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MALPIGHIACEAE

by William R. Anderson

MALPIGHIACEAE A. L. Juss., Gen. Pl. 252. 1789.

Trees, shrubs, and vines, always perennial; hairs unicellular, usually medifixed or submedifixed. Stipules usually present. Leaves usually opposite, often bearing large multicellular glands on petiole or lamina below or both; lamina simple, usually entire, rarely lobed or pseudodentate. Flowers almost always perfect, subtly to strongly bilaterally symmetrical; sepals 5, eglandular or, most often, lateral 4 or all 5 bearing (1 or) 2 large multicellular abaxial glands; petals 5, free, clawed, alternating with sepals, imbricate, innermost (flag) petal posterior and often different from lateral 4; stamens mostly 10, fewer by reduction in some genera, anthers usually dehiscent by longitudinal slits; gynoecium superior, comprising (2 or) 3 free to connate carpels, each fertile locule containing 1 pendent anatropous ovule; styles usually 1 per carpel, rarely connate or reduced in number. Fruits dry or fleshy, dehiscent or indehiscent, samaroid, nutlike, or drupaceous; seed without endosperm.

TYPE GENUS: *Malpighia* L.

About 70 genera with over 1250 species, pantropical but far more numerous and diverse in the New World than in the Old. For additional information see F. Niedenzu, *in* A. Engler, Pflanzenr. IV. Vol. **141:** 1-870. 1928; J. Cuatrecasas, Webbia **13**(2): 343-664. 1958; W. R. Anderson *in* B. Maguire, The Botany of the Guayana Highland - Part XI. Mem. New York Bot. Gard. **32:** 21-305. 1981.

Successful use of the keys to genera and species requires an understanding of what I mean by certain morphological terms. The most important of these are defined here; for more details, see pp. 24-26 of my treatment of the Malpighiaceae of the Guayana Highland.

The ancestral inflorescence of the Malpighiaceae was a thyrse, a raceme of cincinni, but in all species of the Lesser Antilles the cincinni have been reduced to one-flowered units. Each flower is borne on a *pedicel*, which terminates proximally in a joint; below the joint the stalk is called the *peduncle*, and the peduncle bears two *bracteoles*; the peduncle is subtended by a single *bract*. The peduncle has been lost in several evolutionary lines, in which case the pedicel is described as sessile, subtended then by a cluster of the bract and two bracteoles. The inflorescence often contains more or less reduced leaves that do not immediately subtend a floriferous peduncle or pedicel. While these may be taken for bracts in the general sense of that term, in this treatment the term bract, unmodified, is reserved for the structure subtending a floriferous stalk.

The flowers are bilaterally symmetrical, although sometimes nearly radial. The posterior, or flag, petal is erect and usually different from the other four

petals. Across the flower from it is the anterior sepal, which is often eglandular when the other four are biglandular. These two organs define a plane of symmetry and serve as reference points for the descriptions. The lateral sepals and petals, each with its mirror-image twin across the flower, can be designated by the terms anterior-lateral pair and posterior-lateral pair. The stamens are denoted by reference to the sepal or petal to which they are nearest. The carpels are usually situated such that one is anterior, more or less on the plane of symmetry, and the other two are posterior, one on each side of the plane of symmetry.

KEY TO THE GENERA

(for specimens with flowers)

1. Styles slender and subulate; stigmas minute; shrubs or trees.
   2. Leaves eglandular ..... *Byrsonima*
   2. Leaves bearing large glands on abaxial surface of laminae ..... *Galphimia*
1. Styles stout and of uniform thickness or widened at apex; stigmas large; vines, shrubs, or trees.
   3. Petals pink or white.
      4. Shrubs or small trees; petioles eglandular ..... *Malpighia*
      4. Woody vines, rarely shrubby; petioles usually biglandular near middle ..... *Heteropterys*
   3. Petals yellow or yellow and red.
      5. Petals abaxially densely sericeous ..... *Mascagnia*
      5. Petals glabrous.
         6. Style apparently 1 (result of partial to complete fusion of 2); stigmas apical; ovary 2-locular; bracteoles (1 or both) often bearing 1 large abaxial gland ..... *Bunchosia*
         6. Styles 3; stigmas internal, apex of styles dorsally rounded, truncate, or extended into a hook or flap; ovary 3-locular; bracteoles eglandular or rarely each bearing 2 tiny abaxial glands.
            7. Stipules borne on petiole, between middle and apex ..... *Hiraea*
            7. Stipules borne on base of petiole, or on stem between petioles, or absent.
               8. Anthers very unequal, 4 opposite lateral sepals with locules small or absent, 1 opposite posterior petal often small ..... *Stigmaphyllon*
               8. Anthers more or less alike.
                  9. Inflorescences terminating in pseudoracemes of 10 to 60 flowers ..... *Heteropterys*
                  9. Inflorescences terminating in umbels of (3 or) 4 (to 6) flowers.
                     10. Styles acute and unappendaged at apex; peduncle 4-6 mm long; pedicel 5-8 mm long ..... *Tetrapterys*
                     10. Styles bearing dorsal hooks 1-1.7 mm long at apex; peduncle 0.2-2.5 mm long; pedicel 15-30 mm long ..... *Stigmaphyllon*

KEY TO THE GENERA

(for specimens with fruits)

1. Fruits unwinged, indehiscent or schizocarpic.
   2. Fruits dry at maturity, schizocarpic ..... *Galphimia*
   2. Fruits fleshy, indehiscent.

3. Leaves eglandular; fruits containing 1 unlobed trilocular stone; styles slender and subulate; stigmas minute ..... *Byrsonima*
3. Leaves usually bearing large glands on petiole or abaxial surface of laminae; fruits containing 2 or 3 unilocular pyrenes, free or united in center; styles stout; stigmas large.
4. Bracteoles (1 or both) often bearing 1 large abaxial gland; style apparently 1 (result of partial to complete fusion of 2) ..... *Bunchosia*
4. Bracteoles all eglandular; styles 3 ..... *Malpighia*

1. Fruits winged, schizocarpic (wing of each mericarp much reduced in *Stigmaphyllon ovatum*).
5. Samaras with largest wings lateral.
6. Stipules borne on petiole, between middle and apex; pedicel sessile ... *Hiraea*
6. Stipules borne on stem between petioles; pedicel raised on peduncle at least 1 mm long, often longer.
7. Samaras with 2 lateral wings, 1 on each side ..... *Mascagnia*
7. Samaras with 4 lateral wings, 2 on each side ..... *Tetrapterys*
5. Samaras with largest wing dorsal.
8. Samaras 50-70 mm long ..... *Heteropterys*
8. Samaras 13-45 mm long.
9. Petioles usually biglandular near middle ..... *Heteropterys*
9. Petioles biglandular at apex, or glands on lamina just above apex of petiole ..... *Stigmaphyllon*

BUNCHOSIA Kunth

BUNCHOSIA Rich. ex Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 153 (quarto ed.). 1821 [1822].

Shrubs or trees. Stipules small, free from each other, borne on base of petiole. Leaves usually bearing impressed glands on lamina. Inflorescence a pseudoraceme, simple or less commonly ternate, axillary without vegetative leaves or terminating a lateral shoot with 1 pair of vegetative leaves; 1 or both bracteoles often bearing 1 (or 2) glands. Calyx bearing 8 to 10 often decurrent glands; petals yellow or whitish, glabrous; stamens 10, glabrous, anthers more or less alike; ovary with 2 or 3 connate carpels, locules 2 or 3, all fertile; styles as many as carpels, free or partially to completely connate, stout, large terminal stigmas subpeltate or apparently capitate. Fruit a "drupe" (actually a berry) with 2 or 3 1-seeded pyrenes in a common fleshy exocarp, yellow, orange, or red at maturity; pyrenes free from each other at maturity, with smooth, brittle, cartilaginous wall.

TYPE SPECIES: *Bunchosia odorata* (Jacq.) Kunth.

A genus of about 55 species, occurring from Mexico and the West Indies to Paraguay and southern Brazil.

KEY TO THE SPECIES

1. Ovary sericeous; laminae thinly but persistently sericeous below, bearing 0 to 2 glands below near base and several distally in 1 to 3 rows; fruits (dried) 20-28 mm long at maturity, walls smooth ..... *B. glandulifera*
1. Ovary glabrous or very sparsely sericeous; laminae glabrate at maturity, bearing (0 to) 2 glands below, at or somewhat above base; fruits (dried) 7-14 mm long at maturity, walls granulate.
2. Pseudoracemes bearing 4 to 8 (to 11) flowers; connective of anthers dark brown, red, purple, or black; laminae of larger leaves 1.2-2.8 (-3.6) cm wide; dry open rocky places at low elevations, especially coppices on calcareous soil or rocks ..... *B. glandulosa*
2. Pseudoracemes bearing 10 to 30 (to 40) flowers; connective of anthers yellow or light brown; laminae of larger leaves 3-8 cm wide; woodlands or forests, in relatively mesophytic to moist places from near sea level to 1000 m ..... *B. polystachia*

Bunchosia glandulifera (Jacq.) Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 154 (quarto ed.). 1821 [1822].

Basionym: *Malpighia glandulifera* Jacq., Collectanea **4:** 207. 1790 [1791] & **5:** *pl. 5, fig. 3.* 1796 [1797].

Type: Caracas, Venezuela, *Jacquin.*

Syn.: *Malpighia platyphylla* Sw. ex Wikström, Kongl. Svenska Vetenskapsakad. Handl. **1827:** 66. 1828. (Type: Guadeloupe, *Forsström* (NY!, US!).)

Bunchosia emarginata var. *martinicensis* Urban & Niedenzu, *in* Niedenzu, De genere *Bunchosia*, 15. 1898. (Lectotype: Martinique, *Duss 643b*, (NY!).)

Bunchosia martinicensis (Urban & Niedenzu) Small, N. Amer. Flora **25**(2): 166. 1910.

Shrub or small tree 2-8 m tall. Leaves with petioles 5-10 mm long, eglandular or bearing 2 to 4 glands on distal half; laminae of larger leaves elliptical or ovate, 11-18 × 6-10 (-12) cm, base rounded and often slightly attenuate, margin undulate and crispate, apex acuminate and often cuspidate, bearing 0 to 2 glands below near base by midrib and several distally in 1 to 3 rows, sparsely sericeous to glabrate above, thinly but persistently sericeous below. Inflorescences 5-11 cm long; flowers 10 to 20; peduncles 2.5-5 (-8) mm long; 1 or occasionally both bracteoles bearing an abaxial gland. Calyx bearing 9 or 10 glands; petals yellow, lateral 4 eglandular-dentate, posterior glandular-dentate, at least proximally; filaments 2.5-3.5 mm long, to 1/2 connate; anthers with connective yellow or light brown; ovary bicarpellate, sericeous; style (formed by 2 connate) 2.5-3.5 mm long, sericeous, stigmas nearly distinct, reniform-peltate. Fruits orange to red, when dried 20-28 mm long and 15-20 mm in diameter, globose or ellipsoid, very sparsely sericeous to glabrate, wall smooth.

GENERAL DISTRIBUTION: Cultivated, and perhaps locally escaped, in Puerto Rico; widely cultivated and perhaps native in northern South America (Suriname, Venezuela, Colombia, Peru), but exact origin unknown; widely cultivated in Brazil, especially in the Amazon region but also in Rio de Janeiro and Brasília.

DISTRIBUTION IN LESSER ANTILLES: Montserrat, Guadeloupe!, Martinique!, Grenada!.

COMMON NAMES: Café moka, café bois, prune café.

NOTES: This species, with its large edible fruit, is probably not native in the Lesser Antilles. Duss noted on labels that it was cultivated in Guadeloupe, and that in Martinique it was introduced in the Botanical Garden of St. Pierre,

whence it spread over the island. The labels with *Stehlé 404* from Guadeloupe and *4998* from Martinique make no mention of its being cultivated, so perhaps the species is now naturalized, but the paucity of collections from the Antilles suggests that it has not strayed far from inhabited areas.

Bunchosia glandulosa (Cav.) DC., Prodr. **1:** 581. 1824.

Basionym: *Malpighia glandulosa* Cav., Diss. **8:** 411, *pl. 239.* 1789.
Type: Santo Domingo (P-JU 11526!, probable type).
Syn.: *Bunchosia acutifolia* Adr. Juss., Arch. Mus. Hist. Nat. **3:** 336. 1843. (Type: Cultivated plant of uncertain origin (P-JU 11527!).)

Shrub or small tree 2-4 (-8) m tall. Leaves with petioles 3-10 mm long, eglandular; laminae of larger leaves elliptical, 3.5-9.3 × 1.2-2.8 (-3.6) cm, base tapered or cuneate, margin flat, apex obtuse, acute, or acuminate, bearing (0 to) 2 glands below, at or somewhat above base on surface, glabrate. Pseudoracemes 2-6 cm long, of 4 to 8 (to 11) flowers, axillary or 1 to 3 (to 5) terminating short lateral shoot with 1 pair of vegetative leaves; peduncle 0.5-3 mm long; 1 bracteole bearing abaxial gland or both eglandular. Calyx bearing 8 glands; petals yellow, eglandular except posterior often bearing 1 or 2 glands at base of limb; filaments 2-2.8 mm long, 1/2-3/4 connate, forming membranous tube; anthers with connective dark brown, red, purple, or black; ovary bicarpellate, glabrous; style (formed by 2 connate) 2-2.5 mm long, glabrous, stigmas usually distinct. Fruits dark yellow to red, 7-9 (-13) mm long and in diameter (dried), globose or ovoid, glabrous, wall granulate.

GENERAL DISTRIBUTION: Bahamas, Hispaniola, Puerto Rico, Virgin Islands.

DISTRIBUTION IN LESSER ANTILLES: St. Martin!, St. Barts!, Barbuda!, Antigua!, Montserrat, Guadeloupe!, Martinique.

COMMON NAME: Stinkwood.

NOTES: Plants of dry, open, rocky places at low elevations, especially coppices on calcareous soil or rocks. Flowers in all months, but most frequently collected from February to August. The apparently 8 glands on the calyx may actually comprise 10 with those of the anterior sepal fused with adjacent glands. The true nature of the 2 broader anterior glands will be revealed only by anatomical study.

Bunchosia polystachia (Andrews) DC., Prodr. **1:** 581. 1824. FIGURE 235a-f.

Basionym: *Malpighia polystachia* Andrews, Bot. Repos. **9:** *pl. 604.* 1810.
Type: A cultivated plant supposed to have originated in Trinidad (but see discussion below); no specimen is known to exist.
Syn.: *Bunchosia nitida* (Jacq.) DC. var. *grenadensis* Urban & Niedenzu *in* Niedenzu, De genere *Bunchosia* 9. 1898. (Type: Grenada, *Eggers 6375* (A!, lectotype; US!, isolectotype).)
?*Malpighia media* R. Br. *in* W. T. Aiton, Hort. Kew. ed. 2, **3:** 103. 1811. (Type: Cultivated plant originating in "West Indies" (not found at BM or K; perhaps no specimen preserved).)
?*Bunchosia media* (R. Br.) DC., Prodr. **1:** 581. 1824.

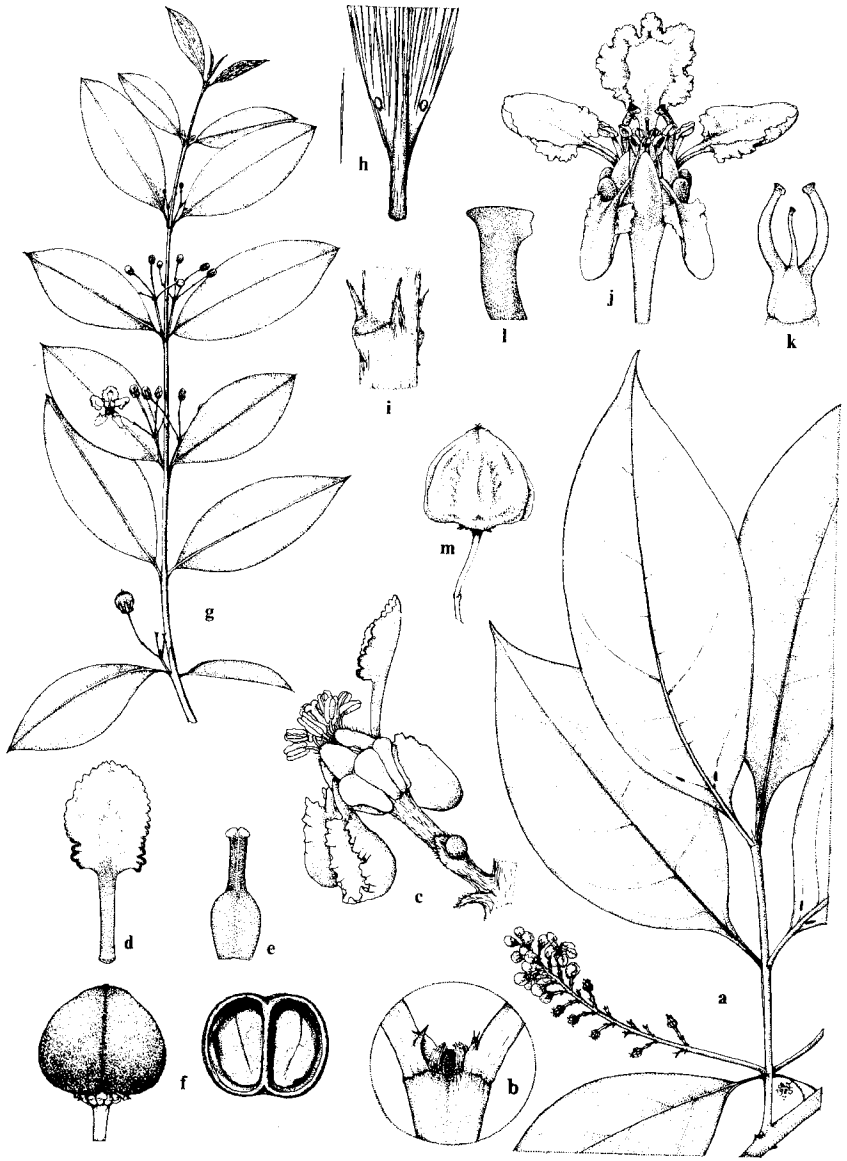

FIGURE 235. a-f, *Bunchosia polystachia*: a, flowering branch, × 0.45; b, stipules, × 4.5; c, flower, side view, × 3; d, posterior petal, × 3.5; e, gynoecium, × 4.5; f, fruit, whole and in cross section, × 1.4. g-m, *Malpighia martinicensis*: g, flowering branch, × 0.45; h, abaxial base of leaf and one hair, × 4.5; i, stipules, × 4.5; j, flower, from front, × 3; k, gynoecium, anterior style in center, × 3.5; l, apex of posterior style, × 18; m, fruit, × 0.9.

Shrub or small tree 2-7 (-10) m tall. Leaves with petioles 5-15 mm long, eglandular; laminae of larger leaves elliptical or ovate, 6-17 × 3-8 cm, base cuneate to almost rounded, apex rounded to obtuse to acute to acuminate, usually bearing 2 abaxial glands somewhat above base and beside midrib or between it and margin, nearly or quite glabrate at maturity. Pseudoracemes 3-12 cm long, of 10 to 30 (to 40) flowers, axillary or 1 to 3 terminating short lateral shoot with 1 pair of vegetative leaves; peduncle 1-4 (-7) mm long; 1 bracteole (or rarely both) usually bearing large eccentric abaxial gland. Calyx bearing 8 glands; petals yellow, eglandular or glandular-dentate at base or around margin; filaments 1.8-2.5 mm long, 1/3-1/2 connate; anthers with connective yellow or light brown; ovary bicarpellate, glabrous or rarely sparsely sericeous; style (formed by 2 nearly to completely connate) 1.8-2.2 mm long, glabrous, stigmas usually distinct. Fruits orange to red, 9-14 mm long and 9-16 mm in diameter (dried), 2-lobed, depressed-globose or globose to ovoid, glabrous, wall granulate, apparently becoming smooth in some (overripe?) fruits.

GENERAL DISTRIBUTION: Cuba, Hispaniola, Puerto Rico, Virgin Islands.

DISTRIBUTION IN LESSER ANTILLES: Saba!, St. Kitts!, Nevis!, Montserrat!, Guadeloupe!, Dominica!, Martinique!, St. Lucia!, St. Vincent!, the Grenadines!, Grenada!, Barbados!.

COMMON NAMES: Wild coffee, bois masse, prune café.

NOTES: Plants of woodlands or forests, in relatively mesophytic to moist places from near sea level to 1000 m. Flowers in all months, but most frequently collected from March to September. This species has long been called *Bunchosia nitida* (Jacq.) DC., but that name was based on a type from Cartagena, Colombia, and the West Indian plant is not known from Colombia. It is therefore inappropriate to use that name for this species. I am adopting the next oldest name, and spelling the epithet as Andrews spelled it. The figure and description in the protologue compare well with the plant from the Lesser Antilles. Andrews said under the generic character "Berry . . . with three large bony seeds," which would not fit our bicarpellate species, but the specific character and plate do not describe or illustrate fruits and he apparently did not section the ovary, so there is no reason to believe that his type was tricarpellate. In fact, there is some evidence that it really was bicarpellate. In the second edition of Hortus kewensis, vol. **3** p. 103, 1811, Robert Brown described *Malpighia polystachia* Andrews as having a bilobed stigma, which implies two carpels. Brown's description seems to have been original, based on a living plant at Kew obtained from A. B. Lambert, who also sent Andrews his specimen. Andrews believed the plant to have originated in Trinidad, but no such plant is known from Trinidad (Fl. Trin. Tob. **1:** 144. 1928), so it seems more likely that Lord Seaforth actually obtained it from somewhere in the Lesser Antilles, perhaps from Barbados where he was governor.

Bunchosia media is listed provisionally as a probable synonym. In the protologue, Brown described the stigma as bilobed, which implies that the type was bicarpellate. If so, it is very probable that this name applies to the Lesser Antillean species, not to the tricarpellate species of Jamaica, which is properly

called *B. swartziana* Griseb.

Bunchosia polystachia is quite variable in size of leaves and presence or absence of glands on the petals, and a few plants have the ovary sparsely sericeous, but differences from the common condition are not correlated from one population to another.

BYRSONIMA Kunth

Byrsonima Rich. ex Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 147 (quarto ed.). 1821 [1822].

Trees, shrubs, or subshrubs. Stipules intra- and epipetiolar, distinct or partially to completely connate. Leaves eglandular. Inflorescence a terminal raceme of few-flowered cincinni or a pseudoraceme (i.e., a raceme of 1-flowered cincinni); floriferous bracts and bracteoles eglandular; pedicels sessile or sometimes raised on short peduncle. Sepals all biglandular or all eglandular, connate as far as tips of glands, glands green, yellow, white, or pink; petals yellow, white, pink, or red (rarely "purple"), usually glabrous, lateral 4 with slender, recurved claws, anterior pair with deeply cupshaped limbs, posterior pair shallower; posterior petal with stout, erect claw and limb smaller, flat or crumpled and often reflexed; stamens 10, anthers more or less alike; ovary with 3 completely connate carpels, 3-locular, all locules fertile or anterior sterile in some species; styles 3, slender and subulate, stigmas minute and apical or slightly internal. Fruit a drupe, thin flesh green turning yellow, orange, red, purple, blue, or blue-black at maturity; stone with hard wall, trilocular.

LECTOTYPE SPECIES: *Byrsonima coccolobifolia* Kunth.

A genus of at least 150 species, all American, mostly South American.

KEY TO THE SPECIES

1. Petals white or pink, often turning reddish in age.
   2. Laminae of larger leaves 0.9-1.9 (-2.4) cm wide; inflorescences 2.5-5 cm long, containing 6 to 10 (to 16) flowers; anthers with locules rounded at apex and connective equaling locules or exceeding them by up to 0.3 mm; fruit yellow at maturity ..... *B. lucida*
   2. Laminae of larger leaves (2.5-) 3-6 (-7) cm wide; inflorescences (3-) 5-17 cm long, containing (15 to) 20 to 50 flowers; anthers with locules apiculate at apex and connective exceeding locules by 0.6-1.4 mm; fruit red at maturity ... *B. trinitensis*
1. Petals yellow.
   3. Posterior petal with 2 or more glands at apex of claw or base of limb; leaves tightly sericeous to glabrate, hairs sessile, straight, appressed; anthers sericeous, especially between locules, with straight appressed hairs; laminae with 15 to 20 or more fine lateral veins on each side ..... *B. spicata*
   3. Posterior petal eglandular; leaves tomentose to glabrate, hairs loose, sinuous to strongly twisted; anthers glabrous or tomentose, hairs loose and spreading; laminae with 7 to 12 principal lateral veins on each side ..... *B. crassifolia*

Byrsonima crassifolia (L.) Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 149 (quarto ed.). 1821 [1822].

Basionym: *Malpighia crassifolia* L., Sp. Pl. **1:** 426. 1753.
Type: Linnaean Herbarium, genus 588 sheet 8 in Savage's Catalogue.
Syn.: *Malpighia coriacea* Sw., Prodr. 74. 1788. (Type: Jamaica.)
Byrsonima coriacea (Sw.) DC., Prodr. **1:** 580. 1824.
Byrsonima berterovana Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 333. 1840. (Type: Jamaica, *Bertero* (P-JU!).)
Byrsonima cubensis Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 333. 1840. (Type: Cuba, *Poeppig* (P!).)
Byrsonima tenuifolia Urban & Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **1:** 19. 1901. (Type: Hispaniola, *Picarda 536.*)

Shrub or small tree (0.8-) 1-7 (-10) m tall. Stipules 2-3 (-4) mm long, connate. Leaves with petioles 8-15 (-23) mm long, tomentose to glabrate; laminae of larger leaves elliptical or broadly elliptical or somewhat obovate or suborbicular, 6.5-13 (-19) × 3-8 cm, base cuneate or attenuate, apex usually abruptly short-acuminate, occasionally obtuse or rounded, densely tomentose to glabrate on both sides, hairs rather loose, sinuous to strongly twisted; principal lateral veins mostly 7 to 12 on each side. Inflorescences 7-15 (-23) cm long, containing 20 to 50 or more flowers; bracts 1-5 mm long, appressed or spreading but not revolute, usually deciduous before maturity of fruit, often much earlier; pedicels weakly to strongly circinate in bud, decurved in fruit. Sepals all biglandular; petals yellow, all eglandular; anthers with locules occasionally glabrous, more commonly pilose with few to many spreading hairs on both sides, connective equaling locules or slightly exceeding them; ovary glabrous or sparsely to densely tomentose-sericeous. Fruits yellow at maturity, 8-10 mm in diameter (dried), globose or depressed-globose, glabrous or sparsely tomentose to glabrate.

GENERAL DISTRIBUTION: West Indies, Mexico and Central America, and much of tropical South America.

DISTRIBUTION IN LESSER ANTILLES: Barbados!.

NOTES: The only two collections seen from Barbados bear no notes on habitat; they were collected in Dodds and St. John, Villa Nova. In most of its range the species grows in open savannas with small trees, where it is often one of the important woody species. It flowers and fruits in all months.

This is an exceedingly variable species. The more I study it the broader my concept of it becomes. In Central America many forms coexist and intergrade. In the West Indies there is one extreme that resembles the plants in Venezuela. It has thick, broad, rather rounded leaves with the leaf reticulum dense and prominent and the leaf hairs twisted and rather long-persistent, long bracts, and usually numerous twisted anther hairs. The other extreme has thinner, more tapered leaves with a less prominent reticulum and straighter hairs that fall sooner, shorter bracts, and few anther hairs. These plants have traditionally been called *Byrsonima coriacea*. The plant in Barbados resembles the latter, and if one were going to recognize *B. coriacea*, that would be the correct name to use in this Flora. However, I cannot defend doing that. I suspect that the present populations in the West Indies are derived from immigrants that came at different times from South America and Central America and represented

different morphological extremes, but they seem to be crossing in the West Indies, and at this time I see no satisfactory way to separate them.

Byrsonima lucida (Miller) DC., Prodr. **1:** 580. 1824.

Basionym: *Malpighia lucida* Miller, Gard. Dict. ed. 8. 1768.
Type: Cuba, *Houstoun* (BM!).
Syn.: *Malpighia cuneata* Turcz., Bull. Soc. Imp. Naturalistes Moscou **31:** 390. 1858. (Type: Cuba, *Linden 1968.*)
Byrsonima cuneata (Turcz.) P. Wilson, Bull. New York Bot. Gard. **8:** 394. 1917.

Shrub or small tree 1-6 m tall. Stipules 0.7-1.5 mm long, connate or distinct just at apex. Leaves often clustered at tips of shoots; petioles 1-5 mm long, sericeous to glabrate; laminae of larger leaves obovate, 20-40 × 9-19 (-24) mm, base cuneate or gradually narrowed, apex rounded or obtuse, very sparsely sericeous to soon glabrate. Inflorescences 2.5-5 cm long, containing 6 to 10 (to 16) flowers; bracts 1.5-3 mm long, appressed or spreading, not revolute, bracts and bracteoles persistent past anthesis, but deciduous before maturity of fruit; pedicels straight in bud, straight to somewhat decurved in fruit. Sepals all biglandular; petals white or pink, turning red in age; anthers glabrous, locules rounded at apex, connective equaling locules or exceeding them by up to 0.3 mm; ovary glabrous. Fruits yellow at maturity, 8-12 mm in diameter (dried), ovoid to spheroidal with short apical beak when immature, glabrous.

GENERAL DISTRIBUTION: Florida, Bahamas, Greater Antilles, Virgin Islands.

DISTRIBUTION IN LESSER ANTILLES: Anguilla!, St. Martin!, Barbuda!, Antigua!, Guadeloupe!, La Désirade!, Marie Galante!, Dominica!, Barbados!.

COMMON NAMES: Clam cherry, gooseberry, olivier.

NOTES: Members of this species grow from sea level to 150 m (occasionally higher in Greater Antilles); they are common in xerophytic associations near coasts, especially coppices on thin soil over limestone, but also in sandy areas back of beach. Flowering and fruiting occur from November to July, perhaps in all months. This species seems to hybridize with *B. spicata* in Dominica; see discussion under the latter species.

Byrsonima spicata (Cav.) DC., Prodr. **1:** 580. 1824.

Basionym: *Malpighia spicata* Cav., Diss. **8:** 409, *pl. 237.* 1789.
Type: Santo Domingo, *Jos. Jussieu* (P-JU!).
Syn.: *Byrsonima guadalupensis* Don, Gen. Hist. **1:** 637. 1831. (Type: Guadeloupe, not located.)
Byrsonima coriacea var. *spicata* (Cav.) Niedenzu *in* Engl., Pflanzenr. IV. **141:** 700. 1928.

Tree 3-25 m tall. Stipules 1-3 mm long, connate. Leaves with petioles 5-12 (-15) mm long, sericeous; laminae of larger leaves elliptical, 6.5-13 (-14.5) × 1.7-4.5 (-5.5) cm, base acute or attenuate, apex acute or acuminate, sericeous on both sides at first, at maturity more or less glabrate above, tightly sericeous to glabrate below, hairs straight, sessile, appressed, lateral veins 15 to 20 or more pairs, fine, parallel. Inflorescences 4-12 cm long, containing (15 to) 25 to 50

flowers; bracts 1-2.5 mm long, spreading to revolute, deciduous before maturity of fruit; pedicels circinate in very young buds, decurved or nearly straight in fruit. Sepals all biglandular, glands yellow; petals yellow, posterior petal bearing 2 or more glands at apex of claw or on base of limb; anthers sericeous, at least between locules, with straight appressed hairs, locules rounded at apex, connective equaling locules or slightly exceeding them; ovary sericeous or (rarely) glabrous. Fruits yellow-orange at maturity, 10-12 mm in diameter (dried), depressed-globose, glabrous or sericeous to glabrate.

GENERAL DISTRIBUTION: Greater Antilles except Jamaica; northern South America, south to Bolivia.

DISTRIBUTION IN LESSER ANTILLES: Antigua!, Saba!, St. Eustatius!, St. Kitts!, Montserrat!, Guadeloupe!, Dominica!, Martinique!, St. Lucia!, St. Vincent!, Barbados.

COMMON NAMES: Bois tan, shoemaker's bark (both reflecting the use of the bark for tanning leather), bois charbon, mauricypre.

NOTES: Growing from near sea level to 630 m, in a variety of associations from dry scrubland to rain forest. Flowering and fruiting in all months. A tree from the Grande Savane of Dominica (*Stern & Wasshausen 2444*, US) is superficially similar to *Byrsonima trinitensis*, but lacks the characteristic anthers and white to pink petals of that species, which grows in wetter places. Dan Nicolson has suggested, in his manuscript for the Flora of Dominica, that this plant resulted from hybridization between *B. lucida*, which is common in the Grande Savane, and *B. spicata*, which is widespread in Dominica. I believe that he is probably correct. The leaves of *2444* are intermediate in size and shape between those of the putative parents, although closer in size to those of *B. spicata*. The bracts are rather long, as in *B. spicata*, but stiff, as in *B. lucida*. The inflorescence is longer and contains more flowers than that of *B. lucida*, and the petals were described as yellow-orange, as in *B. spicata*. The connective of the anthers just equals the locules, and the locules are rounded at the apex, characteristics of both *B. lucida* and *B. spicata*; there are a few hairs between the locules, as in *B. spicata*. Most of the pollen grains of *Stern & Wasshausen 2444* lack stainable contents, so it was probably a sterile F_1 hybrid with no prospect of perpetuation. The parents are not closely related within the genus.

Byrsonima trinitensis Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 334. 1840.
FIGURE 236a-g.

Type: Martinique (see discussion below), *Sieber 51* (K!, M, MO!, NY!, P!).
Syn.: *Byrsonima martinicensis* Krug & Urban ex Duss, Ann. Inst. Bot.-Géol. Colon. Marseille **3:** 111. 1897. (Type: Martinique, *Duss 593* (A!, NY!).)
Byrsonima martinicensis var. *vincentiensis* Urban & Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **1:** 41. 1901. (Syntypes: St. Vincent, *Smith 481*, *Smith 609*, *Eggers 6744*.)

Tree 4-30 m tall, rarely shrubby and only 2-3 m tall. Stipules 1.3-2.7 mm long, connate. Leaves with petioles 3-12 mm long, sericeous to glabrate; laminae of larger leaves elliptical or obovate to nearly orbicular when short, (2.5-) 3-13 (-15) × 3-6 (-7) cm, base cuneate or truncate, apex usually rounded or obtuse,

occasionally some acute, originally sericeous but soon nearly or quite glabrate. Inflorescences (3-) 5-17 cm long, containing (15 to) 20 to 50 flowers; bracts and bracteoles 0.5-1 mm long, straight, persistent past flowering, persistent or deciduous in fruit; pedicels appressed-sericeous, circinate in bud, strongly decurved or twisted in fruit. Sepals all biglandular, glands white; petals white to pink, probably turning reddish in age; anthers glabrous or sparsely sericeous, locules drawn out at apex into short, slender, sterile projections (these often abraded), connective exceeding locules by 0.6-1.4 mm, extension straight or recurved; ovary glabrous or sericeous at apex. Fruits red at maturity, 8-11 mm in diameter (dried), ovoid, usually with distinct apical beak, glabrous or sericeous at apex, subtended by enlarged calyx.

GENERAL DISTRIBUTION: Endemic to the Lesser Antilles (see discussion below).

DISTRIBUTION IN LESSER ANTILLES: Antigua!, Guadeloupe!, Dominica!, Martinique!, St. Lucia!, St. Vincent!, Grenada!.

COMMON NAMES: Bois tan, bois tan montagne, bois tan rouge, mauricif, mauricypre.

NOTES: Growing from 100 to 1200 m, mostly 300 m or higher, mostly rain forests but occasionally found in woodlands or savannas. Flowering from April to December, fruiting from November to July. The name of this species is unfortunate, because it does not occur on Trinidad. The type is surely one of the several collections made by Sieber in Martinique and later distributed with the printed "FL. TRINITATIS" label used for the plants he did get on Trinidad (R. A. Howard, pers. comm.). A similar but easily distinguished plant is known from Mt. Tucuche on Trinidad, and that has often been called *B. trinitensis*. It differs from the plant of the Lesser Antilles in several characters, most notably its short, loosely reddish-tomentose pedicel that is quite straight in bud and fruit and its filaments bearing many long spreading hairs at least halfway up the inner face. The plant on Trinidad seems to be conspecific with *B. kariniana* W. Anderson; plants essentially identical to those of Trinidad have been collected in northeastern Venezuela.

Byrsonima trinitensis is probably endemic to the Lesser Antilles. Adams used the name for a pink-flowered species in his Flowering Plants of Jamaica, but he did not describe the all-important anthers and may not have appreciated how similar quite separable species of *Byrsonima* can be. If the plants of Jamaica have anthers with the connective equaling the locules, as described by Niedenzu for *B. glaberrima* Niedenzu and *B. bracteata* Fawcett & Rendle, they are certainly not *B. trinitensis*. It is also worth noting that the only report of this species from Antigua is *Duss 44* in 1902 (NY!); that record should be confirmed by recollection. The species most similar to *B. trinitensis* is the Venezuelan one currently known by the later homonym *B. reticulata* Klotzsch & Karsten ex Grisebach, which I shall replace with a new name in the near future.

The leaves of the plants treated here as *Byrsonima trinitensis* are variable in size, shape, and hairiness, but intermediates are common and I can see no justification for recognizing the large-leaved extreme as *B. martinicensis*.

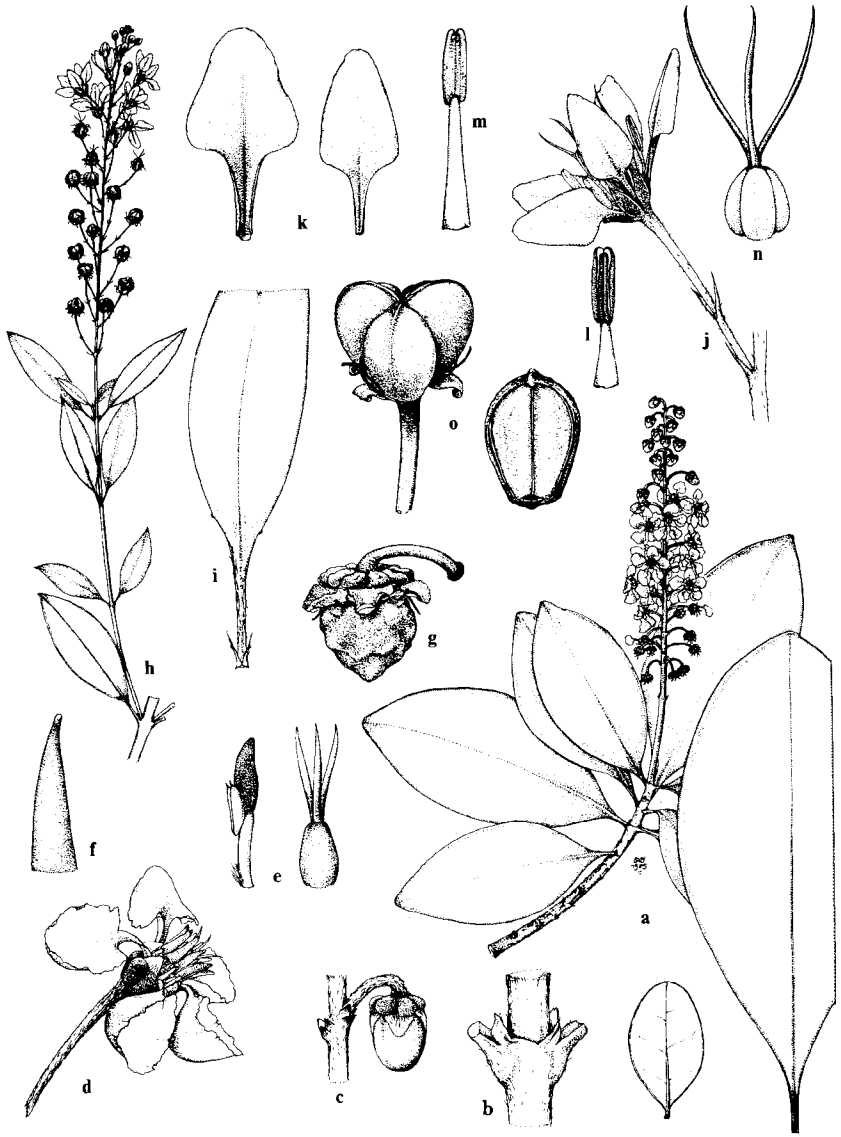

FIGURE 236. a-g, *Byrsonima trinitensis*: a, flowering branch, and large and small leaves from other collections, × 0.45; b, stipules, × 2.3; c, flower bud, × 2.3; d, flower, × 2.3; e, stamen and gynoecium, × 4.5; f, apex of style, × 23; g, dried fruit, × 1.4. h-o, *Galphimia gracilis*: h, flowering branch, × 0.45; i, base of leaf and stipules, × 2.3; j, flower, side view, × 2.3; k, posterior petal (left) and lateral petal, × 3; l, stamen from opposite a petal, adaxial view, × 4.5; m, stamen from opposite a sepal, abaxial view, × 4.5; n, gynoecium, × 4.5; o, intact fruit (left, × 3) and adaxial view of one coccus, × 4.5.

Byrsonima coccolobifolia Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 148 (quarto ed.). 1821 [1822].

In Das Pflanzenreich, Niedenzu cited two collections of this species as possibly originating in Guadeloupe. I have seen no collections of this very distinctive species from the Lesser Antilles, and am reasonably confident that it does not occur there.

Byrsonima laevigata (Poiret) DC., Prodr. **1:** 580. 1824.

Niedenzu cited a Perrottet collection from Guadeloupe under this name in Das Pflanzenreich, and Duss cited his *3675* from Guadeloupe as *B. laevigata* in his Flore Phanérogamique. The Duss collection (NY!) is a large-leaved specimen of *B. trinitensis*, and I assume the Perrottet collection is the same species. *Byrsonima laevigata* is easily distinguished from *B. trinitensis* on the basis of its anther locules, which are densely sericeous and have long apical extensions; it is known only from South America, from Suriname south to Bahia.

GALPHIMIA Cav.

Galphimia Cav., Icon. **5:** 61. 1799.

Syn.: *Thryallis* L., Sp. Pl. ed. 2: 554. 1762, not *Thryallis* C. Martius, Nov. Gen. Sp. Pl. **3:** 77. 1829, nom. cons. (Type of *Thryallis* L.: *T. brasiliensis* L.)

Subshrubs, shrubs, or occasionally small trees. Stipules intrapetiolar, distinct. Leaves usually bearing glands. Inflorescence a terminal pseudoraceme or panicle; floriferous bract and bracteoles eglandular or with tiny glandular areas on margin at base; pedicel raised on well-developed peduncle. Flowers zygomorphic to nearly actinomorphic; calyx eglandular or bearing up to 5 glands; petals yellow or yellow and red, subentire (minutely denticulate); stamens 10, filaments opposite sepals longer than those opposite petals, anthers alike; ovary with 3 carpels completely connate, all fertile; styles 3, slender and subulate with minute apical stigmas. Fruit breaking apart into 3 dry, unwinged, 1-seeded cocci with thin brittle walls, these indehiscent or dorsally dehiscent but probably not releasing the seed.

TYPE SPECIES: *Galphimia glauca* Cav.

A genus of about 11 species occurring principally in Mexico and northern Central America, with one species native to South America and one (*G. gracilis*) cultivated pantropically as an ornamental shrub. For additional information see B. MacBryde, A revision of the *Galphimiinae* Ndz., *Malpighiaceae*, Ph.D. dissertation, Washington University, pp. 110-244, 1970.

Galphimia gracilis Bartling, Linnaea **13:** 552. 1839. FIGURE 236h-o.

Type: Bartling described the species from a cultivated plant and apparently kept no herbarium specimen. MacBryde (cited above) plans to designate as neotype a specimen in the Jussieu Herbarium in Paris.

Syn.: *Thryallis gracilis* (Bartling) Kuntze, Revis. Gen. Pl. **1:** 89. 1891.

Shrub 1-3 (-4) m tall. Stipules 1.5-2.5 mm long. Leaves with petioles 5-15 mm long, loosely sericeous to glabrate, eglandular; laminae of larger leaves elliptical or ovate, 2-5 × 1-3 cm, base truncate, cuneate, or gradually narrowed, apex acute, obtuse, or rounded and often apiculate, glands 2, marginal near base, glabrate on both sides or bearing scattered hairs. Sepals usually all eglandular, lanceolate, acute or slightly obtuse at apex; lateral petals with limb lanceolate, apex acute to obtuse, base cuneate or truncate, 2 to 3 times as long as claw; posterior petal strongly differentiated by its longer claw, limb only 1 to 1.4 times as long as claw and decurrent onto it; petals deciduous before fruit reaches maturity; anthers 2-2.8 mm long; ovary glabrous. Cocci 4-5 × 3 mm.

GENERAL DISTRIBUTION: Native to Mexico; cultivated as an ornamental throughout the tropics and subtropics, especially in Latin America and the Caribbean.

DISTRIBUTION IN LESSER ANTILLES: Cultivated; perhaps occasionally escaped from cultivation: Barbuda, Antigua, St. Eustatius, St. Kitts!, Guadeloupe!, Dominica!, Martinique!, Barbados!.

NOTES: This species is often misidentified as *Galphimia glauca* Cav., a common species of Mexico and Central America which is only rarely cultivated. References to *G. glauca* in the horticultural literature should be assumed to refer to *G. gracilis*.

HETEROPTERYS Kunth

Heteropterys Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 163 (quarto ed.). 1821 [1822].

Woody vines, shrubs, or small trees. Stipules very small, free, triangular, borne on or beside base of petiole, or absent. Leaves usually bearing glands. Flowers borne in umbels, corymbs, or pseudoracemes, these single or grouped in racemes or panicles, axillary or terminal. Petals mostly yellow or pink; stamens 10, anthers more or less alike, connective not or hardly exceeding locules; ovary with 3 carpels partially connate, all fertile; styles 3, apex with large stigma usually internal, rarely terminal, dorsally rounded, truncate, acute, or hooked. Fruit breaking apart into 3 samaras, each samara having its largest wing dorsal, thickened on abaxial (lower) edge and (in most species) bent upward, veins terminating in thinner adaxial edge; much shorter winglets or crests present on sides of nut in some species; dorsal wing rudimentary in a few species.

TYPE SPECIES: *Heteropterys purpurea* (L.) Kunth.

A genus of perhaps 125 species, with one in Africa, the rest American, occurring from Mexico and the West Indies to Argentina.

KEY TO THE SPECIES

Petals yellow; sepals revolute at apex; leaves large, laminae to 30 × 14 cm; samaras large, 50-70 mm long, wing 15-30 mm wide, nut 12-20 × 8-15 mm ..... *H. platyptera*

Petals pink; sepals erect or appressed; leaves small, laminae 1.5-5 × 1-3 (-4) cm; samaras small, 18-30 mm long, wing 7-11 mm wide, nut 6-8 × 3-4 mm ..... *H. purpurea*

Heteropterys platyptera DC., Prodr. **1:** 592. 1824.

Type: Guadeloupe (no collector cited; G).

Syn.: *Banisteria longifolia* Sw., Prodr. 75. 1788. (Type: West Indies.)

Banisteria macrocarpa Pers., Syn. Pl. **1:** 507. 1805, not *H. macrocarpa* Kralik. (Type: Martinique, *Terrasson* (P-JU!).)

Banisteria pubiflora DC., Prodr. **1:** 591. 1824. (Syntypes: Puerto Rico, *Bertero*, and Guadeloupe, *L'herminier*.)

Heteropterys longifolia (Sw.) Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **2:** 53. 1903, not *H. longifolia* Kunth.

Heteropterys longifolia var. *borealis* Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **2:** 53. 1903. (Lectotype: Dominica, *Imray*.)

Heteropterys longifolia var. *martinicensis* Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **2:** 54. 1903. (Lectotype: Martinique, *Isert* in 1787.)

Heteropterys platyptera var. *borealis* (Niedenzu) J. F. Macbr., Candollea **6:** 12. 1934.

Heteropterys platyptera var. *martinicensis* (Niedenzu) J. F. Macbr., Candollea **6:** 12. 1934.

Woody vine climbing to tops of tall trees, sometimes shrubby. Leaves with petioles 8-16 mm long, glabrate, eglandular, black in dried specimens; laminae of larger leaves ovate or elliptical, 15-30 × 6-14 cm, often smaller in inflorescence, base rounded or occasionally slightly cordate, apex acuminate, eglandular or bearing 1 or 2 small glands below near base, glabrate or occasionally thinly sericeous below at maturity. Inflorescence a terminal or axillary panicle, flowers ultimately borne in pseudoracemes 4-18 cm long, containing 10 to 60 flowers; bracts and bracteoles eglandular. Flowers with strong, sweet, lilylike smell; sepals revolute at apex, lateral 4 biglandular, glands 1.5-2.4 mm long; petals yellow, glabrous, dentate, 5-7 mm long including claw 1.5-3.2 mm long; filaments 2.5-3.5 mm long; anthers 0.7-1 mm long, glabrous or each locule with apical tuft of hairs; styles 2.8-3.3 mm long, straight and parallel or posterior 2 somewhat lyrate, apex with stigma distinctly internal and dorsally usually extended into short rounded hook ca. 0.2 mm long. Samaras 50-70 mm long, wing 15-30 mm wide, straight or somewhat bent up or back and sometimes flabellate; nut 12-20 × 8-15 mm, without lateral crests or winglets.

GENERAL DISTRIBUTION: Probably endemic to the Lesser Antilles; Niedenzu (Pflanzenreich p. 374) cites one collection from Puerto Rico, which I have not seen.

DISTRIBUTION IN LESSER ANTILLES: Guadeloupe!, Dominica!, Martinique!, St. Lucia!, St. Vincent!.

COMMON NAMES: Liane caco, see caco.

NOTES: Growing in moist forests or near streams, to 600 m elevation. Flowers from February to August, most commonly from April to June. This species is quite similar to *Heteropterys multiflora* (DC.) Hochr., which is common in

northeastern South America and rare in Colombia, Central America, and Jamaica. The two are usually distinguished on the basis of the samara, which is shorter and more flabellate in *H. multiflora* and has a larger nut. However, as Niedenzu notes (Pflanzenreich p. 374), some plants of the Lesser Antilles have samaras that are somewhat intermediate between the extremes of the two species. From such plants *H. multiflora* differs in having a row of inframarginal glands on the leaves below, larger flowers with longer calyx glands, petals, stamens, and styles, and a longer, dorsiventrally flattened hook on the stigma.

Heteropterys purpurea (L.) Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 164 (quarto ed.). 1821 [1822]. FIGURE 237a-g.

Basionym: *Banisteria purpurea* L., Sp. Pl. **1:** 427. 1753.

Type: Unknown; Linnaeus gives only tropical America for the origin, and Savage lists no specimen in the Linnaean Herbarium.

Syn.: *Banisteria parvifolia* Vent., Choix Pl. 51. 1808. (Type: St. Thomas, *Ledru* (P-JU!).)
Heteropterys parvifolia (Vent.) DC., Prodr. **1:** 591. 1824.
Malpighia elliptica Desv. *in* Ham., Prodr. Pl. India Occ. 40. 1825. (Type: West Indies, P.)

Woody vine climbing to 10 m, apparently sometimes shrubby. Leaves with petioles 3-10 mm long, mostly biglandular near middle; laminae of larger leaves ovate or elliptical to nearly orbicular, 1.5-5 × 1-3 (-4) cm, base obtuse or rounded, margin often slightly revolute and sometimes bearing 1 to several tiny dark glands, apex obtuse or rounded, often apiculate, and occasionally emarginate, soon glabrate on both sides or sparsely sericeous below. Inflorescence a terminal or axillary pseudoraceme 0.5-4 cm long, (4 to) 6 to 20 flowers sometimes crowded almost into an umbel; bracts and bracteoles eglandular. Sepals erect or appressed, lateral 4 biglandular; petals pink, denticulate or nearly entire, 4.5-5 mm long including claw 1-1.5 mm long; filaments 1.5-3 mm long, longer opposite sepals; anthers 0.9-1 mm long, glabrous; styles 1.8-2.3 mm long, terete, usually straight and parallel or bent slightly distally, more or less equal, apex truncate, stigmas terminal. Samaras 18-30 mm long, wing 7-11 mm wide; nut 6-8 × 3-4 mm, without lateral crests or winglets.

GENERAL DISTRIBUTION: Greater Antilles, Trinidad, Venezuela.

DISTRIBUTION IN LESSER ANTILLES: Antigua!, St. Eustatius!, St. Kitts!, Montserrat!, Guadeloupe!, La Désirade!, Marie Galante!, Martinique!, St. Lucia!, St. Vincent!, the Grenadines!, Grenada!, Barbados!.

COMMON NAMES: Aile à ravet, black twist.

NOTES: Plants of dry thickets at low elevations, from sea level to 200 m. Probably flowers in all months (not collected in September or October), but most commonly collected from January to June.

EXCLUDED SPECIES

Heteropterys lindeniana Adr. Juss., Arch. Mus. Hist. Nat. **3:** 457. 1843.

This species was reported from St. Vincent by Grisebach in his Flora of the

British West Indies, on the basis of a collection by Guilding. I have seen the specimen, which is at Kew, and it does seem to be *H. lindeniana*. That species is endemic to the Yucatán Peninsula, and is certainly not in the Lesser Antilles now. Guilding's plant was presumably cultivated, perhaps introduced from Belize.

Heteropterys macrostachya Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 275. 1840.

In Das Pflanzenreich, Niedenzu cited three collections of this species from St. Vincent, two by Caley and one by "Hooker." Alexander Anderson described and illustrated it under the name *Banisteria chrysophylla* in his 1805 manuscript and stated that he had introduced it from Guiana to the Garden in St. Vincent. That was surely the source of the collections by Caley and "Hooker," and as there are no modern collections of the species from the Lesser Antilles, it has clearly not persisted. Niedenzu also cited a Masson collection from Grenada, but that report was erroneous, based on a mixture. The sheet in question is at Stockholm. It consists of five leaves and a stem plus a packet with several flower buds and one umbel. The leaves and stem are indeed *Heteropterys macrostachya*, but there is no reason to believe they were collected by Masson or originated in Grenada. Written on the sheet is "Ind. Occ. *Swartz*." The fragments in the packet represent *Hiraea faginea* (Sw.) Niedenzu, and written on the packet is "Malpighia faginea Sw. Ind. Occ.: Ins. Grenada: *Masson*." Attached to the sheet is a label saying "M. faginea" in Swartz's hand. It seems clear that the packet contains fragments from the type of *Hiraea faginea* at BM, with which they compare perfectly. The leaves represent a different collection from elsewhere, most likely Trinidad, which Swartz misidentified as his *Malpighia faginea*; the resemblance of the leaves in the two species is very strong indeed. These two collections were mounted together, which misled Niedenzu into thinking that the data on the packet applied to the vegetative parts as well.

Heteropterys trigoniifolia Adr. Juss. *in* St.-Hil., Fl. Bras. Merid. **3:** 33. 1832.

This is a pink-flowered species of central Brazil. Niedenzu cited a Caley collection, which I have not seen, from St. Vincent. The species is certainly not native to St. Vincent, nor growing there now, but perhaps it was cultivated in the St. Vincent Botanic Garden during Caley's tenure as director.

HIRAEA Jacq.

Hiraea Jacq., Select. Stirp. Amer. Hist. 137. 1763.

Woody vines, occasionally shrubby. Stipules usually borne on petiole, most often at or above middle, usually long and subulate. Leaves usually bearing glands, tertiary nerves often strongly parallel. Inflorescences axillary, usually 1 to several umbels of 4 or many flowers; pedicels usually sessile. Petals yellow; stamens 10, anthers more or less alike; ovary with 3 carpels nearly free, all fertile; styles 3, inserted low on ventral face of carpels, apex with internal stigma

and dorsally rounded to prominently hooked. Fruits breaking apart into 3 samaras, each samara having its largest wings lateral, usually 2 discrete wings, the samara then butterfly-shaped; dorsal wing small, sometimes reduced to crest or lost; intermediate winglets or slender projections rarely present.

TYPE SPECIES: *Hiraea reclinata* Jacq.

A genus of at least 55 species, occurring throughout the neotropics but most diverse in northern South America.

Hiraea faginea (Sw.) Niedenzu, De genere *Hiraea*, 16. 1906. FIGURE 238a-e.

Basionym: *Malpighia faginea* Sw., Prodr. 74. 1788.
Type: Grenada, *Masson* (BM!).
Syn.: *Hiraea chrysophylla* Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 258. 1840. (Syntypes: Northern Brazil (P!, P-JU!); Rio Negro, *Martius* (P-JU!).)
Hiraea swartziana Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 258. 1840, nom. superfl.

Stipules 2.5-5 mm long, borne between middle and apex of petiole. Leaves with petioles 5-9 (-11) mm long; laminae of larger leaves obovate or elliptical, (6-) 8-15 (-18.5) × 3-6 (-7.5) cm, base rounded or subcordate, apex acuminate, margin usually bearing several small glands distally, 2 large glands below at base by or on midrib, glabrate above at maturity or thinly sericeous, especially on midrib, densely and persistently sericeous below, straight appressed hairs giving laminae a golden or silvery-metallic sheen. Inflorescence a short ternate cyme of 3 4-flowered umbels, sometimes reduced to single umbel; bracts and bracteoles eglandular; pedicels sessile. Sepals all eglandular or lateral 4 bearing 8 glands; 4 lateral petals dentate or laciniate, eglandular, posterior petal glandular-fimbriate all around margin; posterior 3 anthers shorter than anterior 7, largest ones often with connective swollen and glandular; posterior 2 styles strongly arcuate, anterior nearly straight, all 3 with short pointed dorsal hook at apex. Samaras with lateral wings 5-15 mm wide and high, trapezoidal or rectangular, entire or lobed or completely divided into 2 as in *Tetrapterys*, often irregularly reduced; dorsal wing 1.5-5 mm wide; nut 4-6 mm in diameter.

GENERAL DISTRIBUTION: Northern South America, Panama, Costa Rica, Nicaragua, and the Greater Antilles (?).

DISTRIBUTION IN LESSER ANTILLES: St. Lucia, Grenada!.

NOTES: Lesser Antillean plants have been collected on river banks. This species is common in northern South America but apparently rare in Grenada, where it has been found only twice since Masson collected the type, once by Eggers in 1889 and once by Broadway in 1905. In addition to the holotype at BM, there are tiny fragments of the type collection at S, mounted with leaves of *Heteropterys macrostachya*; see discussion above, under "Excluded Species" of *Heteropterys*.

The report from St. Lucia is based on a specimen cited by Grisebach in his Flora of the British West Indian Islands.

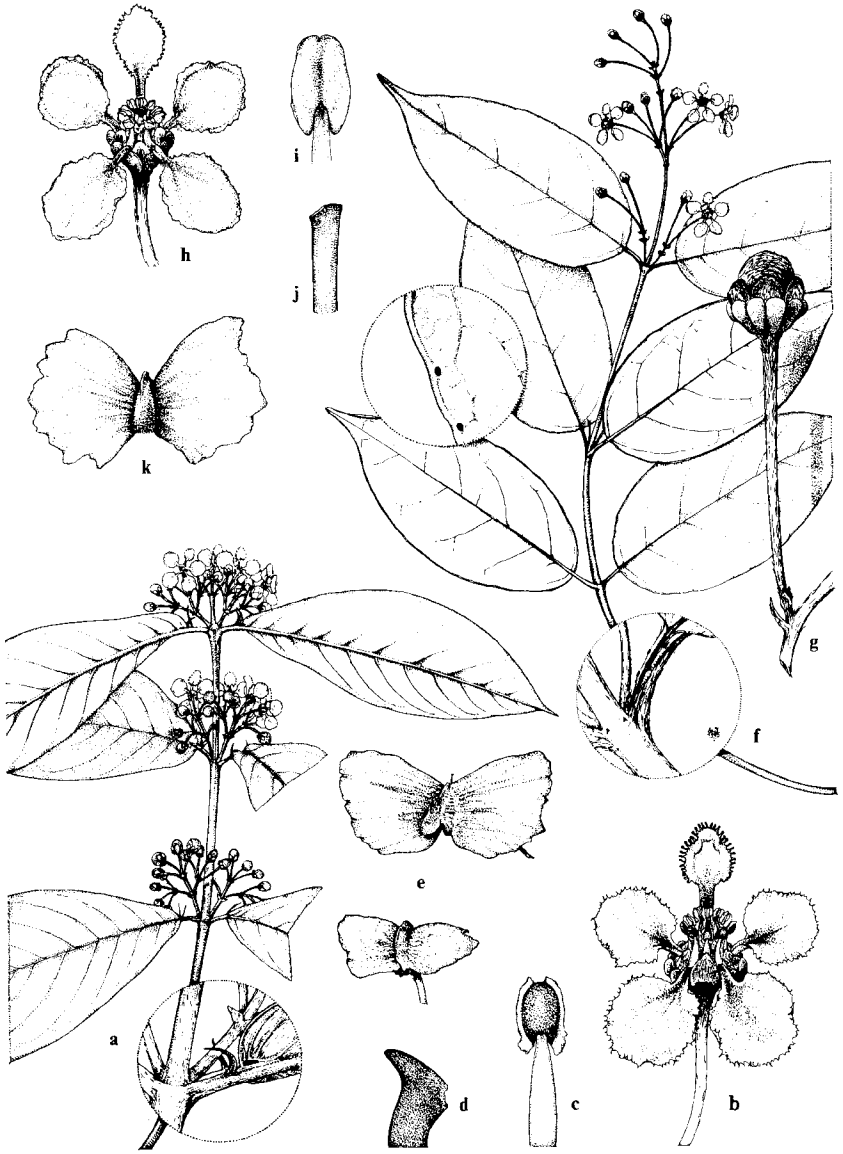

FIGURE 238. a-e. *Hiraea faginea*: a. flowering branch, × 0.45, with base of leaf enlarged, × 1.4; b. flower. × 2.3; c. anther, abaxial view. × 9; d, apex of style, × 18; e, samaras, abaxial views, × ca. 1. f-k, *Mascagnia sinemariensis*: f, flowering branch, × 0.45, with petiole and node enlarged, × 2.3, and adaxial margin of lamina enlarged, × 4.5; g, flower bud, × 2.7 h, flower, × 2.3; i, anther, abaxial view, × 13.5; j, apex of style, × 13.5; k, samara, abaxial view, × 0.7.

MALPIGHIA L.

Malpighia L., Sp. Pl. **1:** 425. 1753.

Shrubs or small trees. Stipules small, borne on stem between petioles. Leaves with eglandular petioles; laminae usually bearing 2 (to 6) glands below. Inflorescence an axillary simple or ternate pseudoraceme usually (always in our species) congested into a dense corymb or umbel; bracts and bracteoles eglandular; pedicels pedunculate. Petals pink, pale purple, or white; stamens 10, all fertile, glabrous, filaments basally connate, anthers alike or 2 opposite posterior-lateral petals larger; receptacle glabrous on both sides of stamens; ovary with 3 carpels usually completely connate, 3 locules all fertile; styles 3, apex with large internal or subterminal stigma and dorsally rounded, truncate, or hooked. Fruit a fleshy red or orange drupe (or berry), with 3 pyrenes united in center or free at maturity but then usually retained in common fleshy exocarp, hard wall of each pyrene showing rudimentary dorsal and lateral wings and sometimes rudimentary intermediate winglets or dissected outgrowths.

LECTOTYPE SPECIES: *Malpighia glabra* L.

A genus of about 42 species, all native to the American tropics and subtropics, mostly in the West Indies, Mexico, and Central America. For additional information, see J. L. Vivaldi, The systematics of *Malpighia* L. (Malpighiaceae), Cornell University Ph.D. thesis, 1979.

Two of our species, *M. linearis* and *M. martinicensis*, bear long, stiff, needlelike hairs, pointed on both ends, which are easily dislodged and cause discomfort when they enter the skin of the unwary. Collectors often describe these as "stinging" hairs, but that is incorrect. They contain no irritating chemical like that which is injected by the stinging hairs of plants in the Euphorbiaceae and Urticaceae; their effect is entirely mechanical. A third species, *M. coccigera*, has stout modifications of the same hairs borne around the margin of its leaves, and while these are not loose, they too defend the plant against herbivores.

KEY TO THE SPECIES

1. Leaves (some or all) sinuate, each lobe armed with a stiff outward-pointing bristle; laminae to 2.5 cm long, mostly shorter, often nearly as wide as long ..... *M. coccigera*
1. Leaves with margin entire and unarmed (although laminae may bear long needlelike hairs on abaxial surface); laminae of larger leaves usually over 2.5 cm long, always distinctly longer than wide.
   2. Styles diverging only distally if at all, straight, coherent in proximal 1/3-2/3; leaves narrowly elliptical to linear, 5.5 to 13 (to 30) times as long as wide ..... *M. linearis*
   2. Styles diverging from base, at least posterior 2 bowed or twisted, distinct; leaves ovate, elliptical, or obovate, to 3.5 times as long as wide.
      3. Leaves usually bearing persistent or deciduous needlelike hairs 1.5-5 mm long below; laminae usually acute or obtuse at apex; umbel usually raised on stalk 2-12 mm long; posterior styles usually bearing prominent dorsal hook at apex ..... *M. martinicensis*
      3. Leaves soon glabrate or bearing only fine, soft hairs to 0.5 mm long on midrib below; laminae most often obtuse or rounded and often emarginate at apex; umbel sessile or raised on stalk 1-3 (-5) mm long; posterior styles dorsally square or only slightly hooked at apex ..... *M. emarginata*

Malpighia coccigera L., Sp. Pl. **1:** 426. 1753.

Type: Represented by *Pl. 168, Fig. 2* in Plum., Pl. Amer., published by Burman in 1758. When Linnaeus was in Holland he studied the copies of 508 of Plumier's original plates made in Paris for Boerhaave (Stafleu & Cowan, Tax. Lit. **4:** 301. 1983). Linnaeus surely based his phrase-name for this species on that drawing, so the copy Linnaeus saw, now in the Groningen University Library, should be considered the type. Plumier probably drew the original plate in Martinique.

Syn.: *Malpighia coccigera* var. *microphylla* Niedenzu, De genere *Malpighia*, 19. 1899. (Type: Vivaldi (p. 448) intends to designate as lectotype *Smith & Smith 1725* from St. Vincent (GH!, K, NY).)

Low shrub to 1 m tall; branches elongated and often prostrate. Leaves with petioles 0-1.5 mm long; laminae of larger leaves orbicular or broadly elliptical or somewhat obovate, 0.6-2.5 × 0.4-2.4 cm, 1 to 1.5 times as long as wide, base rounded, margin of some or all deeply sinuate, each lobe armed with stout, stiff, outward-pointing, bristlelike hair, apex rounded, soon glabrate except for bristles, coriaceous with veins prominent above. Flowers borne singly or in sessile axillary pairs. Calyx bearing 6 to 10 glands, usually 6 large lateral and posterior glands and 2 to 4 smaller anterior glands; petals pink or lilac (or white?); 2 stamens opposite posterior-lateral petals with much longer, thicker filaments and larger anthers than other 8; styles distinct, diverging from base, anterior short, slender, straight, posterior 2 much longer and thicker, strongly bowed, all with interior stigma and at least posterior 2 bearing more or less prominent dorsal hook at apex. Fruits red, 5-15 mm in diameter (fide Vivaldi).

GENERAL DISTRIBUTION: Cuba, Hispaniola, and Puerto Rico; widely cultivated in warm regions and in greenhouses.

DISTRIBUTION IN LESSER ANTILLES: Guadeloupe, Dominica!, Martinique!, St. Lucia!, St. Vincent!, the Grenadines!.

NOTES: Found on exposed rocks and in dry thickets and scrub forests from sea level to 310 m. Flowering in Puerto Rico throughout the year; phenology in the Lesser Antilles very poorly known, but collected with flowers from March to May and in November. Vivaldi recognizes three subspecies of *Malpighia coccigera*, of which ours is ssp. *coccigera*. It is native only in Puerto Rico and the Lesser Antilles. The description given above applies only to that subspecies. The other two subspecies occur in Cuba and Hispaniola.

Vivaldi suggests (p. 449) that the plants in the Lesser Antilles have all escaped from cultivation, but he gives no reason for that belief and the label data of the specimens I have seen do not support the idea.

Malpighia emarginata DC., Prodr. **1:** 578. 1824.

Type: *Sessé & Mociño pl. 6331. 1406 (Hunt Institute, holotype;* G, F neg. 30546).

Syn.: *Malpighia lanceolata* Griseb., Abh. Königl. Ges. Wiss. Gött. **7:** 185. 1857. (Type: Guadeloupe, *Duchassaing 5* (GOET).)

Shrub or small tree 2-6 m tall; much branched with stiff branchlets. Leaves sometimes crowded in dense shoots with very short internodes, same plants also bearing stems with well-developed internodes; petioles (1-) 2-4 mm long; laminae of larger leaves ovate, elliptical, or obovate, 2.5-7 × 1.4-3.3 cm (to 10 × 5 cm in cultivated plants), to 2.5 times as long as wide, base cuneate or rounded, margin entire and unarmed, apex most often obtuse or rounded and often emarginate and apiculate but sometimes acute and rarely slightly acuminate, soon glabrate or bearing only sparse, fine, soft hairs to 0.5 mm long on abaxial midrib. Umbels sessile or raised on stalk 1-3 (-5) mm long and comprising 2 to 4 flowers. Calyx bearing 6 to 10 glands; petals pink or purplish (in age?); 2 stamens opposite posterior-lateral petals with thicker filaments and larger anthers than other 8; styles distinct, diverging from base, anterior shorter, slenderer, more or less straight and leaning outward, posterior 2 longer and thicker, bowed outward at base and then more or less ascending, all truncate at apex with an interior stigma and dorsally square or slightly hooked. Fruits red, to 22 mm wide, 17 mm high, edible.

GENERAL DISTRIBUTION: From Mexico through Central America and the West Indies to northern South America; widely cultivated for the edible fruit, and readily naturalized through dispersal by fruit-eating birds.

DISTRIBUTION IN LESSER ANTILLES: Anguilla!, St. Martin!, Antigua, Guadeloupe!, La Désirade!, Marie Galante!, Les Saintes!, Dominica!, Martinique!, St. Lucia!, the Grenadines!, Barbados.

COMMON NAMES: Acerola, Barbados cherry, cerise de Cayenne, West Indian cherry.

NOTES: Plants of dry lowland areas, especially thorn-scrub, roadsides, and fencerows. Flowering and fruiting from March to July. Vivaldi (p. 257) suggests that this species is probably native in the Mayan region; he believes it unlikely to be indigenous in the Lesser Antilles. It has long been known as *Malpighia punicifolia* L., but Vivaldi states (p. 152) that he has studied the type of *M. punicifolia* and it is actually a specimen of *M. glabra* L.

Malpighia linearis Jacq., Enum. Syst. Pl. 21. 1760.

Type: None is known; type locality was St. Martin; Vivaldi argues (p. 198) that Jussieu effectively chose as neotype a specimen from Guadeloupe (P-JU 11.460!).

Syn.: *Malpighia angustifolia* var. *oblongata* Niedenzu, De genere *Malpighia*, 9. 1899. (Type: Vivaldi (p. 199) intends to designate as lectotype *Wullschlägel 75* from Antigua (GOET, M).)

Malpighia angustifolia var. *linearis* (Jacq.) Niedenzu, De genere *Malpighia*, 9. 1899.

Shrub or small tree 1-5 m tall. Leaves with petioles 1-4 (-6) mm long; laminae of larger leaves narrowly elliptical to linear, 4-11.5 (-15) × (0.3-) 0.5-1.5 cm, 5.5 to 13 (to 30) times as long as wide, base cuneate, margin entire and unarmed and often somewhat revolute, apex very gradually tapered, acute, obtuse, or sometimes rounded, thinly sericeous to glabrate above, thickly to thinly covered below with stiff, straight, appressed, needlelike hairs 2-6 mm long, these persistent or eventually deciduous. Umbels raised on stalk 5-25 mm long and comprising 2 to 6 flowers; inflorescences rarely ternate. Calyx bearing 6 glands on lateral sepals; petals pink; stamens subequal; styles straight, diverging only distally if at all, coherent in proximal 1/3-2/3, all with internal stigma, anterior notably shorter and somewhat slenderer than posterior 2 and dorsally truncate at apex, posterior 2 dorsally truncate or bearing short hook at apex. Fruits red, 7-9 mm in diameter (dried).

GENERAL DISTRIBUTION: Puerto Rico and the Virgin Islands.

DISTRIBUTION IN LESSER ANTILLES: St. Martin!, St. Barts!, Barbuda!, Antigua!, St. Kitts!, Nevis!, Montserrat!, Guadeloupe!, La Désirade!, Les Saintes!, Martinique!, St. Lucia.

COMMON NAMES: Bois royal, cerisier, cow-itch bush.

NOTES: Collected in beach scrub and xerophytic thickets to 300 m, in flower from April to October, in fruit in June, August, October, January, and February. Vivaldi (pp. 198 and 207) treats as a synonym of *Malpighia linearis* the name *M. angustifolia* L. (Sp. Pl. ed. 2: 610. 1762). It is true that Linnaeus' name is superfluous because he cited Jacquin's publication and used his phrase-name, slightly modified, but the type of the Linnaean name is probably best considered the Browne specimen in LINN from Jamaica, which represents another species, and since the type governs the application of a name, Linnaeus' name cannot be considered a taxonomic synonym of Jacquin's.

Several collections have leaves that are intermediate between the narrow ones of *M. linearis* and the broader ones of *M. martinicensis*. These plants may have originated through natural hybridization between those species. The collections are: St. Barthélemy, *Le Gallo 271, Questel 775*; Guadeloupe, *INRA-CRAAG H-562 & H-2155*; Les Saintes, *Duss 2888*; Marie Galante, *Stehlé 198*. Of these six, two (*Duss 2888* and *Le Gallo 271*) have a gynoecium that is also intermediate, the styles separate to the base and slightly bowed outward; one (*Questel 775*) is sterile; and the other three have styles like those of *M. linearis*. Study of natural populations is needed to resolve the status of all these intermediates. Note that *Duss 2888* is the collection that Vivaldi (p. 251) proposes to designate lectotype of *Malpighia punicifolia* var. *lancifolia* Niedenzu (De genere *Malpighia*, 8. 1899). Vivaldi has annotated the sheets of *2888* at NY and US as *M. emarginata*, but that identification seems questionable, given the shape of the leaves and their needlelike hairs.

Malpighia martinicensis Jacq., Enum. Syst. Pl. 21. 1760. FIGURE 235g-m.

Type: None is known; type locality was Martinique; Vivaldi (p. 301) intends to designate as neotype a *Bertero* collection from Guadeloupe (M, not seen).

Syn.: *Malpighia martinicensis* var. *jussieuana* Niedenzu, De genere *Malpighia*, 13. 1899. (Type: Vivaldi (p. 302) intends to designate as lectotype the *Bertero* collection at M that will also be the neotype of the specific epithet.)

Shrub or small tree 1-8 m tall. Leaves seldom crowded in short dense lateral shoots; petioles 2-5 (-7) mm long; laminae of larger leaves elliptical or slightly ovate, 4-9 (-11.5) × 1.6-4 (-6.2) cm, 1.8 to 3 (to 3.5) times as long as wide, base

cuneate, margin entire and unarmed, apex usually acute or obtuse but sometimes rounded, usually bearing stiff, straight, appressed, needlelike hairs 1.5-5 mm long below, these deciduous or persistent and prominent on older leaves. Umbels rarely sessile, usually raised on stalk 2-12 mm long and comprising (2 or) 3 or 4 (or 5) flowers. Calyx bearing 6 glands on lateral sepals; petals white (*Proctor 21064*) or pink (*Box 1135*); 2 stamens opposite posterior-lateral petals with thicker filaments and larger anthers than other 8; styles distinct, diverging from base, posterior 2 longer and thicker than anterior, bowed or eventually twisted, all with interior stigma and at least posterior 2 bearing more or less prominent dorsal hook at apex. Fruits red, 15 mm wide, 13 mm high, edible.

GENERAL DISTRIBUTION: Endemic to Lesser Antilles.

DISTRIBUTION IN LESSER ANTILLES: St. Barts!, Antigua!, Guadeloupe!, Marie Galante!, Martinique!, St. Vincent!.

COMMON NAMES: Cerise capitaine, cerise du pays.

NOTES: Plants of xerophytic woodlands near the sea. Collected in flower in May, June, and October, in fruit in December. This species seems to hybridize with *Malpighia linearis*; see discussion under that species.

MASCAGNIA Bertero

Mascagnia Bertero *in* Colla, Hortus Ripul. 86. 1824.

Vines, mostly woody. Stipules small, free, triangular, borne between petioles or on base of petiole. Leaves usually bearing glands. Inflorescences mostly axillary or terminal pseudoracemes, sometimes congested and reduced to form corymbs or umbels, single or grouped in panicles; floriferous peduncles usually well developed. Petals yellow, pink, lilac, or white; stamens 10, anthers more or less alike; ovary with 3 carpels connate along central axis, all fertile; styles 3, apex with large internal stigma and dorsally rounded, truncate, acute, or short-hooked. Fruits breaking apart into 3 samaras, each samara having largest wings lateral, 2 discrete wings or a single wing continuous at base or at both base and apex; dorsal wing small, sometimes reduced to a crest or lost; intermediate winglets present or absent; wings reduced or rudimentary in a few species.

TYPE SPECIES: *Mascagnia macradena* (DC.) Niedenzu (*Mascagnia americana* Bertero).

A diverse and probably unnatural genus of about 55 species, occurring from Mexico and the West Indies to Argentina.

Mascagnia sinemariensis (Aublet) Griseb. *in* C. Martius, Fl. Bras. **12**(1): 93. 1858. FIGURE 238f-k.

Basionym: *Banisteria sinemariensis* Aublet, Hist. Pl. Guian. **1**: 462, *pl. 185.* 1775.
Holotype: French Guiana, *Aublet* (BM!).

Syn.: *Malpighia volubilis* Sims, Bot. Mag. **21**: 809. 1805. (Type: cultivated, from "West Indies" (K!).)
Byrsonima volubilis (Sims) DC., Prodr. **1**: 581. 1824.
Hiraea simsiana Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13**: 259. 1840, nom. superfl.
Mascagnia simsiana (Adr. Juss.) Griseb., Fl. Brit. W. Indian Is. 121. 1859.
Hiraea schizoptera Turcz., Bull. Soc. Imp. Naturalistes Moscou **36**(1): 584. 1863. (Type: St. Vincent, *Caley*.)
Mascagnia volubilis (Sims) Niedenzu, Arbeiten Bot. Inst. Königl. Lyceums Hosianum Braunsberg **3**: 22. 1908.
Mascagnia schizoptera (Turcz.) Cuatrec., Webbia **13**: 373. 1958.

Woody vine. Stipules interpetiolar. Leaves with petioles 8-13 mm long, eglandular or bearing 2 (to 4) small glands on distal half; laminae of larger leaves ovate or elliptical, 7-13 (-16) × 3-7 (-8) cm, base cuneate or rounded, margin usually slightly revolute, apex acuminate, thinly sericeous to glabrate, bearing many tiny impressed glands on adaxial surface of revolute margin. Inflorescence a congested axillary (and sometimes terminal) panicle shorter than subtending leaf, flowers mostly borne in corymbose clusters of 4 to 8 or more; bracts and bracteoles eglandular; pedicels 10-22 mm long, borne on peduncles 1-3 (-5) mm long. Sepals leaving outer petal exposed during enlargement of bud, lateral 4 or all 5 biglandular; petals yellow, densely sericeous abaxially, lateral 4 erose or dentate, eglandular, posterior petal glandular-fimbriate proximally or all around margin; styles equal, straight and erect or divergent, apex dorsally rounded or truncate or very shortly apiculate, with internal stigmas sometimes appearing nearly terminal, especially in older flowers. Samaras with 2 lateral wings discrete, thin or somewhat coriaceous, 10-23 mm wide, 22-32 mm high, erose or coarsely toothed or rarely lacerate; dorsal wing 1-7 mm wide or little more than a ridge, entire or coarsely toothed; nut 3.5-6 mm in diameter.

GENERAL DISTRIBUTION: Brazil (northeastern Pará), French Guiana, Venezuela, Trinidad and Tobago, Colombia, and Peru.

DISTRIBUTION IN LESSER ANTILLES: St. Vincent!, Grenada!.

COMMON NAME: Black twist.

NOTES: Lesser Antillean plants are found in forest and second growth at elevations of 300-600 m. Flowers in Lesser Antilles from November to February and in July and August. Aublet's epithet *sinemariensis* was rejected by Jussieu and Niedenzu because the fruit he described and illustrated was sapindaceous, probably *Thinouia*. That rejection is not permissible under the current Code of Nomenclature. All other parts of the description and figure represent the malpighiaceous species, and the type at BM consists entirely of leafy and flowering parts; no fruit has been preserved. Note that a strictly analogous case is *Hiraea quapara* (Aublet) Sprague, for which Aublet illustrated another sapindaceous fruit. Here, too, Jussieu substituted a new name, *H. multiradiata*. Sprague's combination has been widely adopted. If that name based on a mixture is admissible, there can be no alternative to taking up the name *Mascagnia sinemariensis*.

STIGMAPHYLLON Adr. Juss.

Stigmaphyllon Adr. Juss. *in* St.-Hil., Fl. Bras. Merid. **3:** 48. 1832 [1833].

Syn.: *Brachypterys* Adr. Juss. *in* Deless., Icon. Sel. Pl. **3:** 20. 1837 [1838]. (Type species: *B. australis* Adr. Juss., nom. superfl. = *S. paralias* Adr. Juss.)

Woody or herbaceous vines, a few species shrubby. Stipules small, free, interpetiolar. Leaves with petioles often long and bearing 2 large glands at apex; laminae entire or lobed. Inflorescences unbranched or more commonly dichasia (or occasionally a small thyrse) of congested pseudoracemes, these usually corymbose or umbellate. Calyx bearing 8 glands on 4 lateral sepals, anterior sepal eglandular; petals yellow or yellow and red, glabrous; stamens 10, with filaments usually unequal in length and thickness; anthers very unequal in most species, 4 opposite lateral sepals often with reduced locules or sometimes sterile and 1 opposite posterior petal often small (anthers subequal in several species, including 1 of ours, *S. ovatum*); ovary with 3 carpels partially connate, all fertile; styles 3, apex with internal stigma and dorsally truncate, hooked, or bearing foliaceous lateral appendage, appendage symmetrical on anterior style, 1-sided on posterior styles. Fruits breaking apart into 3 samaras, each with largest wing dorsal, thickened on adaxial (upper) edge, veins terminating in thinner abaxial edge; much shorter winglets or crests present on sides of nut in some species; dorsal wing much reduced in a few species.

LECTOTYPE SPECIES: *Stigmaphyllon auriculatum* (Cav.) Adr. Juss.

A genus of about 100 species of the American tropics and subtropics; one species (*S. ovatum*) has been found once in West Africa. The treatment here is based in part on the following paper: Christiane Anderson, *Stigmaphyllon* (Malpighiaceae) in Mexico, Central America, and the West Indies, Contr. Univ. Mich. Herb. **16:** 1-48. 1987. I acknowledge with thanks Dr. Anderson's assistance, and the loan of the plate of *S. emarginatum*.

KEY TO THE SPECIES

1. Styles with well-developed apical folioles; samaras 20-45 mm long.
   2. Peduncles 0-5.3 mm long, distinctly shorter than pedicels.
      3. Lamina of leaf deeply auriculate at base, ciliate all around margin, nearly or quite glabrate at maturity, venation palmate ..... *S. ciliatum*
      3. Lamina of leaf cuneate to rounded at base, without marginal cilia, persistently sericeous below, venation pinnate ..... *S. puberum*
   2. Peduncles 3.5-17 mm long, mostly as long as pedicels or longer, to 2.5 times as long.
      4. Laminae persistently tomentose below or only belatedly glabrescent; hairs of lamina with short stalk and straight or sinuous crosspiece 0.6-1.2 mm long or longer; anthers pubescent; nut of samara inflated, (12-) 17-21 mm in diameter, usually without lateral crests ..... *S. adenodon*
      4. Laminae thinly sericeous below to mostly glabrate at maturity except for some hairs persistent near base and on major veins; hairs of lamina quite sessile, straight, fusiform, 0.1-0.2 mm long; anthers glabrous; nut of samara uninflated, 6-7 × 4-5 mm, usually with prominent crest or winglet on each side ..... *S. convolvulifolium*
1. Styles without folioles, rounded, truncate, or hooked at apex; samaras to 24 mm long.

5. Inflorescences terminating in umbels of (3 or) 4 (to 6) flowers; anthers subequal; all 3 styles with well-developed apical-dorsal hooks; samaras with large subspherical nut 8-11 mm in diameter and dorsal wing shorter than nut or about same length ..... *S. ovatum*
5. Inflorescences terminating in umbels, corymbs, or pseudoracemes of (4 to) 6 to 20 or more flowers; anthers more or less strongly unequal; posterior 2 styles dorsally rounded, truncate, or with very short acute projection at apex; samaras with small flattened nut (4-7 × 2-3 mm) and dorsal wing several times as long as nut.
   6. Posterior styles straight or slightly diverging, stout, much stouter than anterior style; anterior style with very short laterally flattened projection at apex 0.1-0.4 mm long; peduncles usually well developed, 1.3-25 mm long; leaves sericeous at first with straight appressed hairs, usually glabrate at maturity ..... *S. emarginatum*
   6. Posterior styles strongly twisted, about as thick as anterior style; anterior style with well-developed dorsiventrally flattened projection at apex 0.6-1.4 mm long; peduncles usually none or short, 0-2 (-3.5) mm long; leaves tomentose with twisted hairs, tomentum persistent below or eventually deciduous ..... *S. diversifolium*

Stigmaphyllon adenodon Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 288. 1840.

Holotype: Trinidad, *Schach* in 1824 (K!).

Syn.: *Stigmaphyllon grenadense* Niedenzu, De genere *Stigmatophyllo*, **2:** 26. 1900. (Type: Tobago, *Eggers 5726* (K!, lectotype; A!, M!, P!, S!, isolectotypes).)

Vine. Leaves with petioles 16-100 (-115) mm long, biglandular at apex; laminae ovate, 5-13.1 (-14.5) × 3.5-12.3 (-15) cm, base cordate or smaller ones truncate, margin bearing several small, short-stalked, peltate glands, apex acute or short-acuminate and mucronate, soon glabrate above, persistently tomentose below or only belatedly glabrescent, hairs with short stalk and straight or sinuous crosspiece 0.6-1.2 mm long or longer. Inflorescences basically dichasial but with branches inconsistently elongated, each umbel or corymb containing 15 to 30 (to 35) flowers; peduncles 3.5-14 (-17) mm long, commonly as long as pedicels or longer, to 2.5 times as long; pedicels 3.5-6 mm long. Petals yellow, erose or erose-denticulate; anthers pubescent, anterior 7 larger but 2 opposite anterior-lateral sepals with reduced locules, posterior 3 smaller and bearing small locules; all 3 styles with dorsal appendage bearing pendent folioles, anterior style shorter than posterior 2. Samaras 30-45 × 11-21 mm, widest at base of wing, which partly surrounds nut; nut subspherical, (12-) 17-21 mm in diameter, inflated and containing air cavities, usually without lateral crests.

GENERAL DISTRIBUTION: Trinidad and adjacent Venezuela; Amazonian Brazil, Colombia, Ecuador, and Peru.

DISTRIBUTION IN LESSER ANTILLES: Grenada!.

NOTES: Plants of riversides and wet lowland forests. Collected with flowers and fruits from November to April in our area.

Stigmaphyllon ciliatum (Lam.) Adr. Juss. *in* St.-Hil., Fl. Bras. Merid. **3:** 49. 1832 [1833].

Basionym: *Banisteria ciliata* Lam., Encycl. **1:** 369. 1783 [1785].
Type: Rio de Janeiro, Brazil, *Commerson* (P!, holotype; C!, isotype).

Vine climbing to 8 m. Leaves with petioles 16-52 mm long, biglandular at apex; laminae broadly ovate, 4.2-9.5 × 3.5-7.3 cm, base deeply auriculate with rounded lobes usually overlapping, bearing slender cilia to 4 (-5.5) mm long all around margin, apex obtuse or acute or slightly acuminate and often mucronate, nearly or quite glabrate at maturity, venation palmate. Inflorescence an umbel of 3 to 8 flowers, usually solitary, sometimes arranged in dichasia; peduncles 0-5.3 mm long, to 1/2 as long as pedicel; pedicels 6-13 mm long, inflated distally. Petals yellow, fimbriate; anthers glabrous, locules small or absent on anthers opposite 4 lateral sepals; all 3 styles with dorsal appendage bearing pendent folioles, anterior style shorter than posterior 2. Samaras 20-28 × 11-18 mm, widest at base where wing encircles nut; nut more or less flattened laterally, ca. 7-9 × 3.5-4 mm, with prominent reticulum but without lateral crests.

General distribution: Occasional from Belize around the Caribbean coast of Central and South America to Trinidad; unknown from the Guianas; fairly common from Ceará down the coast of Brazil to Uruguay.

Distribution in Lesser Antilles: Barbados!.

Notes: Plants of lowlands at or near the coast, most commonly at edge of mangrove associations or in beach scrub vegetation. Flowers in all months. This species is widely cultivated and was probably introduced to Barbados, but it now seems to be naturalized there along roadsides.

Stigmaphyllon convolvulifolium Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 289. 1840.

Syntypes: French Guiana, *Martin* (P!), *Leblond 47* (G!), *Richard* (P!).
Syn.: *Banisteria convolvulifolia* Cav., Diss. **9:** 428, *pl. 256.* 1790, nom. superfl.

Woody vine climbing to 10 m, or trailing on ground in open places. Leaves with petioles 20-45 (-105) mm long, bearing 2 protuberant glands at apex; laminae of larger leaves ovate, 8-16 × 5.5-12.5 cm, base rounded to deeply cordate, margin usually bearing both broad sessile glands and slender cilia (often abraded), apex mostly acuminate, soon glabrate above, thinly sericeous to often nearly glabrate below, with some hairs usually persistent near base, especially on major veins, hairs very short (0.1-0.2 mm long), fusiform, sessile, appressed. Inflorescences dichasial, each umbel or corymb containing 10 to 20 (to 30?) flowers; peduncles 5-10 mm long, commonly as long as pedicels or longer but never twice as long; bracteoles sometimes with 2 tiny abaxial glands or glandular spots; pedicels 4-9 mm long. Petals yellow or yellow and red, dentate or short-fimbriate; anthers glabrous, anterior 7 larger but 2 opposite anterior-lateral sepals with locules tiny or absent, posterior 3 smaller and bearing small locules; styles often hirsute proximally to middle, all 3 with dorsal appendage bearing pendent folioles; anterior style slenderer and straighter than posterior 2. Samaras 33-40 × 12-14 mm, usually widest beyond middle of wing but rarely at base, wing with an adaxial projection at base but not or hardly encircling nut;

nut 6-7 × 4-5 mm, bearing on each side a crest or winglet 1-3 mm wide, this occasionally dissected into 2 or 3 crests.

General distribution: Trinidad, Guyana, Suriname, French Guiana, and Brazil (Amapá and Pará).

Distribution in Lesser Antilles: Martinique!, St. Vincent.

Notes: Members of this species occur from sea level to 225 m; riverine forests, shrubby secondary growth, and open places, where often trailing along the ground. Collected with flowers in all months. *Stigmaphyllon convolvulifolium* is known in the Lesser Antilles from only two vouchered collections, *Duss 1473* from Martinique and *H. H. Smith & G. W. Smith 418* from St. Vincent; I have not seen the latter. It was also observed and described in Martinique by Plumier, whose notes and figures were cited by Cavanilles. Since the plant has very showy flowers and would not be overlooked easily by collectors, the lack of more, and more recent, collections suggests that it appears occasionally as a waif in our islands but does not persist as an established member of the flora.

Jussieu's name must be treated as new and dating from 1840 because it was based on an illegitimate name (see Article 72 Note 1 of the Code of Nomenclature). Cavanilles' name was superfluous because he cited in synonymy the species-number and phrase-name of *Banisteria dichotoma* L., which he should have adopted.

Although I have not studied its type, I am reasonably sure that the name *Stigmaphyllon dichotomum* (L.) Griseb., Linnaea **13:** 207. 1839, based on *Banisteria dichotoma* L., Sp. Pl. **1:** 427. 1753, cannot be applied to our plant. Adrien de Jussieu, who saw Linnaeus' type in the Clifford Herbarium (BM), considered it to represent some species other than *Banisteria convolvulifolia* Cav., of which he said he had the type (Arch. Mus. Hist. Nat. **3:** 374. 1843). He made special mention of the leaves of the Linnaean type being hirsute below, which certainly cannot be said of our species. Dr. C. E. Jarvis of the British Museum has very kindly sent me a photograph of the Linnaean type, and the leaves do appear to be densely tomentose below, quite different from those of *S. convolvulifolium.*

Stigmaphyllon diversifolium (Kunth) Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 290. 1840.

Basionym: *Banisteria diversifolia* Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 159 (quarto ed.). 1821 [1822].
Type: Near Havana, Cuba, *Humboldt & Bonpland* (P-HBK!).
Syn.: *Banisteria ledifolia* Kunth *in* Humb., Bonpl. & Kunth, Nov. Gen. Sp. **5:** 159 (quarto ed.). 1821 [1822]. (Type: Havana, Cuba, *Humboldt & Bonpland* (P-HBK!).)
Stigmaphyllon cordifolium Niedenzu, De genere *Stigmatophyllo*, 8. 1899. (Type: Martinique, *Sieber 135* (G!, lectotype; F!, GH!, M!, MO!, W!, isolectotypes).)
Stigmaphyllon ledifolium (Kunth) Small, N. Amer. Flora **25**(2): 141. 1910.

Woody vine. Leaves extremely variable, with petioles 2-10 mm long, biglandular at apex, glands sometimes obscure; laminae suborbicular, ovate, elliptical, to linear, 2-8 × 0.5-5 cm, often coriaceous, base cuneate to rounded to cordate,

margin entire, eglandular, and often slightly revolute, apex acute to rounded, usually apiculate, and occasionally emarginate, initially appressed-tomentose, soon glabrate above, persistently tomentose below with fine, stalked, more or less twisted hairs or eventually glabrescent, reticulum sometimes visible but hardly prominent. Inflorescences often dichasial or paniculate, branches terminating in umbels, corymbs, or occasionally condensed pseudoracemes of 6 to 20 flowers; peduncles usually poorly developed, 0-2 (-3.5) mm long, occasionally to 4 mm long; pedicels 7-15 mm long. Petals yellow, erose to deeply dentate; anthers glabrous or tomentose, 4 opposite lateral sepals lacking locules; anterior style distinctly shorter than but about as thick as posterior 2, erect or slightly recurved, bearing dorsiventrally flattened dorsal projection at apex 0.6-1.4 mm long, this sometimes wider proximally and thus pedaliform; posterior styles strongly spreading and twisted, laterally flattened even at apex, apex dorsally rounded, truncate, or apiculate. Samaras 15-24 mm long, wing 6-9 (-13) mm wide, widest near middle, bearing basal adaxial projection 1-2 mm high; nut small, 4-7 mm long, about 3 mm across, longitudinally rugose but without crests.

GENERAL DISTRIBUTION: Cuba.

DISTRIBUTION IN LESSER ANTILLES: Anguilla!, St. Barts!, Barbuda!, Antigua!, St. Kitts!, Montserrat!, Guadeloupe!, La Désirade!, Marie Galante!, Les Saintes!, Dominica!, Martinique!.

NOTES: Plants of open places at low elevations. Flowers in diverse months in Cuba, but mostly from February to June in the Lesser Antilles. Plants from Cuba east to Anguilla and St. Barthélemy have the leaf lamina cuneate to rounded at the base; these are *Stigmaphyllon diversifolium* in the sense of Niedenzu (Small called the species *S. ledifolium*). From Barbuda south the leaf lamina is rounded to cordate at the base. These plants were segregated by Niedenzu and Small as *S. cordifolium*. *Stigmaphyllon cordifolium* also tends to have slightly longer petioles and a longer, narrower dorsal projection on the anterior style.

Stigmaphyllon emarginatum (Cav.) Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 290. 1840. FIGURE 239.

Basionym: *Banisteria emarginata* Cav., Diss. **9:** 425, *pl. 249.* 1790.

Lectotype: *Plate 249* of Cavanilles (designated by Niedenzu, De genere *Stigmatophyllo*, 5. 1899).

Syn.: *Banisteria fulgens* L., Sp. Pl. **1:** 427. 1753, not *Stigmaphyllon fulgens* Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 289. 1840, Arch. Mus. Hist. Nat. **3:** 370. 1843. (Lectotype of *B. fulgens* L.: Clifford Herbarium (BM, photo MICH!).)

Triopterys lingulata Poiret *in* Lam., Encycl. **8:** 104. 1808. (Type: Santo Domingo (P-LAM!).)

Banisteria periplocifolia Desf. ex DC., Prodr. **1:** 589. 1824. (Type: Puerto Rico, *Bertero* (G-DC).)

Banisteria umbellulata DC., Prodr. **1:** 588. 1824. (Type: *Bertero* (G-DC, photo MICH!).)

Stigmaphyllon periplocifolium (Desf. ex DC.) Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 290. 1840.

Stigmaphyllon lingulatum (Poiret) Small, N. Amer. Flora **25**(2): 140. 1910.

Woody vine. Leaves extremely variable, with petioles 2-28 mm long, biglandular at apex; laminae orbicular, ovate, elliptical, to linear, 2-9.5 × 0.6-6.5 cm, often coriaceous, base rounded or cordate, margin entire and eglandular, apex obtuse or rounded and usually emarginate and apiculate, initially sericeous but mostly glabrate at maturity, reticulum usually prominent above or on both sides. Inflorescences unbranched pseudoracemes of (4 to) 6 to 20 or more flowers, these separated or crowded into a corymb or umbel; peduncles usually well developed, 1.3-25 mm long; pedicels 6-19 mm long. Petals yellow, entire or erose or obtusely dentate; anthers glabrous, all fertile although some locules may be much reduced; anterior style slightly to distinctly shorter and slenderer than posterior 2, erect to recurved, bearing laterally flattened, unwinged dorsal hook at apex 0.1-0.4 mm long; posterior styles as stout as adjacent filaments, straight and erect to somewhat diverging, without folioles at apex, flat on top and bearing short acute dorsal projection with very narrow remnant of foliole on 1 side. Samaras 15-23 mm long, wing 7-10 mm wide, widest in middle, bearing basal adaxial projection 1-4 mm high, rounded or triangular; nut small, 4-6 × 2-3 mm, longitudinally rugose, often with 1 to several parallel crests.

GENERAL DISTRIBUTION: Greater Antilles and Virgin Islands.

DISTRIBUTION IN LESSER ANTILLES: Anguilla!, St. Martin!, St. Barts!, Barbuda!, Antigua!, St. Eustatius, Nevis!, Guadeloupe!, Martinique!, St. Lucia.

NOTES: Plants of open dry thickets, especially at low elevations. Flowers in all months, but most commonly collected from January to May.

Stigmaphyllon ovatum (Cav.) Niedenzu, De genere *Stigmatophyllo*, **2:** 31. 1900.

Basionym: *Banisteria ovata* Cav., Diss. **9:** 429, *pl. 257.* 1790.

Syntypes: Santo Domingo, *Desportes* and *Surian* (P-JU!, mounted together on sheet 11.546).

Syn.: *Brachypterys borealis* Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 291. 1840, nom. superfl.

Brachypterys ovata (Cav.) Small, N. Amer. Flora **25**(2): 138. 1910.

to lanceolate or ovate, 4-12 × 1.5-5.5 cm, base attenuate, cuneate, or truncate, margin entire and eglandular, apex acute or obtuse and sometimes apiculate, originally sericeous but glabrate above and thinly sericeous below at maturity, biglandular at base or at apex of petiole; leaves subtending umbel often abruptly smaller, broadly ovate or subrotund. Inflorescence an umbel of (3 or) 4 (to 6) flowers, solitary or arranged in dichasia; peduncles 0.2-2.5 mm long; pedicels 15-30 mm long. Petals yellow, erose; anthers glabrous, subequal, that opposite posterior petal often somewhat smaller than others; styles equal or subequal, all bearing apical-dorsal hook 1-1.7 mm long, without folioles. Samaras 13-17 (-20) mm long, with 1/2 or less of length attributable to obtuse triangular dorsal wing (4-9 × 5.5-7.5 mm); nut subspherical, 8-11 mm in diameter, usually bearing at maturity several lateral ribs or crests to 2 mm high, these radiating from areole at right angles to dorsal wing.

GENERAL DISTRIBUTION: Greater Antilles; Caribbean coast from Veracruz,

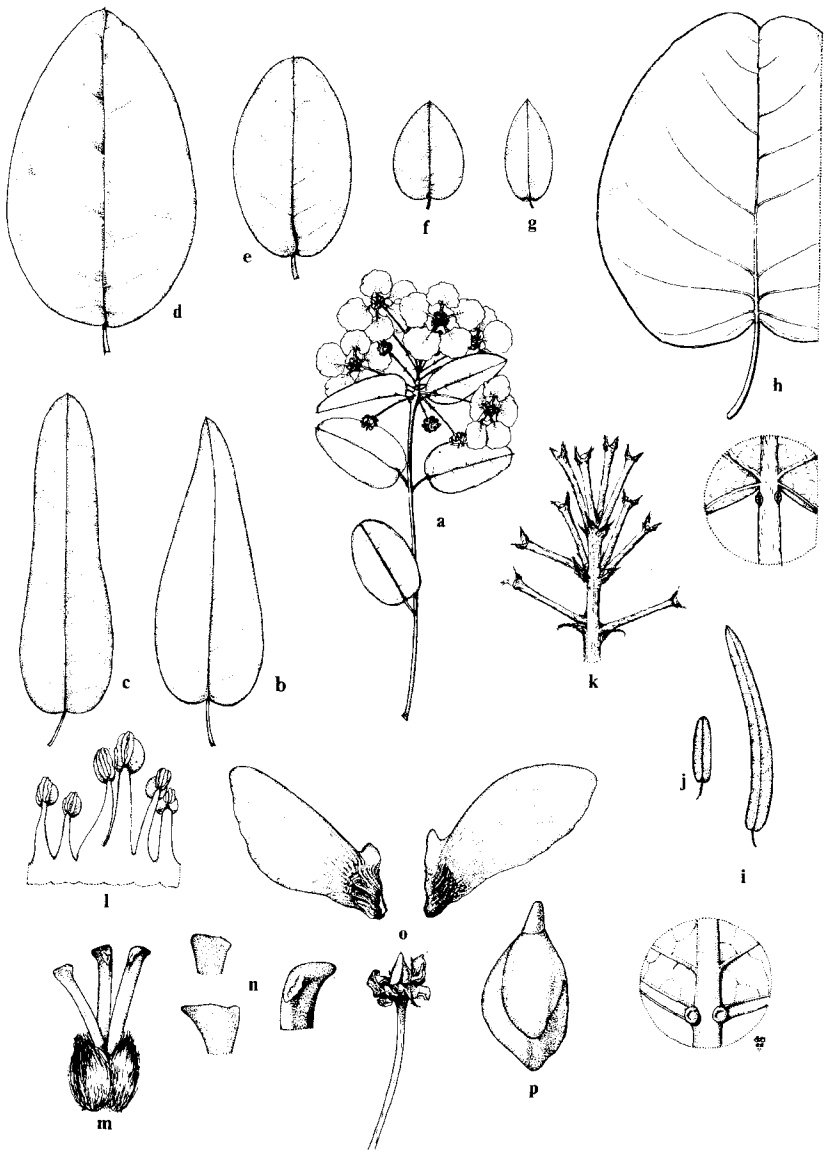

FIGURE 239. *Stigmaphyllon emarginatum*: a, flowering branch, × 0.45; b-j, variation in size and shape of leaves from diverse collections, × 0.45, with base of lamina in h × 2.3, in i × 4.5; k, details of inflorescence, × 2.3; l, part of androecium, laid open, with stamen opposite posterior petal at right, × 4.5; m, gynoecium, with anterior style at left, × 4.5; n, apices of styles, the left 2 anterior, the right posterior, × 9; o, samaras and receptacle showing torus, × 1.4; p, embryo, × 4.5.

Mexico, to Trinidad and Tobago, thence south to Maranhão, Brazil; also known from one collection from the coast of Sierra Leone, Africa.

DISTRIBUTION IN LESSER ANTILLES: Guadeloupe!, Martinique!, St. Lucia!, Barbados!.

NOTES: Plants of wet lowlands at or near the coast, commonly on beaches or in mangrove associations, salt marshes, or riverine forests. Flowers in all months.

Stigmaphyllon puberum (Rich.) Adr. Juss., Ann. Sci. Nat. Bot. sér. 2, **13:** 289. 1840.

Basionym: *Banisteria pubera* Rich., Actes Soc. Hist. Nat. Paris **1:** 109. 1792.
Type: French Guiana, *Leblond 44* (G!).

Woody vine. Leaves with petioles 15-45 (-60) mm long, biglandular at apex; laminae of larger leaves narrowly to broadly ovate or subelliptical, 10-15 (-17) × 4-9 (-10.5) cm, base cuneate to rounded, margin entire and nearly or quite eglandular, apex acuminate, sericeous to glabrate above, hairs often persistent on midrib, persistently sericeous below, venation pinnate, even at base. Inflorescences dichasial, each umbel with 4 to 10 (to 20) flowers; peduncles 1-5 mm long; pedicels 4-8 mm long. Petals yellow and red, fimbriate (posterior 3 more deeply so than anterior 2); anthers glabrous, 2 opposite anterior-lateral sepals with large, globose, glandular connectives and locules much reduced, posterior 3 all with small locules; anterior style longer than posterior 2, with dorsal appendage an arching axis bearing pendent folioles; posterior styles with dorsal appendage bearing horizontal or somewhat pendent foliole. Samaras 22-40 × 10-15 mm, widest at base with wing partly surrounding nut; nut 8-12 × 6-9 mm, without lateral crest but often longitudinally rugose (parallel to axis of wing).

GENERAL DISTRIBUTION: Lowlands of northern South America to Belize and the West Indies.

DISTRIBUTION IN LESSER ANTILLES: Guadeloupe!, La Désirade!, Dominica!, Martinique!, St. Vincent!.

COMMON NAMES: Aile à ravet, liane à ravet.

NOTES: Plants of littoral vegetation, edges of rivers, dry woodlands, moist forests, from sea level to 700 m. Probably flowers in all months, but most commonly collected from May to October.

TETRAPTERYS Cav.

Tetrapterys Cav., Diss. **9:** 433. 1790.

Vines or occasionally shrubs. Stipules small, usually interpetiolar. Leaves usually bearing glands. Flowers borne in umbels, corymbs, or pseudoracemes, these often grouped in panicles. Calyx usually bearing 8 or 10 glands; petals yellow or pink; stamens 10, anthers more or less alike, connective not exceeding locules; ovary of 3 centrally connate carpels, all fertile; styles 3, apex with stigma

internal to apical, dorsally smooth to truncate or short-hooked. Fruits breaking apart into 3 samaras, each samara having its largest wings lateral, usually 4 discrete wings; dorsal wing smaller, reduced to crest or absent in some species; intermediate winglets or projections present in some species.

LECTOTYPE SPECIES: *Tetrapterys inaequalis* Cav.

A genus of about 90 species, all native to the American tropics and subtropics.

Tetrapterys inaequalis Cav., Diss. **9:** 433, *pl. 260.* 1790. FIGURE 237h-m.

Type: "Santo Domingo," *Jos. Jussieu* (P-JU; see note below.)

Woody vine, climbing to 10 m, vegetative stems loosely tomentose or subvelutinous to glabrescent. Stipules connate in interpetiolar pairs, each pair triangular, caducous, leaving prominent scar between opposite petioles. Leaves with petioles 10-15 mm long, appressed-tomentose to glabrate, eglandular; laminae of larger leaves ovate or occasionally elliptical, 10-17.5 × 5.5-9 cm, base cuneate or more commonly rounded or slightly cordate, apex acuminate, appressed-tomentose to glabrate, some hairs often persistent on midrib below, several tiny impressed glands usually present below on each side in a row set well in from margin. Inflorescences paniculate, containing thin much-reduced leaves that often shrivel as fruits mature, branches terminating in umbels of 4 flowers; bracts and bracteoles eglandular; pedicels 5-8 mm long, borne on peduncles 4-6 mm long. Lateral 4 sepals biglandular; petals yellow, glabrous, entire or sinuate-margined; anthers alike, glabrous; styles alike, glabrous, recurved distally, acute and unappendaged at apex, stigma internal and decurrent. Samaras with upper lateral wings 17-28 × 6-10 mm, lower lateral wings 8-13 × 3-6 mm; dorsal wing none or usually represented by rib to 1 mm wide, best developed toward base; nut usually smooth between dorsal rib and lateral wings, rarely bearing a short protuberance.

GENERAL DISTRIBUTION: Puerto Rico; also St. Croix, according to Niedenzu (Pflanzenreich p. 208). The flowering specimen from Tobago (*Broadway 4302*, NY!) that Niedenzu called *T. citrifolia* is almost certainly *T. discolor* (G. Meyer) DC.

DISTRIBUTION IN LESSER ANTILLES: Antigua!, Guadeloupe!, Martinique!, St. Vincent!.

COMMON NAME: Aile à ravet.

NOTES: In the Lesser Antilles, the species occurs in mesophytic forests and along rivers, at elevations of 110-500 m. Collected in flower or fruit in all months except May and June. Niedenzu (Pflanzenr. p. 207) considered this species a synonym of *Tetrapterys citrifolia* (Sw.) Pers. They are certainly closely related, both belonging to the difficult group called Section *Lophogynixa* by Niedenzu. However, *T. citrifolia* from Jamaica, the type locality, has a well-developed dorsal wing on the samara and young stems that are tightly sericeous with straight appressed hairs. These differences lead me to consider *T. citrifolia* endemic to Jamaica and apply the later name *T. inaequalis* to the plant of

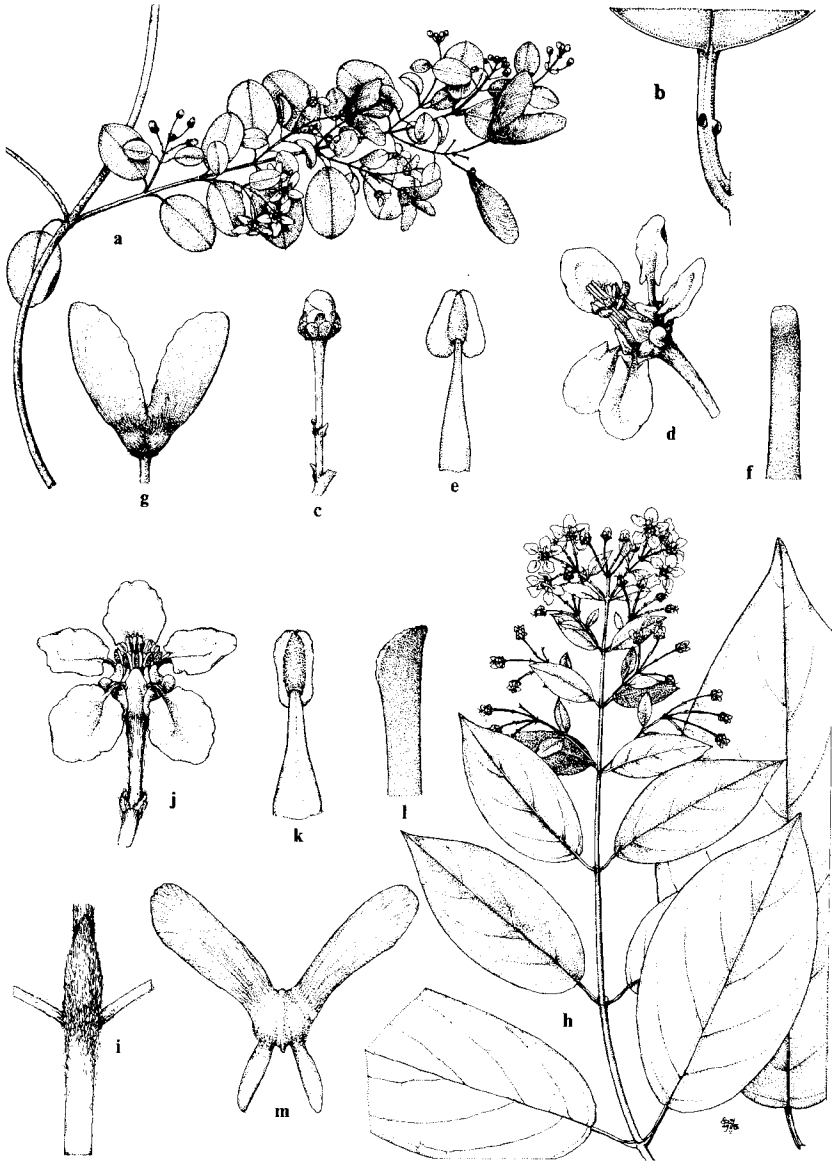

FIGURE 237. a-g, *Heteropterys purpurea*: a, flowering branch, × 0.45; b, petiole, × 4.5; c, flower bud, showing bract, peduncle, bracteoles, and pedicel, × 2.3; d, flower, × 2.3; e, stamen, abaxial view, × 9; f, apex of style, × 18; g, fruit with only 2 of the 3 samaras developed, × 0.9. h-m, *Tetrapterys inaequalis*: h, flowering branch, with separate leaf from lower stem, × 0.45; i, stipules, × 2.3; j, flower, × 2.3; k, stamen, abaxial view, × 9; l, apex of style, × 18; m, samara, abaxial view, × 0.9.

Puerto Rico and the Lesser Antilles.

Cavanilles stated in the protologue that his type came from Santo Domingo, but the species of the Lesser Antilles seems not to occur on Hispaniola. Cavanilles illustrated a samara that matches perfectly the samaras of plants from Puerto Rico and the Lesser Antilles. The type, which should be specimen 11692 in the Jussieu Herbarium, is missing, but a fragment of it is there as 11692 + A. That comprises 2 leaves and 1 samara, and the samara matches Cavanilles' plate and modern specimens from Puerto Rico and the Lesser Antilles. I conclude that the name *T. inaequalis* really does represent the species described here; Joseph de Jussieu probably collected it in Martinique, where he also stopped (Lasègue, Mus. Bot. Delessert, p. 484), instead of in Santo Domingo as believed by Cavanilles.

Excluded Species

Tetrapterys discolor (G. Meyer) DC., Prodr. **1:** 587. 1824.

In Das Pflanzenreich, Niedenzu cited a collection of this species by Caley from St. Vincent. The species is common in northeastern South America, but it is not known to reach the Lesser Antilles. It was probably introduced to the St. Vincent Botanic Garden by Alexander Anderson and collected by Caley when he was director of the Garden.

Tetrapterys mogoriifolia Adr. Juss. *in* St.-Hil., Fl. Bras. Merid. **3:** 11. 1832 [1833].

Niedenzu cited two collections of this species by Caley from St. Vincent. I have not seen the specimens, but the species is native to southern Brazil and is certainly not in the flora of St. Vincent. If Caley's plant really was *T. mogoriifolia*, it must have been cultivated in the St. Vincent Botanic Garden.

Tetrapterys mucronata Cav., Diss. **9:** 434, *pl. 262.* 1790.

Niedenzu cited one collection of this species from Martinique, *Duss 44.* I have not seen that collection, but the species is distinctive and I am willing to assume that Niedenzu identified the specimen correctly. No other collections of the species are known from the Lesser Antilles, so I suppose it was cultivated at one time in the Botanical Garden of St. Pierre and collected there by Duss.

Excluded Genera

Banisteriopsis C. B. Robinson.

The type of *Heteropterys appendiculata* DC. came from St. Vincent, and it represents the species whose correct name is *Banisteriopsis lucida* (Rich.) Small. However, there are no modern collections of *Banisteriopsis* from St. Vincent or elsewhere in the Lesser Antilles, and de Candolle said "forsan culta" (perhaps cultivated) in the protologue, so I conclude that the species' range does not extend north of Trinidad.

Spachea Adr. Juss.

The Soufrière Tree has been cultivated in St. Vincent since its introduction from British Guiana in 1791 (R. A. Howard & K. S. Clausen, J. Arnold Arbor. **61:** 765-770. 1980). Specimens from St. Vincent have been called *Spachea elegans* (G. Meyer) Adr. Juss., *S. parviflora* Adr. Juss., *S. perforata* Adr. Juss., and *S. tenuifolia* Griseb.; the latter three names should all be considered synonyms of *S. elegans*. The species is not established outside cultivation in St. Vincent, nor does it even set seed there, probably due to the functional dioecy described in my treatment of the Malpighiaceae of the Guayana Highland (Mem. New York Bot. Gard. **32:** 42-43. 1981), which was quoted by Howard & Clausen in the publication cited above. See their paper for a fuller discussion of the history of *Spachea* in the Caribbean.

For recent experimental evidence on the breeding system of *Spachea*, see K. E. Steiner, "Functional dioecism in the Malpighiaceae: The breeding system of *Spachea membranacea* Cuatr.," Amer. J. Bot. **72:** 1537-1543. 1985.