the horizontal plane at anthesis, with faint sweet-waxy odor or like cut ripe pumpkin, green-white to white, the corona basally yellow-green, distally pale green, green-yellow, or most commonly light yellow; floral stipe 2–5.5 mm (to 6.5 mm in fruit), often tinged red, this color sometimes flushing onto the center of the base of the hypanthium; hypanthium 12.5–15 mm diam.; sepals (12–)14–19 × 7–9 mm, ovate-triangular, apically rounded with no subapical projection, pale green to light yellow-green abaxially, nearly white adaxially, strongly reflexing at anthesis; petals (8–)10–14 × 3–5.8 mm, narrowly ovate or lanceolate, the apex rounded or truncate and sometimes slightly erose, white; coronal filaments in 2 series, the outer ca. 33 or 34 in number (N = 2), (6–)7–10 mm long, ca. 1 mm wide, erect at base, slightly dilated distal to the middle and slightly curved-spreading outward, tapering to the apex, somewhat falcate,



Figure 1. Photograph of the holotype of *Passiflora sandrae* J. MacDougal (Knapp & Mallet 1156, MO).

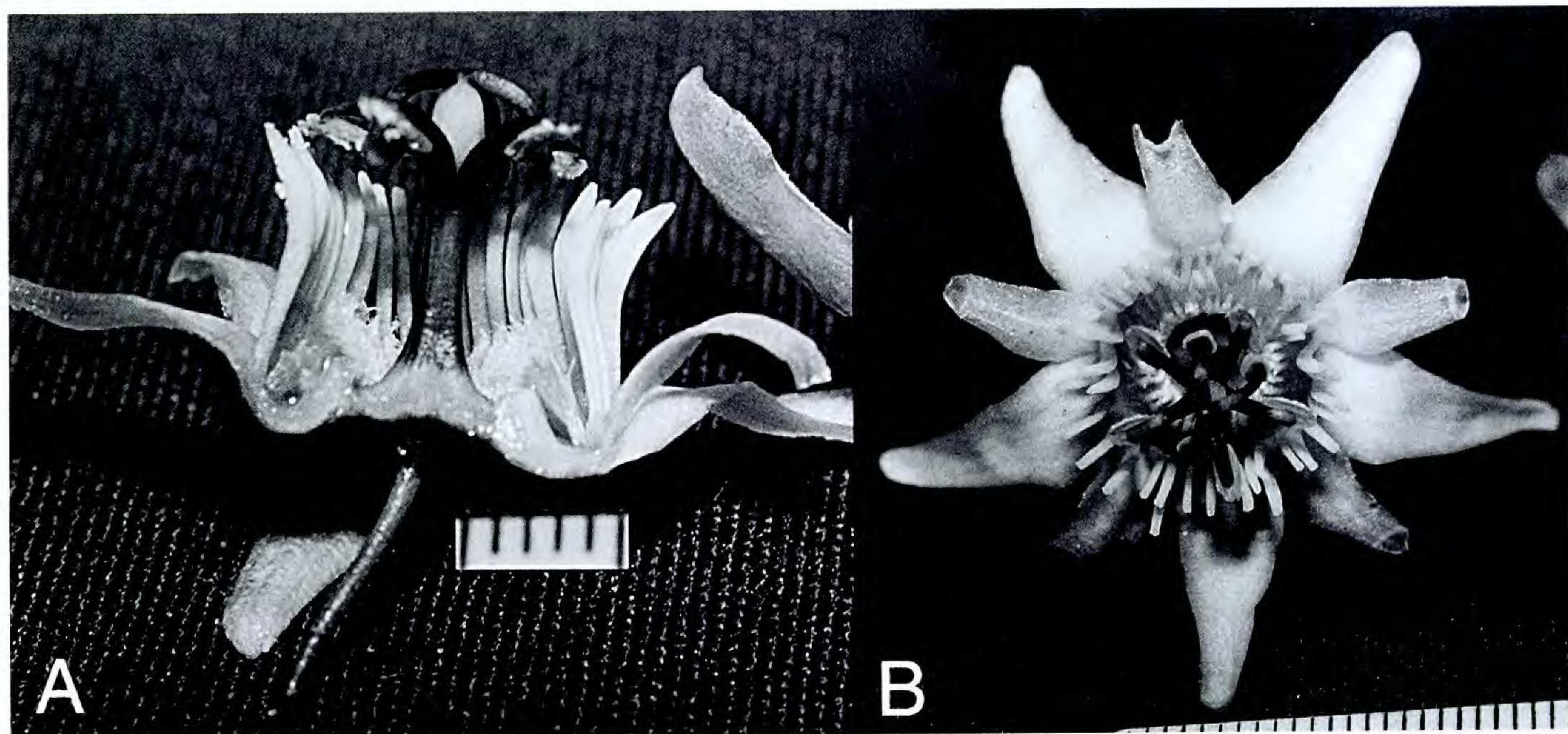


Figure 2. Photographs of the flower of *Passiflora sandrae* J. MacDougal (Knapp & Mallet 5125, MO). —A. Longitudinal section. —B. Whole flower. Scale is mm in both.

laterally compressed and sub-3-sided to sub-4-sided in cross section, light yellow-green at base, distally pale green to yellow-green or light yellow, the inner series 1.5–3.5 mm long, capillary, light to dark green-yellow with white tips; operculum 3–4 mm long, membranous, plicate, pale green-white to light yellow-green, sometimes tinged pale purple distally, the apex notably white-fimbriate; raised nectary annulus absent; limen floor conical, pale green, unmarked, the raised edge fleshy; androgynophore 5.5–8 mm, red-purple; staminal filaments red-purple; anthers 3–3.5 mm long, not marked with purple; pollen–coronal distance 3–5 mm; ovary 3–4.5 mm long, ellipsoid, glabrous; styles 4.5–6 mm long including stigmas, red-purple. Fruit a berry, 2.2–3 × 1.5–1.8 cm, ellipsoid to obovoid, sometimes slightly 3-sulcate, estipitate, mature color unknown; arils unknown; seeds 3.8–4.1 × 2.3–2.5 × 1.4–1.5 mm, obovate in outline, dark brown, transversely sulcate with (8)9 to 11(12) sulci, the intervening ridges verrucose, the chalazal beak slightly inclined toward the raphe.

Distribution and ecology. Apparently endemic to Panama, this species occurs from the province of Coclé to southern Darién, and is a part of the otherwise well-known flora of Barro Colorado Island. *Passiflora sandrae* is recorded from forest edges, treefalls, and secondary vegetation in humid to very humid tropical or premontane forest at 0–700(–1000) m elevation.

Phenology. Flowers have been collected throughout the year except July and August; fruits throughout the year except August and September. In the field and in the greenhouse, this species blooms in the

early morning and the flowers close by mid to late morning.

Passiflora sandrae is a small to medium-sized climber with bilobed leaves. It belongs to subgenus *Decaloba* (DC.) Reichenbach supersection *Decaloba* (DC.) MacDougal & Feuillet based on the plicate operculum, transversely grooved seeds, laminar nectary position, variegated leaves, and cernuous new growth. It is somewhat similar to *P. biflora* Lamarck, but may be distinguished even in a vegetative or juvenile state by the presence of one rather than two prophylls at the axillary vegetative bud. The leaves are usually conspicuously variegated along the two main lateral veins, and plants from elevations lower than 400 m, in particular, have notably dark-edged laminar nectaries. The leaves of *P. biflora* are never variegated along the main veins, but instead are mottled between the veins if variegated at all. Other differences include 2 to 4 large laminar nectaries always present at the base of the main veins, dark bracts that are not necrescent, buds abruptly narrowed distally, ovaries always glabrous, fruits ellipsoid, and floral stipes always noticeably shorter than the peduncles (i.e., the articulation of the pedicel closer to the flower than the stem).

In one specimen from the province of Coclé (Gentry 6884), at the high elevation of 1000 m, the plant as a whole is less puberulent, the stem is subglabrescent with only a few trichomes, and the floral stipe is long, representing the upper limit in the description. A number of specimens of seedlings and juveniles are known. The leaves of the juveniles (e.g., Netting 68) bear a close resemblance to the mature foliage of *Passiflora nubicola* MacDougal, a Costa Rican

endemic. The color of the mature fruit is not definitely known—all collections note a greenish immature or yellow-green submature fruit. The label of *Mallet 27* states “fruit green when mature” because it contained dark and apparently mature seeds. It is normal, however, for the seeds to be viable and mature some days before the fruit turns the final ripe color. Most species in supersection *Decaloba* have a dark purplish black fruit that may appear blue due to a glaucous bloom.

Passiflora sandrae was included by Yockteng and Nadot (2004: 385, 393) in their molecular phylogenetic study of the genus *Passiflora*, the name published there as a nomen nudum. In that study, *P. sandrae* fell in subgenus *Decaloba* (cited as subgenus *Plectostemma*) grouped with the other species with conspicuous laminar nectaries. Their analysis was based on a collection from Pipeline Road in the Canal Zone, *Yockteng-112* (P), but I have not seen or confirmed the identity of the specimen.

Etymology. This vine is named for Sandra Knapp (b. 1956) in recognition and honor of her deep contributions to tropical botany and to our understanding of passionflowers. An astute observer and collector of plant life, Sandy made many well-prepared specimens of this species in collaboration with her husband, James Mallet, who had discovered it and realized it was undescribed. Specimens from her Central and South American expeditions with Jim continue to yield many new discoveries in many plant families.

Paratypes. CULTIVATED. Grown 1997–2002 at Missouri Botanical Garden from plant collected by Mallet in Panama (*Gilbert 9259*), 22 Jan. 2002, *MacDougal 6036* (MO). PANAMA. **Canal Zone:** cultivated in Curunda, originally from Pipeline Road near the Río Frijolito, 15 May 1982, *Knapp & Mallet 5125* (MO); Barro Colorado Island, David Fairchild Trail & also at tower on Wheeler Trail, 21 Mar. 1934, *Netting 68* (CM, MO); Zetek Trail, 27

Oct. 1931, *Shattuck 247* (F, MO); along shore of island E of laboratory, past Colorado Point, 16 Sep. 1968, *Weaver 1603* (DUKE); Zetek Trail, 31 July 1929, *Wetmore & Woodworth 67* (F); T. Barbour 3, 1 Feb. 1932, *Woodworth & Vestal 307* (F, MO); cove N of lab, 1 Feb. 1932, *Woodworth & Vestal 313* (F, MO). **Coclé:** hills above El Valle, 24 Dec. 1972, *Gentry 6884* (MO). **Colón:** near bridge over Quebrada La Furnia on Hwy. 5–8 (82), 17 Sep. 1974, *Mori & Kallunki 1945* (MO). **Darién:** Ensenada del Guayabo, 25 Jan. 1981, *Garwood 1178* (MO); Quebrada Sierpe from Río Tuira to track of Chevy Expedition, 27 Feb. 1972, *Gentry 4437* (MO); ridge to NE of Ensenada El Guayabo, 23 Jan. 1982, *Knapp & Mallet 3068* (MO); rocky ridges near Pacific Ocean, Ensenada El Guayabo, 23 Jan. 1982, *Knapp & Mallet 3133* (MO); N of Punta Guayabo Grande, NW of Ensenada El Guayabo ridges, 25 Jan. 1982, *Knapp & Mallet 3166* (MO); ridges of Filo del Talo, SW of Canglón, 8 Mar. 1982, *Knapp & Mallet 3998* (MO); Río Iglesias, near El Real, 17 Mar. 1982, *Mallet 27* (DUKE). **Panamá:** Majé, along bank of Río Majé ca. 5 mi. up from village of Majé, 18 Nov. 1970, *Foster & Kennedy 2018* (DUKE). **San Blas:** Kuna Yala, Río Mandinga basin, near village of Mandinga, 3 Mar. 1985, *McDade 855* (DUKE); Cangandi, hills near village, 27 Mar. 1986, *de Nevers et al. 7610* (MO).

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Literature Cited

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