

FLACOURTIACEAE NEW TO PANAMA: CASEARIA AND XYLOSMA

THOMAS B. CROAT¹

ABSTRACT

Casearia guianensis (Aubl.) Urban var. *rafflesioides* Croat is described as new. It differs from the typical variety in having precocious flowers and in bearing branch-spines. *Casearia stjohnii* Johnston is considered only a variety of *Casearia guianensis*. It differs from both the typical variety and var. *rafflesioides* in having stouter, more densely pubescent pedicels, longer, darker-colored bracts, and by flowering later in the season. *Xylosma sylvicola* Standley and *X. chloranthum* Donn. Sm. are reported new to Panama.

In the course of field work for the new Barro Colorado Island Flora, three interesting flacourtiaceous plants were encountered. After extensive field observations as well as library and herbarium studies, it is concluded that two are species new to Panama and that one is an undescribed taxon.

CASEARIA Jacq.

Casearia guianensis (Aubl.) Urban is a wide-ranging species occurring in seasonally dry areas and known from the West Indies, Costa Rica, Panama and northern South America. In Panama, where I have observed the species in the field, plants usually flower precociously or at least before leaves are fully developed. Sometimes even the fruits are fully mature before the leaves are completely expanded. In addition to var. *guianensis*, two additional varieties are now known from Panama. The following key distinguishes them.

KEY TO VARIETIES OF *Casearia guianensis*

- a. Bracts of the inflorescence dark, thick and opaque, usually more than 2 mm long; pedicels thick, more than 0.5 mm in diameter when dry, densely tomentose, usually hidden by the bracts; in Panama flowering June and July with fruits maturing August and September 3. var. *stjohnii* (Johnston) Croat
- aa. Bracts of the inflorescence pale, whitish to translucent, usually less than 2 mm long; pedicels slender, usually less than 0.3 mm in diameter when dry, sparsely pubescent, usually clearly exposed above the bracts; in Panama flowering March to June with fruits maturing April to June.
 - b. Leaves elliptic (rarely obovate), mature at time of flowering, drying green on flowering collections, blades to 7.5 (9.5) cm long and to 2.5 (4.5) cm wide; stipules deltoid to narrowly triangular, 1.5–2 mm long; branchlets frequently ending in a stout, sharp, branch-spine; pedicels usually articulate at about the middle 1. var. *rafflesioides* Croat
 - bb. Leaves obovate, usually very young or even absent at time of flowering, drying blackish on flowering collections, blades of at least the larger leaves more than 9.5 cm long and 4.5 cm wide; stipules narrowly triangular to subulate, 2–5 mm long; branchlets lacking branch-spines; pedicels usually articulate well below the middle 2. var. *guianensis*

1. *Casearia guianensis* (Aubl.) Urban var. *rafflesioides* Croat, var. nov.— FIGS. 1–3.

Differt a var. *guianensis* et var. *stjohnii* saepe ramis validis acutis spiniformibus (etiam trunco inferiore armato); lamina ovata vel elliptica, raro obovata vel oblanceolata, apice

¹ Missouri Botanical Garden, 2315 Tower Grove Avenue, St. Louis, Missouri 63110.

acuminato vel acuto vel rotundato, basi obtusa vel attenuata et decurranti, 2.5–11 cm longa, 1–3.4 cm lata; stipula deltoidea, 1.5–2 mm lata; bractea inflorescentiarum plerumque minus quam 2 mm longa, nivea vel translucida; pedicellus 1.5–3 mm longus, plerumque bractea longior, gracilis, exsiccatus circa 3 mm diametro, sparsim villosus, articulatus circa in medio.

Tree ca. 5 m tall; trunk ca. 7 cm dbh; armed with simple spines below; branches and branchlets glabrate to densely strigulose or puberulent, branches arching, wide-spreading, often with straight, stout, sharp branch-spines. Petiole 2–8 mm long; blade ovate to elliptic or rarely obovate or oblanceolate, acuminate to acute or rounded at apex, obtuse to attenuate and decurrent at base, 2.5–11 cm long, 1.3–4 cm wide, glabrous to sparsely $\pm$ appressed pubescent, crenate-serrate, the teeth obscure to sharp, glandular and incurled, weakly or not at all pellucid-punctate. Stipules deltoid, 1.5–2.0 mm long. Flowers greenish-white, ca. 7 mm in diameter; in sparse, sessile, axillary fascicles; bracts usually less than 2 mm long, connate, sparsely pubescent, whitish to translucent, very thin, the outermost $\pm$ triangular, very short, the inner oval, rounded at apex; pedicels 1.5–3 mm long, slender (to 0.3 mm in diameter when dry), sparsely villous, articulate at about the middle, usually longer than bracts; calyx 3–3.5(5.5) mm long, the lobes free to the base, strigulose outside, blunt to rounded at apex, spreading at anthesis; stamens 7 or 8(9), ca. 4 mm long, erect at anthesis, fused into a ring at the base, alternating with densely villous staminodia, the staminal tube glabrous outside, pubescent inside, filaments $\pm$ glabrous, anthers ca. 1 mm long, introrse, equalling height of style, pollen yellowish, $\pm$ tacky; ovary sparsely villous, narrowly ovate; style short; stigma globular, viscid, short-puberulent. Capsule 3-valved, round to ellipsoid, to ca. 1 cm long, pale green to white, often marked with purple, the valves maroon within, marked with prominent white spots; seeds of irregular shapes, ca. 4 mm long, enveloped in a pale orange aril.

TYPE: PANAMA. CANAL ZONE: Barro Colorado Island, Armour Trail 685, Croat 14057 (MO 2059605, holotype; DUKE, F, NY, PMA, VEN, isotypes).

Casearia guianensis var. *rafflesioides* is frequent in the understory of tropical moist forest on Barro Colorado Island and elsewhere in the Canal Zone and adjacent Panamá Province. It is also known from Darién Province. It flowers in March and April with fruits maturing from April to June.

The name *rafflesioides* refers to the fact that these plants serve as host plants for the parasite *Apodanthes caseariae* Poit. (Rafflesiaceae). The parasites flower during August and September, and at that time they can be found along the trunks of both var. *rafflesioides* and var. *guianensis*.

Additional specimens examined: PANAMA. CANAL ZONE: Barro Colorado Island, Croat 7728, 7768, 8691, 9263, 9442, 9502, 11777, 11955, 13268 (all MO), 14869 (F, MO, NY, PMA, RSA). Near Summit Hills Golf Course, Croat 10956A (MO). DARIÉN: Hydro Camp Pico Pendejo, in monsoon rain forest on Río Sabana, 50 ft, Duke 15432 (MO). PANAMÁ: Vic. of Madden Lake, Gentry 5055 (MO).

2. *Casearia guianensis* (Aubl.) Urban var. *guianensis*—FIG. 4.

This taxon has been adequately described in the *Flora of Panama* (Robyns, 1968) and its description will not be given here. This variety is much more abundant than the other two varieties in Panama. It is known from drier parts of



tropical moist forest (Holdridge, 1967) in the Canal Zone, and in the Provinces of Panamá, Darién, Veraguas and Herrera. It is also known from premontane moist forest in Panamá Province. Plants flower mostly in March and April, rarely as early as January or as late as May. Fruits mature between March and June. It is phenologically similar to var. *rafflesioides* but is apparently now isolated phenologically from var. *stjohnii*. While plants generally lack branch-spines, a specimen from Mexico in Tuxpeña, Campeche (Lundell 986) has some branch-spines.

3. *Casearia guianensis* (Aubl.) Urban var. *stjohnii* (Johnston) Croat, comb. nov.

Casearia stjohnii Johnston, Sargentia 8: 213. 1949.

The discovery of the var. *rafflesioides* and the consequent thorough study of the variation of *C. guianensis* have made it clear that *C. stjohnii* is also only infra-specifically distinct from *C. guianensis*. The preceding combination is therefore made. Study of recently acquired specimens allows a more accurate description of the taxon:

Tree or large shrub 3–12 m tall; branches glabrous in age, sometimes with stout, sharp branch-spines, 1–3.5 cm long. Leaves mature at time of flowering, usually drying dark; petioles slender, 5–15 mm long; blade obovate to obovate-elliptic, rounded to obtuse and abruptly acuminate at apex, (the acumen blunt or sometimes absent with apex of blade rounded), acute to attenuate (sometimes obtuse) at base, 6–12 cm long, 3–6.5 cm wide, pellucid-punctate, the margin crenate, the upper surface (at least on veins) inconspicuously appressed-pubescent. Flowers greenish-yellow or greenish-white; in very dense, sessile, axillary fascicles; pedicels stout, 1–2 mm long, 0.5–0.7 mm in diameter, densely tomentose to sericeous, articulated at the middle, the stout lower half persisting; bracts oval, acute at apex, 2–3 mm long, glabrous inside, densely tomentulose outside on those surfaces exposed in bud, exceeding and obscuring the pedicels, persistent; buds subglobose; calyx 4–5.5 mm long, the lobes ovate-oblong to oblong, unequal in width, 1–1.5 mm wide, free to very near the base, densely and minutely appressed-pubescent outside, glabrous to sparsely strigulose inside in upper half; stamens 8(9), the filaments glabrous, filiform, mostly 2.5 mm long, united into a tube with alternating staminodia; anthers ca. 0.5 mm long, staminodia to 2 mm long, the free part densely villous, staminal tube nearly glabrous outside, sparsely pubescent inside, to 1 mm long; ovary narrowly ovoid, gradually tapered onto style, pilose; stigma conical-capitate, weakly puberulent, held at the level of the anthers; capsules globose to depressed-globose, green to purplish, ca. 8 mm in diameter, sparsely pubescent, apex with an old persistent style base, the 3 valves sometimes unequal, to 12 mm long and 7 mm wide after dehiscence.

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FIGURES 1–4. *Casearia guianensis* (Aubl.) Urban.—1. Var. *rafflesioides*, showing branch-spines and flower buds ($\times \frac{3}{4}$).—2. Var. *rafflesioides*, fruits ($\times 1$).—3. Var. *rafflesioides*, flowers ($\times \frac{1}{2}$).—4. Var. *guianensis*, showing precocious flowering ($\times \frac{1}{2}$).

Known from tropical moist forest in the Canal Zone, San José Island (Panamá Province) as well as from the Provinces of Herrera and Veraguas in western Panama; also known from premontane moist forest in Los Santos Province and premontane wet forest in Chiriquí Province. Flowers in June and July. Fruits mature during August and September.

Casearia guianensis var. *stjohnii* has a perianth very similar to var. *guianensis* and var. *rafflesioides*, but has much stouter, densely tomentose pedicels and thicker, longer inflorescence bracts. The larger bracts generally hide the pedicels. This may be true even in fruit.

Perhaps the most important distinction in this variety is its different phenological behavior since plants flower and fruit later than those of vars. *guianensis* and *rafflesioides*.

PANAMA. CANAL ZONE: Vic. of Ft. Kobbe Beach, *Duke* 4252 (MO). Chiriquí: Tolé, vic. of Santa Ana Well, ca. 1,000 ft, *Dwyer & Kirkbride* 7456 (COL, MO, US). HERRERA: Océ, *Ebinger* 1096 (MO). LOS SANTOS: Los Asientos, *C. Wendehake* 36 (MO, PMA). PANAMÁ: San José Island, *Erlanson* 369 (NY, US, Type of *C. stjohnii*). VERAGUAS: ca. 5 mi N of Santiago, vic. of Santa María River, *Blum & Tyson* 618 (MO).

XYLOSMA Forst. f.

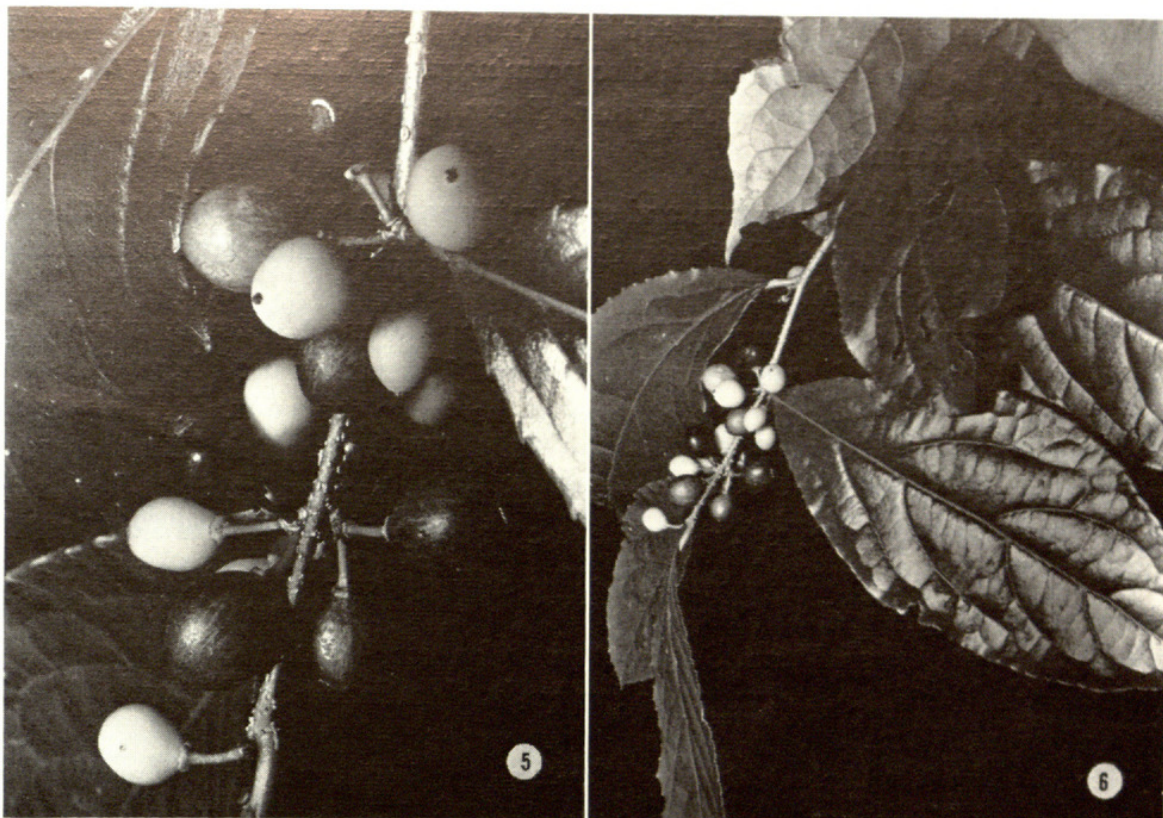
Xylosma sylvicola Standley, Publ. Field Columbian Mus., Bot. Ser. 4: 316. 1929.
—FIGS. 5–6.

Dioecious tree to 6 m tall, often branching near ground; trunk unarmed or rarely with branched spines; the larger branches sparsely armed with a few simple spines to 1 cm long; stems glabrous. Leaves thin; petioles ca. 5 mm long, glabrous to pubescent; blades elliptic, acuminate, acute to obtuse at base, 3–16 cm long, (1.5)3.5–7.5 cm wide, with minute, gland-tipped teeth, glabrous except sometimes puberulent on midrib below; estipulate. Flowers in very short racemes, often appearing glomerulate, inconspicuously bracteate at base; rachis 2–6 mm long; pedicels 5–8 mm long, puberulent, subtended by triangular bracts to 2 mm long; calyx deeply lobed, to 1.3 mm long, the lobes ovate, rounded at apex with margins ciliate, glabrous outside, weakly pubescent and weakly keeled inside; stamens usually 10–16, to 2.7 mm long, glabrous, anthers as broad as long; disc of male flowers 9–12-lobed, the lobes rounded, irregular; disc of female flowers entire or 2-parted; ovary ellipsoid to obovoid, ca. 1.5 mm long; style with 2 short flattened branches, each with rounded lobes. Fruits ellipsoid to obovoid, 8–12 mm long, to 9 mm wide, becoming orange, then bright red, finally violet-purple at maturity; exocarp thin; mesocarp fleshy; seeds 1–3, ovoid, ca. 5 mm long.

Ranging from Mexico (Chiapas) to Panama. Flowers seen from March to July, mostly early in the rainy season; mature fruits have been seen from April to September.

Knight 1201 has both male and female flowered twigs. If the two branches were taken from the same plant, the species is not always dioecious. Field observations showed only the dioecious condition.

This species corresponds to *Xylosma* species no. 2 in the *Flora of Panama* (Robyns, 1968). The species is best characterized by its usually thin, weakly-



FIGURES 5-6. *Xylosma sylvicola* Standley.—5. Close-up of fruits ($\times 3\frac{3}{4}$).—6. Habit ($\times \frac{3}{4}$).

toothed, elliptic blades; the stout short, simple spines borne sparsely on the larger branches; very short, racemose inflorescences; dioecious plants with 9–12 stamens in the staminate flowers; and calyx lobes pubescent on the inner surface. Barro Colorado Island collections of this species differ in having larger, thinner leaves 8–16 cm long and 4–7.5 cm broad.

MEXICO. CHIAPAS: Escuintla, *Matuda* 1795 (MO).

GUATEMALA. ALTA VERAPAZ: Sebol, *Contreras* 4380 (F). PETÉN: Finca Yalpemech and Chinaja, 50–100 m, *Steyermark* 45444 (MO).

HONDURAS. ATLANTIDA: Lancetilla Valley, near Tela, 200 m, *Standley* 52917 (F, Holotype).

PANAMA. CANAL ZONE: Barro Colorado Island, *Knight* 1201 (MO); *Foster* 1243, 1715, 1064, 1039, 2254 (all MO, DUKE); *Croat* 14640 (MO, F, NY, PMA, DUKE, K, VEN), 14642 (MO). COCLÉ: El Valle, *Dwyer* 1837 (MO); *Allen & Alston* 1856 (MO, F, US).

***Xylosma chloranthum* Donn. Sm., Bot. Gaz. (Crawfordsville) 57: 415–416. 1914.**

Dioecious shrub or tree to 6 m tall; trunk usually with large, branched spines; glabrous except for puberulent young stems; stems prominently lenticellate, unarmed or armed with straight stiff axillary spines to 2.5 cm long (perhaps only on juveniles). Leaves alternate; petioles 3–5 mm long; blades narrowly-ovate to lance-elliptic, long acuminate, acute to rounded at base, 8–19 cm long, 2–6 cm wide, lacking pellucid-punctations, obtusely glandular-crenate, shiny on both surfaces, reticulate veins prominulous on both sides; estipulate. Flowers yellowish, usually occurring in leafless axils; pedicels 3–7 mm long, puberulous, articulated in lower $\frac{1}{3}$ of male flowers and near middle of fruiting pedicel; sepals 4 or 5, very broadly ovate to nearly rounded, 1.5–2 mm long, ferruginous-puberulous and

glandular near apex, the margins $\pm$ ciliate (near apex); petals absent; stamens 22–29(35), to 6 mm long, glabrous; disc prominently undulate-lobed, style (3)4- or 5-lobed, the lobes short and spreading. Bacca ellipsoid, ca. 6 mm long; seeds few, ovoid, to 4.5 mm long.

Flowers during the dry season and early rainy season, usually while plants are still devoid of their leaves. Fruits develop within a short time, often even before the leaves have been replaced.

The taxonomy of the genus *Xylosma* is among the most seriously in need of work for all of Central American plant genera. The names used here thus will remain doubtful until a complete revision of the group can be made. This taxon has been confused with *X. excelsa* Standley & L. O. Williams which differs in being much larger (13–25 m), in being polygamous and in bearing leaves at flowering time. *Xylosma chloranthum* has also been confused with *X. intermedia* (Seem.) Tr. & Pl. The latter species has polygamous flowers and has been transferred to the genus *Eichlerodendron* (Sleumer, 1934). As judged from a photograph, the type of *X. oligandrum* Donn. Sm. appears to be very similar to the type of *X. chloranthum* Donn. Sm. and may prove to be the oldest name for this taxon. It was published in 1897.

Known from Belize, Guatemala, Costa Rica, Nicaragua and Panama. In Panama known from tropical moist forest in the Canal Zone and Panamá Province, and from premontane wet forest in Colón (Santa Rita Ridge), Chiriquí (near Boquete) and Panamá (Cerro Azul) Provinces.

BELIZE. CAYO: Mountain Pine Ridge, San Augustin, *Lundell* 6754 (F).

COSTA RICA. ALAJUELA: La Palma to San Ramon, 1125 m, *Brenes* 4665 (F); 1050–1100 m, *Brenes* 5144, 5181 (both F). Piedades beyond San Ramon, 1050 m, *Brenes* 4761 (F). San Pedro to San Ramon, 1125 m, *Brenes* 4668 (F); 1075 m, *Brenes* 4678 (F). GUANACASTE: 6 mi S of La Cruz, *Lent* 97 (F). SAN JOSÉ: 3 km E of San Isidro, *Molina*, *Burger* & *Wallenta* 18323 (F). Vic. of El General, *Skutch* 4077, 3080 (both US).

GUATEMALA. ALTA VERAPAZ: Cubilquitz, *Turckheim* 4111 (F, US, Type). SANTA ROSA: Volcán Tecuamburro, N of Chiquimulilla, 250–500 m, *Steyermark* 33137 (F).

PANAMA. CANAL ZONE: Barro Colorado Island, *Bailey* & *Bailey* 484 (F); *Croat* 11617, 10087 (both MO); *Foster* 785 (MO); *Woodworth* & *Vestal* 419 (F, MO). COLÓN: Santa Rita Ridge, *Croat* 14138 (MO). PANAMÁ: Chepo to El Llano, *Tyson* & *Hale Smith* 4125 (MO).

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