# CAESALPINIA SUBGENUS GUILANDINA IN THE BAHAMAS

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WHEN THE AUTHORS were engaged in field collecting in the southern Bahama Islands early in 1973, pursuant to the preparation of a new Bahama Flora, they were especially interested in the reproductive biology of the nicker beans, *Caesalpinia spp.*[1] Drs. Carroll E. Wood, Jr. and Kenneth R. Robertson of the Arnold Arboretum had noted apparent dioecy in one species of this group of plants in South Florida [*C. bonduc* (L.) Roxb.]. Accordingly, we examined populations of the genus during our field work in Mayaguana and Inagua, and found that dioecy seems to be typical of this group, at least in all populations we saw. Dioecy was noted by Linnaeus (1754) but apparently was overlooked until relatively recently, probably because the carpellate flowers have well-developed anthers and appear to be perfect, yet no pollen is produced. The staminate flowers lack a gynoecium. In recent years, however, Wilczek (1952) for the Flora of the Congo and Brenan (1967) for the Flora of Tropical East Africa noted dioecy in *C. bonduc*.

The Caesalpinioideae, subtribe Caesalpinieae, the type of which is *Caesalpinia*, have been treated by different workers as a complex either comprised of a large number of genera or consolidated into few. Britton and Rose (1930) in their treatment for the North American Flora recognized 28 genera in North America, among them *Guilandina* L. (which would have to be considered as having perfect flowers in their key). Fifteen to 17 of these genera might well be considered *Caesalpinia, sensu lato*, not warranting segregation because of the relatively minor characters used for distinguishing them. *Guilandina* is one of these genera.

The *Guilandina* species comprise the only group within *Caesalpinia, sensu lato*, apparently having unisexual flowers. Moreover, these species have compressed, thick, rounded, rigidly chartaceous legumes, and an unusual scrambling habit. Most other *Caesalpinia* species are either trees or shrubs. A few, however, like *C. decapetala* (Roth) Alston in Trimen (frequently called *C. sepiaria* Roxb.), resemble species of the *Guilandina* group in their vinelike, scrambling shrubby habit. The *Guilandina* group inhabits chiefly the coastal regions of Central America, the Greater Antilles, the Bahamas, and Bermuda. Two vines of mountainous regions of Costa

[1] The nicker beans are also called nickels, probably a corruption of the name of a game played by the people of the West Indies. The game reportedly originated in Africa where it was played with stones in holes in the ground. Instead of stones, the playing "bits" or "nickels" in the West Indies were seeds of various species of *Caesalpinia* subg. GUILANDINA. The seeds were evidently used in place of coins and possibly represented one's winnings or losings. In the Bahamas, a wooden board was developed for table use in playing the game. Such a playing board with twelve depressions for the nickels is preserved and on display in the Bahamia Museum in Nassau.

Rica and Haiti are also placed here by Britton and Rose (1930). Little is known of *Guilandina* in the Old World except for the widespread species *C. crista* (L.) Roxb., which is often confused with the gray-seeded *C. bonduc* (L.) Roxb. of the New World (Dandy & Exell, 1938).

Because of the great diversity within subtribe Caesalpinieae, one could elect either to follow Britton and Rose by proliferating genera, or to take a more conservative generic view, resulting in a fairly inclusive *Caesalpinia*. Because data presently available for all *Caesalpinia* species are insufficient, we have chosen not to defend segregation of such genera as *Libidibia* Schlecht., *Erythrostemon* Klotzsch, *Tara* Molina, *Ticanto* Adans., *Nicarago* Britton & Rose, *Guaymasia* Britton & Rose, *Russellodendron* Britton & Rose, *Poincianella* Britton & Rose, and *Biancaea* Todaro. However, because of habit, distinctive fruit, and dioecy of *Guilandina*, we feel justified in treating it as a subgenus of *Caesalpinia*.

**Caesalpinia** subg. **Guilandina** (L.) Gillis & Proctor,[2] comb. & stat. nov.

*Guilandina* L. Sp. Pl. 381. 1753; Gen. Pl. ed. 5. 179. 1754, *pro gen.* Benth. & Hook. Gen. Pl. 1: 566. 1865, *pro sect.* TYPE: *Guilandina bonduc* L. = *Caesalpinia bonduc* (L.) Roxb.

Frutex volubilis, differt a subgeneribus aliis floribus unisexualibus, fructibus chartaceis, compressis rotundatis.

Britton and Millspaugh's *Bahama Flora* (1920) records three species of *Guilandina* in the Bahamas. One of these [*Guilandina crista* (L.) Small = *Caesalpinia bonduc* (L.) Roxb.] has flat, round, gray seeds, often with a depression in the center, while the two other species have yellow-orange or brownish seeds and lack the central depression [*Guilandina bonduc* L. = *Caesalpinia divergens* Urban and G. *ovalifolia* (Urban) Britton = *Caesalpinia ovalifolia* Urban]. While we were studying plants of these taxa on the island of Inagua in the vicinity of Matthew Town, we found two populations that were clearly different from the species listed by Britton and Millspaugh, one of which we are describing as new. The other remains, for the moment, anomalous.

The one new species of *Caesalpinia* subgenus GUILANDINA is distinct from the others indigenous to the Bahamas in its dusky, glabrous legume, its elongate, striate, brownish seeds, and its unarmed stems. An occasional individual was found with some recurved spines subtending the leaflets, but the spines were sparse. A number of such intermediate forms occurred suggesting that this new species, *Caesalpinia murifructa*, is interfertile with *C. ovalifolia*, with which it was growing intertwined. The style continues to elongate during development of the fruit, becoming curled and greatly resembling an animal's tail. The dusky, gray-brown color, its rounded shape, and the "tail" give the legume the appearance of a mouse, hence

[2] Although an adequate description of this taxon was published by Linnaeus (1754), we are emending it with a diagnosis indicating characters which segregate subg. GUILANDINA from its relatives.

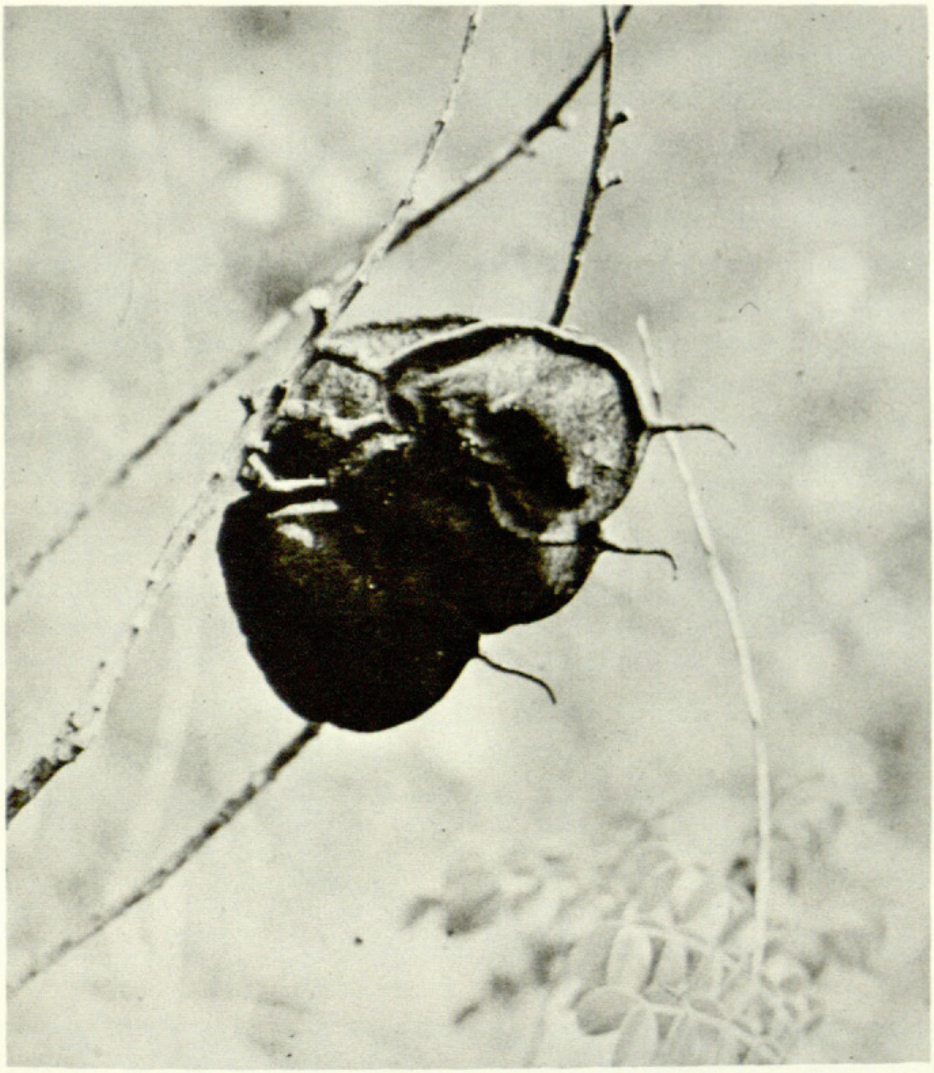

FIGURE 1. Cluster of fruits of *Caesalpinia murifructa* from type locality, Matthew Town, Inagua, Bahama Islands.

the specific epithet *murifructa* (Latin, *mus*, *muris*, mouse, + *fructus*, fruit). (FIGURE 1).

**Caesalpinia murifructa** Gillis & Proctor, sp. nov. Frutex inermis adscendens saepius volubilis, foliis bipinnatim compositis, exstipulatis; foliolis ovalibus usque orbicularibus, inaequilateralibus, apicibus emarginatis, plerumque setaceo-mucronatis, mucrone usque ad 0.5 mm.; floribus unisexualibus; sepalis utrinque dense aureo-pubescentibus, petalis luteis, glabris vel glabratis; legumine glabro fusco-murino; stylo accrescente in caudam usque 2.2 cm.; seminibus sublateritiis, dilute horizontaliter striatis, 2–4 in fructu. Differt a *Caesalpinia culebra* et a *C. portoricense* seminibus sublateritiis, et a *C. caymanense* seminibus sublateritiis et caulis puberulis.

HOLOTYPE. Bahamas: Great Inagua Island, abandoned field, Matthew Town, in rocky roadside thicket. Scrambling shrub entirely lacking in spines. *Proctor 33371* (A); isotypes: (IJ, BM).

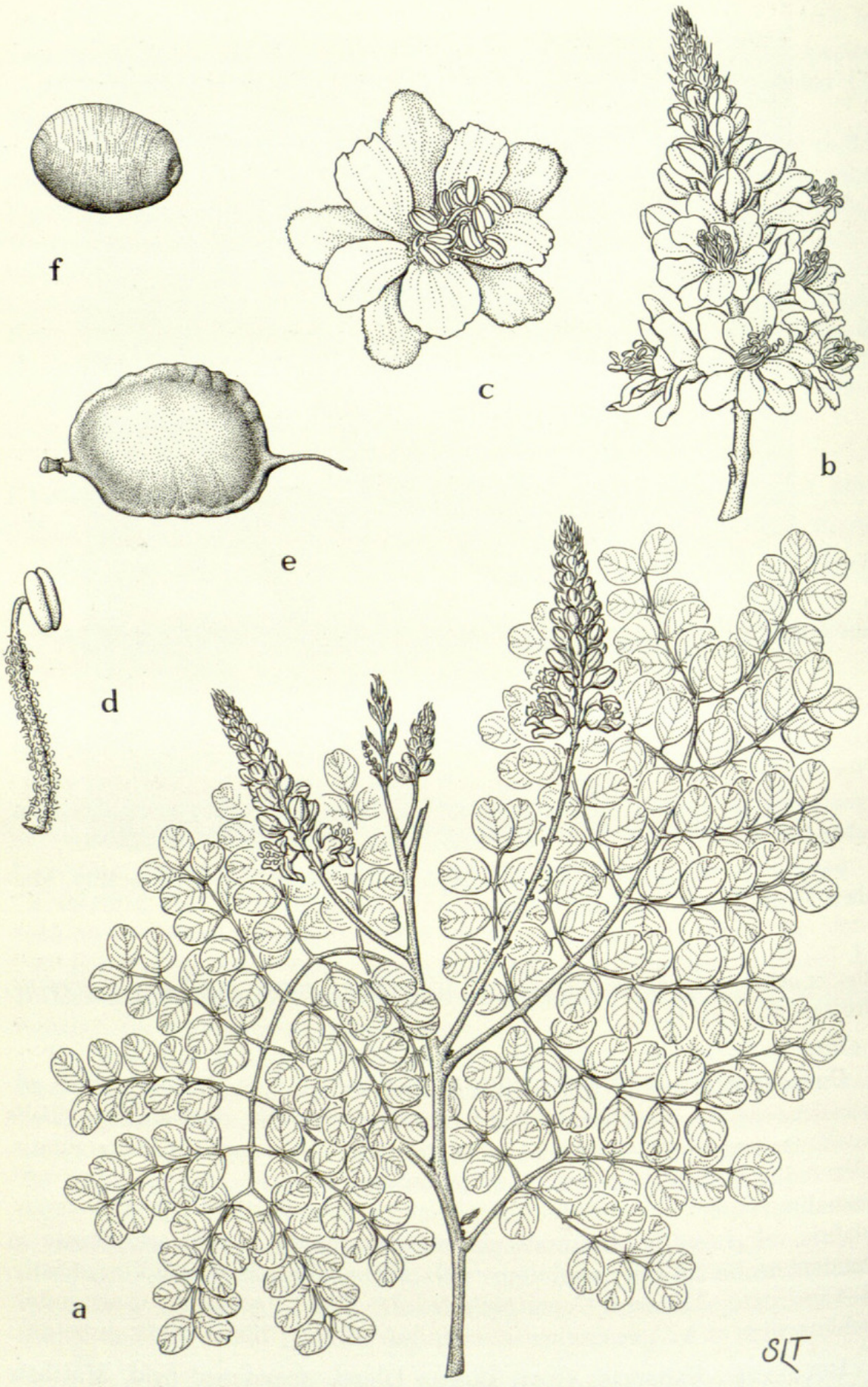


FIGURE 2. *Caesalpinia murifructa*. a, habit, note erect flowering stalks and pedicel bases of fallen staminate flowers, × 1/2; b, staminate inflorescence,

Vinelike, scrambling shrub, branches usually unarmed, puberulent; leaves bipinnately compound, 1.2–2.3 dm. long, stipules wanting; pinnules to 6 or 7 pairs, 4–8 cm. long, 1.5–2.5 cm. between pinnae; leaflets 4 or 5 pairs, generally without spines, 1–2 cm. long, oval to orbicular, 0.6–1.5 cm. broad, inequilateral, emarginate with bristle-tip, with aborted foliar flap at the tip of the pinnule, 1–1.5 mm. long; petiolule 1–1.5 mm. long. Inflorescence a raceme, 8–15+ cm. long, axis regular; subulate bract subtending each flower, 0.5 cm. long, the distal half an awn, the awn totally deciduous at anthesis. Flowers bright yellow; sepals ovate, 5, covered with a golden bronze puberulence on both surfaces, 1 cm. long; petals 5, deeper in hue than the sepals, short-clawed, erose, 0.8 cm. long, glabrous or with a few scattered hairs on the abaxial surface; pedicels 1–3 mm. long; staminate flowers with 10 stamens, anthers orange, filaments villous; carpels lacking. Carpellate flowers with 10 stamens, anthers orange, filaments villous, appearing as in staminate flowers but lacking pollen; carpels glabrous; receptacle densely golden puberulent. Fruit laterally compressed, dehiscent, dusky gray-brown, glabrous, rigid-chartaceous, 5 cm. long, 4 cm. broad, 1.5 cm. thick, style accrescent forming a tail-like beak up to 2.2 cm. long, usually curved or curled. Seeds brown-orange, ovoid, horizontally faintly striate, 2–4 per legume, 1.7 × 1.4 cm., usually with a slight depression on the surface nearest the other seeds. (FIGURE 2).

Additional specimen examined: Vacant lots in Matthew Town, Inagua, *Dunbar 352* (A).

The closest relatives of *Caesalpinia murifructa* appear to be the unarmed species *C. caymanensis* Millsp. with white-hairy branches and gray seeds; *C. culebrae*,[3] with orange-yellow seeds; and *C. portoricensis*,[4] with black seeds that are not striate.

Another population of *Caesalpinia* subgenus GUILANDINA was discovered in a field adjacent to the type locality of *C. murifructa*. Its flowers were one and one-half times the size of the flowers of any other Bahama species of subgenus GUILANDINA. The only flowers seen were staminate, yet one young, seemingly aborted, fruit was also found. The clone may represent a polyploid population. Until more material is known, it is considered an anomalous form of *C. ovalifolia*.

[3] **Caesalpinia culebrae** (Britton & Wilson ex Britton & Rose) Gillis & Proctor, comb. nov. *Guilandina culebrae* Britton & Wilson ex Britton & Rose, N. Am. Fl. 23: 339. 1930. TYPE. Coast of Culebra I., Puerto Rico, *Britton & Wilson 79* (NY).

[4] **Caesalpinia portoricensis** (Britton & Wilson) Gillis & Proctor, comb, nov. *Guilandina portoricensis* Britton & Wilson, Sci. Surv. Porto Rico Virgin Is., 5: 380. 1924. TYPE. Salinas de Guanicas, Puerto Rico, *Britton, Cowell, & Brown 4916* (NY).

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with open flowers and buds subtended by awned bracts, × 1 1/2; c, staminate flower showing varying lengths of stamens, × 2; d, single stamen, note pubescence on filament, × 5; e, fruit, with remnant of calyx and accrescent stylar "tail," × 1/2; f, seed, showing faint striations, × 1.

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## LITERATURE CITED

BRENAN, J. P. M. 1967. Leguminosae, subfamily Caesalpinioideae. E. MILNE-REDHEAD & R. M. POLHILL, *eds.* Fl. Trop. East Afr. Pp. 1–231. Publ. Crown Agents for Oversea Governments and Administrations.

BRITTON, N. L., & C. F. MILLSPAUGH. 1920. The Bahama flora. Privately published. Reprinted 1962, Hafner Publishing Co., New York, N.Y. 695 pp.

——— & J. N. ROSE. 1930. Caesalpiniaceae. North Am. Fl. **23**: 201–349.

DANDY, J. E., & A. W. EXELL. 1938. On the nomenclature of the species of *Caesalpinia*. Jour. Bot. **76**: 175–180.

LINNAEUS, C. VON. 1754. Genera Plantarum. Stockholm.

WILCZEK, R. 1952. Caesalpiniaceae. II. Eucaesalpinieae. Flore du Congo Belge et du Ruanda-Urundi. 3: 247–264. Bruxelles.

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