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169. MALVACEAE

By P.A. Fryxell.

Herbs, shrubs, or trees, often stellate-pubescent; stems erect or procumbent, sometimes repent. Leaves alternate, stipulate, ovate or lanceolate (less often elliptic or orbicular), sometimes lobed or dissected, with hairs that may be stellate or simple, sometimes prickly, sometimes glandular, or rarely lepidote. Flowers solitary or fasciculate in the leaf axils or aggregated into inflorescences (usually racemes or panicles, less commonly spikes, scorpioid cymes, umbels, or heads); involucel present or absent; calyx pentamerous, more or less gamosepalous; petals 5, distinct, adnate to staminal column at base; androecium monadelphous; anthers reniform, numerous (rarely only 5); pollen spheroidal, echinate; gynoecium superior, 3-40-carpelled; styles 1-40; stigmas truncate, capitate, or decurrent. Fruits schizocarpic or capsular, sometimes a berry; seeds reniform or turbinate, pubescent or glabrous, rarely arillate.

The family includes approximately 110 genera and about 1800 spp., principally from tropical and subtropical regions but with a few temperate-zone genera.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 1-522 (1988); *Brittonia* 49: 204-269 (1997). Kearney, T.H. *Amer. Midl. Naturalist* 46: 93-131 (1951). Robyns, A. *Ann. Missouri Bot. Gard.* 52: 497-578 (1965).

1. Individual flowers and fruits subtended by an involucel or epicalyx (sometimes deciduous).
2. Involucel trimerous.
 3. Corolla 2-7 cm, red, rose, or purplish (rarely white); large shrubs with palmately lobed leaves.

4. Flowers (usually 3) in axillary umbels, the peduncles 4-17 cm; fruits subglobose, more or less inflated, papery, of 30-40 carpels; involucel sometimes deciduous.

35. Phymosia

4. Flowers solitary (or paired) in the leaf axils, the pedicels 2-4 cm; fruits disciform, not inflated, indurate, of c. 8 carpels; involucel persistent.

37. Malva (5. M. assurgentiflora)

3. Corolla large or small, white cream, or yellow (or orange in *Modiola* or purplish in *Fuertesimalva* and *Malva*, but then <1.5 cm); herbs, shrubs, or small trees, the leaves various, lobed or unlobed.

5. Style single; fruits capsular; plants large shrubs or small trees.

6. Stigmas 5, capitate, crowded; leaves large (at least 21 × 35 cm); capsules 4-7 cm, 5-celled, obovoid; plants not gland-dotted. **3. Wercklea (3. W. lutea)**

6. Stigmatic lobes 3-5, decurrent; leaves smaller; capsules 2-5 cm, 3-5-celled, ovoid or oblate, minutely punctate-glandular in petals, calyces, and herbage.

7. Involucellar bracts (in ours) ovate, laciniate, concealing the bud; leaves (in ours) palmately lobed; seeds comose (bearing commercial cotton); plants shrubby. **7. Gossypium**

7. Involucellar bracts subulate to ligulate, entire, not enclosing the bud; leaves ovate or shallowly lobed; seeds short-pubescent or glabrous; plants arborescent.

8. Fruits oblate, glabrescent, indehiscent; petals 4-6 cm, showy, the corolla campanulate, yellow with maroon center; seeds short-pubescent; trees from littoral habitats, perfect-flowered. **5. Thespisia**

8. Fruits globose to elongate, farinose-puberulent, dehiscent; petals 0.5-3 cm, reflexed, whitish; seeds glabrous, prominently arillate; species not littoral, usually dioecious. **6. Hampea**

5. Styles multiple (7 or more); fruits schizocarpic; plants herbs or shrubs, not punctate-glandular; flowers usually small.

9. Corolla lavender or purplish.

10. Flowers in scorpioid cymes in the leaf axils; stigmas capitate.

33. Fuertesimalva

10. Flowers solitary or fasciculate in the leaf axils; stigmas unilaterally decurrent. **37. Malva**
9. Corolla orange, yellow, or white; leaves ovate to orbicular, simple, lobed, or sometimes deeply dissected; stigmas truncate or capitate; plants erect (except *Modiola*).
11. Plants procumbent herbs; corolla orange to brick-colored; mericarps each with 2 chambers and 2 seeds; flowers axillary. **23. Modiola**
11. Plants erect shrubs or subshrubs; corolla yellow or white; mericarps 1-chambered and 1-seeded; flowers axillary or in terminal inflorescences.
12. Plants vigorous subshrubs 1-3 m tall; flowers white, in diffuse panicles or dense spiciform inflorescences; leaves palmately lobed; fruits glabrous, blackish at maturity. **32. Kearnemalvastrum**
12. Plants shrubs seldom more than 1 m tall; flowers yellow, solitary or in spikes or interrupted racemes; leaves unlobed; fruits more or less setose, red-brown at maturity. **34. Malvastrum**
2. Involucel of 4-24 elements.
13. Flowers and fruits in head-like groups subtended and enclosed by specialized (ovate) floral bracts; flowers with 10 styles and 10 capitate stigmas; fruits dry (not fleshy), smooth, the 5 mericarps each 1-seeded.
14. Corolla (in ours) yellow, the "heads" usually on lateral branches; leaves unlobed, ovate; plants stellate-pubescent, from well-drained habitats. **12. Peltaea**
14. Corolla lavender, the "heads" terminal; leaves palmately divided; plants notably hispid, from swampy habitats. **13. Malachra (1. M. radiata)**
13. Flowers and fruits solitary or aggregated into inflorescences of various types but not enclosed by specialized bracts; styles, stigmas, and fruits various.
15. Fruits fleshy (a berry), usually red (sometimes white), the 5 carpels each 1-seeded; petals auriculate at base, usually red, forming a tubular corolla; the androecium and 10 styles and stigmas more or less exserted, the filaments retrorse. **9. Malvaviscus**
15. Fruits not fleshy (a capsule or schizocarp), the carpel number various; petals not auriculate, the corolla sometimes tubular but usually campanulate to rotate; genitalia included or exserted, the anthers subsessile or the filaments spreading.

16. Fruits capsular, 3-5-locular; seeds several per locule (except solitary in *Kosteletzkyia*).
 17. Fruits 3-locular; seeds densely pubescent; calyx prominently gland-dotted.
- 8. Cienfuegiosia**
17. Fruits 5-locular; seeds glabrous or pubescent; calyx (and plant) not gland-dotted.
 18. Fruits depressed, 5-winged, 5-seeded, often with recurved uncinate hairs on wings; plants often in wet habitats. **1. Kosteletzkyia**
 18. Fruits ovoid to elongate, generally unwinged, many-seeded, variously pubescent.
 19. Calyx asymmetrical, splitting laterally at anthesis and falling with the corolla; style single with 5 sessile stigmas; fruits elongate, often hispid.
- 4. Abelmoschus**
19. Calyx symmetrical, persistent; styles 5, apically distinct, each with a capitate stigma; fruits ovoid to elongate, variously pubescent or glabrous.
 20. Leaves orbicular to flabellate, relatively large; stipules prominent (foliaceous and amplexicaul); plants usually arborescent, from rain-forest habitats. **3. Wercklea**
20. Leaves ovate, hastate, or palmately divided; stipules subulate and inconspicuous (except in *H. pernambucensis*, but then not amplexicaul); plants usually shrubby, seldom from rain forest (except *H. uncinellus*). **2. Hibiscus**
16. Fruits schizocarpic, with 5-40 mericarps; seeds solitary.
 21. Mericarps (and styles and stigmas) 20 or more, unarmed; leaves orbicular or palmately lobulate; involucel (in ours) of 6-7 bracts, more or less connate; flowers showy (sometimes double) in spiciform inflorescences; plants robust herbs, introduced and cultivated. **38. Alcea**
 21. Mericarps 5 (styles and stigmas 10), armed or unarmed; leaves usually simple and ovate, sometimes palmately lobed; involucel various; plants indigenous.

22. Leaves with 1(-3) nectaries near base of principal veins beneath; fruits prominently glochidiate; involucellar bracts 5, alternate with the lobes of the calyx; anthers subsessile. **11. Urena**

22. Foliar nectaries absent; fruits armed with 3 barbed spines or unarmed (not glochidiate); involucellar bracts 4-24; anthers on manifest filaments.

10. Pavonia

1. Individual flowers and fruits not subtended by an involucel or epicalyx.

23. Mericarps (and styles and stigmas) 3-4(-6), divided into an upper and a lower chamber.

24. Fruits enclosed by the calyx, pubescent; petals pale lavender to white; staminal column rudimentary, the filaments essentially free. **14. Bastardiastrum**

24. Fruits exceeding the calyx, glabrescent or obscurely puberulent; petals usually yellowish; staminal column manifest. **15. Wissadula**

23. Mericarps (and styles and stigmas) 5-30, not divided into two chambers (except in *Briquetia*, *Pseudabutilon*, and *Wissadula*).

25. Mericarps 5-10, divided into an upper and lower chamber, the upper 2-seeded, the lower 1-seeded.

26. Uppermost leaves (immediately below the inflorescence) sessile and amplexicaul; inflorescence (in ours) spiciform. **16. Briquetia**

26. All leaves petiolate; inflorescences paniculate.

27. Calyx shorter than fruit; the upper chamber of the mericarp bulbous and markedly larger than the lower. **15. Wissadula (6. W. contracta)**

27. Calyx subequal to fruit; the distinction of the upper and lower chambers of the mericarp obscure. **17. Pseudabutilon (part)**

25. Mericarps 5-30, 1-chambered.

28. Seeds (in ours) 2-7 per mericarp.

29. Fruits subglobose, thin-walled, more or less inflated, usually puberulent or hispid.

30. Shrubs to 3 m tall; petals 1-3 cm, purple; mericarps 8-12, each with 2 long (10-14 mm) spines at base. **36. Neobrittonia**

30. Perennial herbs or subshrubs <1 m tall; petals 0.6-1.1 cm, white; mericarps 10-14, spineless. **22. Herissantia**
29. Fruits various but usually indurate-walled, not inflated.
31. Leaves entire, the venation camptodrome; pubescence usually ferrugineous, the stellate hairs often stipitate; mericarps rounded, usually with lacerate wings on dorsal margin (except wing suppressed in *B. pittieri* and *B. gaumeri*). **19. Bakeridesia**
31. Leaves manifestly dentate to subentire, the principal veins terminating at the margin; pubescence various; mericarps usually acute or apiculate at apex, lacking dorsal wings.
32. Uppermost leaves (immediately below the inflorescence) sessile and amplexicaul (in ours); seeds 5, with a small endoglossum below the lowermost seed; fruits blackish at maturity **20. Hochreutinera**
32. Leaves all petiolate; seeds 3 or more per carpel; endoglossum present or absent (if present, dividing the carpel in equal halves); fruits tan or brown (sometimes blackish) at maturity.
33. Endoglossum present. **17. Pseudabutilon** (part)
33. Endoglossum absent. **18. Abutilon**
28. Seeds solitary.
33. Plants arborescent.
34. Petals 1.5-4 cm, yellow; calyx prominently 10-ribbed, ca. half-divided; mericarps indurate, apically dehiscent, coherent in fruit. **29. Dendrosida**
34. Petals 0.5-1.6 cm, yellowish, white or lavender; calyx unribbed, divided nearly to the base; mericarps not indurate, more or less inflated, indehiscent, usually divergent in fruit. **31. Robinsonella**
33. Plants herbs or shrubs.
35. Flowers and fruits in head-like groups subtended and enclosed by specialized floral bracts; mericarps 5 per fruit. **13. Malachra**
35. Flowers and fruits solitary or aggregated into inflorescences of various types but not enclosed by specialized bracts; mericarps 5-20.
36. Mericarps internally with pectinate (dissected) endoglossum encircling the seed; flower buds often nodding; leaves sometimes distichous. **30. Gaya**

36. Endoglossum absent or minute and (if present) neither pectinate nor encircling the seed; flower buds usually erect; leaves usually spirally disposed.
37. Lateral walls of mericarps disintegrating at maturity (incompletely so in *Anoda pristina*), the mericarps usually dorsally spurred.
38. Petals spatulate, erect, red; genitalia exserted; stigmas clavate.

25. Periptera

38. Petals obovate, spreading, lavender or pale yellowish; genitalia included; stigmas capitate, flattened.

24. Anoda

37. Lateral walls of mericarps persistent, the mericarps often apically dehiscent and apiculate or spined, but not dorsally spurred.
39. Carpels laterally coherent, forming a pseudocapsule (in ours 6-8-celled); plants (in ours) notably viscid and malodorous. **21. Bastardia**
39. Mericarps separating at maturity, the fruits clearly schizocarpic; plants sometimes viscid, usually not.

40. Calyx more or less 10-ribbed; mericarps indurate, often laterally reticulate, apically dehiscent.

28. Sida

40. Calyx ecostulate, basally rounded, often less than 5 mm; mericarps usually fragile-walled laterally smooth or obscurely reticulate, often indehiscent.

41. Minute endoglossum present; lateral walls of mericarps smooth; leaves broadly ovate.

27. Allosidastrum

41. Endoglossum absent; lateral walls of mericarps often weakly reticulate; leaves narrowly ovate.

26. Sidastrum

1. Kosteletzkya K. Presl, nom. cons.

By P.A. Fryxell.

Stout herbs or subshrubs, often hispid, frequently growing in moist habitats. Leaves narrowly lanceolate, ovate, cordate, hastate, palmately lobed, or sagittately parted, with serrate margins, usually coarsely pubescent or scabrous; stipules inconspicuous. Flowers solitary in the leaf axils or in terminal racemes or panicles; involucel of 6-10 linear

bractlets, usually hispid; calyx deeply 5-parted; corolla whitish, yellow, or pink; androecium subequal to corolla (in ours) or manifestly exserted; styles and capitate stigmas 5. Capsules depressed, 5-winged, usually scabrid, the 5 locules each 1-seeded; seeds reniform, glabrous to scabridulous. 17 spp., United States, Mexico, West Indies, Colombia, Venezuela, Ecuador, Malesia, Africa.

1. Kosteletzkya depressa (L.) O. Blanchard, Fryxell & D. Bates, *Gentes Herb.* 11: 357 (1978). *Melochia depressa* L., *Sp. Pl.* 674 (1753). Holotype: ex Jamaica, in cult., *van Royen s.n.* (L-909,64115). Illustr.: Fryxell, *Fl. Veracruz* 68: 131, t.13 (1992b).

Kosteletzkya pentasperma (Bertero ex DC.) Griseb., *K. sagittata* K. Presl, *K. hastata* K. Presl, *K. hispida* K. Presl.

Herbs or subshrubs 1-2 m tall, the stems green, hispid or scabrid with simple and stellate hairs. Leaves progressively reduced upward, lanceolate, hastate, or somewhat lobed, stellate-pubescent with coarse few-armed hairs intermingled with much smaller hairs. Flowers solitary or in diffuse leafy panicles, pedicels scabridulous; involucellar bractlets 2-3 mm; calyx 3-5 mm, 5-lobed; corolla 8-10 mm, rotate, whitish or yellowish (fading pink); staminal column glabrous, pallid, the anthers few. Capsules ca. 6 mm in diameter (excluding wings), transversely costate, stellate-pubescent and with prominent uncinate hairs on margins of wings; seeds 2.5 mm, glabrous. $2n = 38$. *Roadside swales, disturbed areas, especially in wet or inundated soil.* T (Cowan 3179, NY); Ch (Matuda 2712, MEXU); G (Standley 61341, NY); H (Molina & Molina 25880, US); ES (Montalvo & Vargas 3105, MO?); N (Stevens 21629, MO); CR (Opler 1867, US); P (Dwyer 4047, MO). At low elevation, but up to 1000 m. (Mexico, West Indies, Colombia, Venezuela, Ecuador.)

2. Hibiscus L.

By P.A. Fryxell.

Subshrubs, shrubs, or trees, glabrescent, pubescent, or hispid. Leaves elliptic, lanceolate, ovate, or cordate, sometimes lobed or parted, dentate or less commonly subentire; stipules usually subulate, inconspicuous. Pedicels long or short, usually solitary in the leaf axils, sometimes aggregated apically; involucellar bracts 8-10(-20), distinct or

basally connate, rarely suppressed; calyx 5-lobed, gamosepalous; petals yellow (sometimes with purplish basal spot), lavender, red, or other colors; anthers numerous; styles and capitate stigmas 5. Fruit a 5-celled dehiscent capsule, glabrous or pubescent, ovoid or oblong; seeds several per locule, glabrescent or hirsute. C. 200 spp., worldwide.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 192-232 (1988). Kearney, T.H. *Leafl. W. Bot.* 7: 274-284 (1955); 8: 161-168 (1957). Menzel, M.Y. et al. *Brittonia* 35: 204-221 (1983).

1. Stipules prominent ($15-26 \times 5-10$ mm), enclosing the developing shoot, deciduous; involucel gamophyllous, 8-20-toothed or -lobed; trees or large shrubs in mangrove habitats; leaves coriaceous, discolored, subentire. **9. Hibiscus pernambucensis**
1. Stipules smaller, not enclosing the shoot, often persistent; involucellar bracts distinct or slightly connate at base; small to large shrubs, not in mangrove habitats (or if so, not arborescent); leaves otherwise.
 2. Calyx lobes with prominent marginal costae, often with prominent (or obscure) nectary on midrib of each calyx lobe (except *H. costatus* and *H. radiatus*); involucellar bracts often bifurcate; leaves usually palmately lobed (except merely angulate in *H. costatus*).
 3. Corolla scarlet, salverform; plants scandent ("viny") to 10-20 m in forests by means of retrorse prickles on stems and petioles; involucellar bracts prominently bifurcate. **2. Hibiscus uncinellus**
 3. Corolla lavender (pink) or yellow with maroon center (sometimes red, but then corolla campanulate or funneliform and plant not scandent); involucellar bracts simple or bifurcate.
 4. Bracts of involucel simple.
 5. Calyx bright red, accrescent and fleshy in fruit; foliage glabrescent.
 5. Calyx usually green, never fleshy; foliage subglabrous to pubescent.
 6. Stems stellate-pubescent and prominently aculeate, often reclining; calyx nectaries obscure but present; corolla yellow with maroon center.
 - 8. Hibiscus diversifolius**

6. Stems glabrescent, with scarce urticating hairs, erect; calyx nectaries absent; involucellar bracts sometimes bifurcate; corolla dark red.

5. *Hibiscus radiatus*

4. Bracts of involucel bifurcate.

7. Nectaries absent on the midribs of the calyx lobes.

8. Leaves glabrescent or sparsely aculeolate, deeply palmately parted with narrow lobes; foliar nectaries absent; corolla dark red; involucellar bracts sometimes simple.

5. *Hibiscus radiatus*

8. Leaves scabridulous, cordate-ovate to 3-5-angulate; foliar nectaries present; corolla lavender; involucellar bracts bifurcate.

1. *Hibiscus costatus*

7. Nectaries present (sometimes obscure) on the midribs of the calyx lobes.

9. Corolla yellow or yellow suffused with red; leaves usually red, glabrescent; plants in garden cultivation.

4. *Hibiscus acetosella*

9. Corolla lavender; leaves green; plants of swampy habitats.

10. Plants sparsely and minutely aculeolate to glabrescent; leaves deeply lobed; involucel (at anthesis) exceeding the calyx.

6. *Hibiscus bifurcatus*

10. Plants densely stellate-pubescent, sometimes also aculeolate; leaves shallowly lobed; involucel (at anthesis) shorter than calyx.

7. *Hibiscus furcellatus*

2. Calyx lobes with neither marginal costae nor nectaries on midrib; bracts of involucel never bifurcate.

11. Bracts of the involucel abruptly expanded distally to a reniform blade; capsules densely hispid; plants of swampy habitats.

13. *Hibiscus sororius*

11. Bracts of the involucel subulate, lanceolate, or spatulate, not as above; capsules glabrous or variously pubescent (if hispid, the bracts linear); plants usually of drier habitats (except *H. trilobus* and *H. striatus*).

12. Introduced shrubs not occurring outside of cultivation; flowers usually showy, sometimes double.

13. Flowers pendent on long slender pedicels exceeding the subtending leaves; petals complexly dissected, reflexed; involucel 2-3 mm.

21b. *Hibiscus rosa-sinensis* var. *schizopetalus*

13. Flowers more or less erect, the pedicels shorter than the subtending leaves; petals neither dissected nor reflexed; involucel 10 mm or more.

14. Calyx glabrescent; genitalia exserted.

21a. *Hibiscus rosa-sinensis* var. *rosa-sinensis*

14. Calyx puberulent; genitalia included.

15. Leaves about as wide as long, cordate, shallowly lobed, stellate-pubescent; involucel shorter than calyx. **19. *Hibiscus mutabilis***

15. Leaves longer than wide, usually cuneate-rhomboid, glabrescent; involucel subequal to calyx. **20. *Hibiscus syriacus***

12. Indigenous shrubs or subshrubs, rarely (if ever) planted in cultivation (although *H. lavaterioides* is sometimes cultivated).

16. Calyx 0.6-1.9 cm, not accrescent or slightly so; seeds sericeous, the hairs longer than the seed; plants usually less than 1 m tall.

17. Corolla red, more or less tubular; genitalia exserted; calyx lobes shorter than the tube. **16. *Hibiscus poeppigii***

17. Corolla lavender or greenish yellow, campanulate or rotate; genitalia included or slightly exserted; calyx lobes subequal to calyx tube or slightly longer.

18. Flowers and fruits subsessile in axillary glomerules; corolla less than 1 cm, greenish yellow; species dioecious. **18. *Hibiscus purpurissatus***

18. Flowers and fruits solitary, manifestly pedicellate; corolla 1-4 cm, lavender; species with perfect flowers.

19. Fruits antrorse stringose; involucellar bracts linear or subulate; plants sparsely pubescent to glabrescent. **17. *Hibiscus phoeniceus***

19. Fruits stellate-pubescent; involucellar bracts lanceolate to spatulate; plants densely pubescent. **15. *Hibiscus lavaterioides***

16. Calyx 2-5 cm, often accrescent; seeds short-pubescent to glabrous; plants 1-6 m tall, robust.

20. Flowers zygomorphic, the corolla reddish-brown, the staminal column markedly declined with secund anthers; seeds glabrous.

12. *Hibiscus clypeatus*

20. Flowers actinomorphic, the corolla lavender or pink; seeds minutely papillate or short-pubescent.
21. Corolla 4-5.5 cm; capsule stellate-hispid; seeds minutely papillate; plant densely pubescent, lacking aculei; involucellar bracts spatulate.

14. *Hibiscus verbasciformis*

21. Corolla 5-11 cm; capsule hispid with mostly simple hairs; seeds pubescent; plant more or less pubescent, sometimes with scattered aculei; involucellar bracts linear.
22. Leaves 2-3 times as long as wide, narrowly lanceolate; calyx 3-4 cm, minutely tomentose; involucellar bracts 18-20 mm.

11. *Hibiscus striatus* subsp. *lambertianus*

22. Leaves cordate-ovate, usually 3-5-lobed; calyx at anthesis 2-3 cm, densely hirsute; involucellar bracts 14-16 mm.

10. *Hibiscus trilobus* subsp. *hirsutus*

1. *Hibiscus costatus* A. Rich., *Hist. Phys. Cuba, Pl. Vasc.* 138, t.15 (1845 [1841]); *Hist. Fis. Cuba, Fanerogamia* 49, t.15 (1845 [1841]). Isotype: Cuba, *de la Sagra s.n.* (K!, US!). Illustr.: Fryxell, *Fl. Veracruz* 68: 85, t. 11 (caption on p. 104 as a printing error) (1992b).

Perennial herbs or shrubs 0.5-1.5 m tall, the stems more or less scabrous. Leaves ovate or 3-5-angular, cordate, serrate, acute to acuminate, sparsely scabridulous above and beneath, with nectary at base of midrib beneath; stipules 5-8 mm, filiform. Pedicels solitary in the leaf axils, exceeding the subtending petiole, scabrous; involucellar bracts 10-12, shorter than the calyx, hispid, apically bifurcate; calyx 2-3 cm, more than half-divided, more or less hispid to glabrescent, with prominent marginal costae, the ribs often reddish, lacking nectaries; petals 5-7 cm, lavender. Capsules 1.5-2 cm, densely strigose, the hairs appressed and antrorse; seeds 3.5 mm, glabrous. $2n = 36$. *Evergreen forest, secondary forest, and disturbed sites, usually in locally wet soil.* T (Fryxell 740, MEXU); Ch (Breedlove 34952, CAS); C (Krapovickas & Cristóbal 23541, CTES); B (Gentle 8154, LL); G (von Türkheim 7823, US); H (Nelson & Romero 4485, MO); N (Stevens 12767, MO); CR (Molina 14896, NY); P (Williams 331, US). 100-700 m. (Cuba and central Mexico to Panama.)

2. *Hibiscus uncinellus* DC., *Prodr.* 1: 449 (1824). Lectotype (designated by Fryxell & Wilson, 1986): *Icones Florae Mexicanae s.n.!* (Torner Collection, acc. no. 6331.1422, Hunt Institute) — lectotypified by the exclusion of the corolla. Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 231, t. 55 (1988).

Hibiscus bifurcatus auct. non Cav.

Shrubs 1-3 m tall, often scandent in forests to 20 m by means of prickles; stems prickly, also often hirsute. Leaves basally cordate, serrate, deeply 3-5-lobed with open rounded sinuses, hirsute above and beneath, the lower surface with retrorse prickles on main veins, with 1-3 small nectaries near base of principal nerves; stipules 7-11 mm, lanceolate. Pedicels solitary in the leaf axils, subequal to subtending petioles, both prickly and hirsute; involucellar bractlets strongly bifurcate; calyx 2-2.5 cm, setose, prominently costate, each midrib with a central nectary; petals scarlet, reflexed to form a salverform corolla 6-10 cm in diameter; androecium glabrous, reddish, appearing exserted (because petals reflexed); styles 5, hirsute, stigmas capitate. Capsule ovoid, antrorsely hispid; seeds 4.5 mm, papillate. $2n = 72$. *Montane rain forest, pine-oak forest, and in secondary and disturbed sites.* T (Fryxell & Bates 876, BH); Ch (Breedlove & Raven 29605, CAS); G (Aguilar 524, F). 400-1500 m. (Sinaloa to Guatemala.)

3. *Hibiscus sabdariffa* L., *Sp. Pl.* 695 (1753). Type: unresolved fide Borssum Waalkes, 1966: 64, but see: Krapovickas & Fryxell, in prep., who justify lectotypifying with the Hort. Cliff. specimen (BM). Illustr.: Sivarajan & Pradeep, *Malvac. So. Peninsular India* 118, t. 41 (1996). N.v.: rosa de Jamaica (H); viñuela (P).

Subshrubs 1-3 m tall, glabrescent. Leaves ovate to deeply digitately divided, truncate to cuneate, serrate, glabrescent, with nectary near base of midrib beneath; stipules 5-9 mm, subulate to lanceolate. Peduncles solitary in the leaf axils, shorter than the subtending petiole; involucellar bracts ca. 8, shorter than the calyx, lanceolate, basally connate; calyx 1.5-3 cm, somewhat hispid to glabrescent, bright red, marginally costate, with nectary on midrib of each lobe, accrescent and fleshy in fruit; corolla yellow with maroon center. Capsules 2 cm, antrorsely hispid; seeds 4 mm, scabridulous. $2n = 36$, 72. *Cultivated and sometimes naturalized, generally in disturbed sites.* T (Cowan 1907, CAS); Ch (Matuda 17330, MEXU); C (Krapovickas & Cristóbal 23534, CTES); G

(Kellerman 7977, NY); H (Molina 23282, NY); ES (Calderón 2243, US); N (Moreno & Sandino 6224, MO); P (Standley 25222, US). (Pantropical in cultivation, probably of African origin.)

Hibiscus sabdariffa is widely used to produce condiments, drinks, confections, and vegetables, especially the fleshy calyces and the young shoots and leaves.

4. *Hibiscus acetosella* Welw. ex Hiern, *Cat. Afr. Pl.* 1: 73 (1876). Holotype: Angola, Welwitsch s.n. (BM). Illustr.: Sivarajan & Pradeep, *Malvac. So. Peninsular India* 102, t. 31 (1996).

Widely branched shrubs 1-2 m tall, the stems glabrescent, reddish. Leaves digitately 3-5-parted, reddish, the lobes coarsely crenate, subacute to obtuse, glabrescent; stipules 5-12 mm, lanceolate. Peduncles shorter than the subtending petioles, axillary, 1-4-flowered; pedicels ca. 1 cm; involucellar bracts shorter than the calyx, bifurcate, sparsely ciliate; calyx 2 cm, reddish, hispid, marginally costate, with obscure nectary on midrib of each lobe; petals 2-4 cm, yellow or reddish with dark spot at base. Capsule ovoid and long-beaked, exceeding calyx, sparsely stellate-pubescent. $2n = 72$. *Garden plant, sometimes naturalized?* H (Molina 1975, NY); N (Fryxell 2874, CTES); CR (Haber 62G2, MO). (Pantropical in gardens, of African origin.)

5. *Hibiscus radiatus* Cav., *Diss.* 3: 150, t.54, f.2 (1787). Holotype: cult. in Paris from seeds collected by Banks, *Cavanilles s.n.* (microfiche! ex P-JU no. 12373). Illustr.: Bates, *Baileya* 13: 56, t. 19 (1965).

Hibiscus cannabinus auct. non L.

Herbs or subshrubs to 1.5 m, erect or decumbent, the stems sometimes with urticating hairs, glabrescent. Leaves deeply 3-5-parted, the lobes lanceolate, coarsely serrate, acute, subglabrous; lacking foliar nectary; stipules 8-12 mm, lanceolate. Pedicels 2-5(-13) mm, solitary in the leaf axils; involucellar bracts 10-15 mm, distinct, hispid, linear and bifurcate (rarely simple), spreading in flower to reflexed in fruit; calyx 1.5-2.5(-3) cm, marginally costate, with stiff urticating hairs on the nerves, lacking nectaries; corolla 4-6 cm, dark red (sometimes yellow) with dark throat. Capsules shorter than calyx, ovoid, hispid; seeds 4 mm, scabridulous. $2n = 72$. *Garden plant, sometimes naturalized.* Ch (Matuda 18181, MEXU); H (Molina & Molina 25878, NY); ES

(Calderón 2254, US); N (Grijalva & Grijalva 1500, MO); P (Standley 30526, US).
(From tropical Asia, pantropical in gardens.)

6. *Hibiscus bifurcatus* Cav., *Diss.* 146, t.51, f.1 (1787). Holotype: Brazil,
Commerson s.n. (microfiche! ex P-JU no. 12374; isotype: MA!).

Erect (sometimes scandent) shrubs 1-3 m tall, the stems with small (less than 1 mm) retrorse prickles, sometimes nearly glabrous. Leaves cordate, palmately 3-5-lobed, the lobes lanceolate, coarsely serrate, acuminate, glabrescent; stipules 10-12 mm, lance-linear. Pedicels subequal to calyx, solitary in the leaf axils, prickly; involucellar bracts longer than calyx at anthesis, setose, bifurcate; calyx 12-14 mm, accrescent in fruit to 20 mm, setose, marginally costate, with nectary on midrib of each lobe; petals 7-8 cm, lavender. Capsules ovoid, beaked, antrorsely hispid; seeds 3.5 mm, papillose and somewhat striate. $2n = 72$. *River banks and swampy habitats, sometimes coastal.* B (Schipp 839, WIS); H (Fryxell 2804, F); N (Stevens 20823, MO); P (Pittier 3997, US). Low elevation. (Florida Keys, West Indies, Colombia, Venezuela, Guyanas, Ecuador, Peru, Bolivia, Brazil, Argentina.)

7. *Hibiscus furcellatus* Desr. in Lam., *Encycl.* 3: 358 (1789). Holotype: *Anon., s.n.* (microfiche! ex P-LA).

Shrubs to 2 m tall, the stems erect, densely stellate-pubescent, sometimes aculeolate. Leaves ovate to weakly 3-5-lobed, cordate to truncate, serrate to subentire, densely stellate-pubescent above and beneath, with nectary near base of midrib beneath; stipules 4-6 mm, subulate. Pedicels shorter than the subtending petioles, solitary in the leaf axils; involucellar bracts shorter than the calyx, bifurcate, stellate-pubescent; calyx 1.5-2.5 cm, hispid, marginally costate, with nectary on midrib of each lobe; petals 5-7 cm, lavender. Capsules c. 2 cm, strigose; seeds 3 mm, glabrous. $2n = 72$. *River banks and swampy habitats.* T (Matuda 3048, MEXU); Ch (Matuda 17399, MEXU); B (Dwyer 14962, MO); H (Fryxell 2806, F); N (Stevens 8295, MO); CR (Tonduz 6666, US); P (Antonio 1950, MO). Low elevation. (Florida, C. Mexico, West Indies, Colombia, Venezuela, Guyanas, Peru, Bolivia, Paraguay, Argentina; also Hawaii.)

8. *Hibiscus diversifolius* Jacq., *Collectanea* 2: 307 (1788). Neotype (designated by Fryxell, 1988): Jacquin, *Icon. Pl. Rar.* t.551 (1792).

Low shrubs, reclining to scandent, the stems minutely stellate-pubescent and prominently aculeate with stout conical prickles c. 1 mm or more. Leaves truncate or subcordate, palmately 5-lobed, serrate, acute, moderately hispid beneath (hairs both simple and stellate), sparsely so above, with nectary near base of midrib beneath. Inflorescence a terminal nearly leafless raceme, the pedicels c. 1 cm, solitary, prickly; involucellar bracts 10-12 mm, hispid, distinct, simple; calyx 18-23 mm, densely hispid (hairs 2 mm), marginally costate, with obscure nectary on midrib of each lobe; corolla 4.5 cm, yellow with maroon center. Capsule ovoid, antorsely hispid (hairs 3-4 mm, stout); seeds 4 mm, glabrous. $2n = 144$. B (Standley & Record, 1936); CR (*Cooper* 5718, US). (West Indies, Brazil, Africa, E. Australia.)

9. *Hibiscus pernambucensis* Arruda, *Diss. Pl. Brazil* 44 (1810). *Hibiscus tiliaceus* subsp. *pernambucensis* (Arruda) Castell. Neotype (here designated): Brazil (specimen unknown); Oliveira 229 (US!); isoneotype: MCM). Illustr.: Robyns, Fl. Panama, *Ann. Missouri Bot. Gard.* 52: 503, t. 1 (1966). N.v.: majagua.

Hibiscus tiliaceus auct. non L.

Shrubs or trees 1-8 m tall, minutely stellate-pubescent to glabrescent. Leaves broadly ovate, deeply cordate, entire or minutely denticulate, acuminate, coriaceous, markedly discolored, with 1-5 nectaries near base of principal veins beneath; stipules 1.5-2.6 × 0.5-1.0 cm, more or less oblong, densely puberulent, enclosing bud, deciduous. Peduncles usually 0.5-3 cm, axillary, often apically congested; involucel gamophyllous, 8-20-toothed, the teeth 6-10 mm, lanceolate; calyx ca. 2.5 cm, with nectary on midrib of each lobe; petals 4 cm, bright yellow fading orange. Capsules ca. 2 cm, antorsely pubescent; seeds 4 mm, minutely papillate. *River banks, borders of estuaries, mangrove associations.* T (Cowan 3201, MEXU); Ch (Matuda 2730, MEXU); QR (Steere 2617, NY); B (Gentle 1431, WIS); G (Deam 6025, US); H (Fryxell 2818, F); ES (Reyna 1373, MEXU); N (Moreno & Sandino 11991, MO); CR (Jiménez 3905, US); P (Knapp 1916, MO). 0-20 m. (Throughout Neotropics.)

10. *Hibiscus trilobus* Aublet, *Hist. Pl. Guian. Fr.* 2: 708 (1775). Type: Plumier, *Pl. Amer.* 7: t.159, f.1 (1758). Jamaica, Hispaniola, and Puerto Rico.

10a. *Hibiscus trilobus* subsp. *hirsutus*, O. Blanchard & Fryxell, *Novon* __: __ (1999). Holotype: Guatemala, *Aguilar 486* (NY).

Shrubs or subshrubs 2-5 m tall, the stems with stout prickles, also stellate-pubescent when young. Leaves cordate, broadly and shallowly 3-5-lobed, acuminate. Peduncles shorter than to longer than corresponding petioles, solitary in the leaf axils; involucellar bracts 14-16 mm, linear; calyx 2-3 cm, more or less cylindric, accrescent (inflated) in fruit, densely hirsute (hairs 2-4 mm), the shallow lobes acuminate; petals 5-11 cm, pink with darker base; staminal column c. half length of petals, the anthers purplish; styles essentially glabrous, with capitate stigmas. Capsules 2-3.5 cm, enclosed in calyx, hispid; seeds 3.5-4 mm, short-pubescent. *Swampy habitats.* B (*Proctor 30054*, MO); G (*Tun Ortiz 713*, US). Below 600 m. (Endemic.)

11. *Hibiscus striatus* Cav. *Diss. 3:* 146, t.54, f. 2 (1787). Holotype: without locality, *Anon. s.n.* (microfiche! ex P-JU-12391). Bolivia, Paraguay, Argentina, and Uruguay.

11a. *Hibiscus striatus* subsp. *lambertianus* (Kunth) O. Blanchard ex Proctor, *J. Arnold Arbor.* 63: 267 (1982). *Hibiscus lambertianus* Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 291 [folio ed. 226] (1822). Holotype: Venezuela, *Humboldt & Bonpland 761* (microfiche! ex P-Bonpl.). Illustr.: Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: t. 478 (1822).

Perennial herbs or subshrubs 2-3 m tall, the stems densely stellate-tomentose and with a few scattered prickles. Leaves narrowly lanceolate (2-3 times as long as wide), truncate or subcordate, serrate, acute or acuminate, densely and softly tomentose; stipules 3-14 mm, subulate. Pedicels 2-4 cm, shorter than the corresponding petioles; involucellar bracts 18-20 mm, linear, hispid; calyx 3-4 cm, minutely tomentose and also hispid toward base, somewhat inflated, shallowly lobed; petals 8-10 cm, lavender with small red spot at base; staminal column less than half length of petals; stigma a 5-lobed disk, white. Capsule 3 cm, densely hispid (hairs 3-5 mm); seeds 3.5 mm, short-pubescent. $2n = 52$.

Marshes. T (*Fryxell & Bates* 882, BH); H (*Standley* 53904, US). 0-100 m (but to 1000 m in South America). (Texas, Cuba, Trinidad, C. America, Colombia, Venezuela, Surinam, Peru, Bolivia, Brazil.)

12. *Hibiscus clypeatus* L., *Syst. Nat.* ed. 10. 1149 (1759). Type: Plumier, *Pl. Amer.* 7: t.160. f. 2 (1758). N.v.: hol (Maya)

Shrubs 3-6 m tall, densely and softly stellate-tomentose. Leaves broadly ovate or ovate-angulate or weakly 3-lobed, deeply cordate, obscurely denticulate, acuminate. Pedicels 3-10 cm, solitary in the leaf axils, stout; involucellar bracts 16-22 × 3-5 mm, linear-lanceolate; calyx c. 4 cm in flower, 4-5 cm in fruit, c. half-divided, the lobes 3-5-nerved; petals c. 5 × 1.5 cm, reddish brown, fleshy, externally densely tomentose, asymmetrically disposed (flower zygomorphic); staminal column declined, the filaments 6-7 mm, secund and ascending. Capsules 3-4 × 2.5-3 cm, ovoid, enclosed in calyx, externally hispid (hairs 2-3 mm), internally pilose (hairs 3-5 mm); seeds 3.5-4 mm, glabrous. $2n = 20$. *Evergreen or deciduous shrubs on limestone soils.* Y (*Gaumer* 24145, F); C (*Lundell* 1000, MO); QR (*Sousa* 10906, MEXU); G (*Contreras* 3593, LL). 0-300 m. (Also West Indies and Tamaulipas, San Luis Potosí, and Veracruz in Mexico.)

13. *Hibiscus sororius* L., *Pl. Surin.* 12 (1775). Holotype: Surinam, *Dalberg* s.n. (microfiche! ex LINN-875.7). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 107-I (1892).

Shrubs c. 1 m, often reclining or scandent, the stems roughly stellate-pubescent. Leaves deeply cordate, ovate or weakly 3-lobed, crenate to subentire, acute to obtuse, minutely stellate-pubescent above and beneath; stipules 2 mm, subulate. Pedicels 1.3-8 cm, solitary in the leaf axils; involucellar bracts c. 1 cm, stipitate with an abruptly dilated reniform blade 3-6 mm wide at apex; calyx 2-2.5 cm, more or less inflated, stellate-pubescent; petals 5-7 cm, lavender. Capsules 15-18 mm, densely hispid (hairs 3 mm); seeds 2 mm, scabridulous. *Swampy habitats.* T (*Matuda* 3367, NY); B (*Chanek* 50, F); G (*Johnson* 1105, US); N (*Araquistain* 3349, MO); P (*Standley* 31593, US). 0-100 m. (West Indies, Mesoamerica, Venezuela, Guyanas, Bolivia, Brazil, Argentina.)

14. *Hibiscus verbasciformis* Klotzsch ex Hochr., *Annuaire Conserv. Jard. Bot.*

Genève 4: 143 (1900). *Hibiscus verbasciformis* Klotzsch in Schomb. *Reis. Brit. Guiana* 991 (1848), nom. nud. Type: British Guiana, *Schomburgk* 787 (K!).

Hibiscus spathulatus Garcke (1849) non Gaudichaud (1826).

Perennial herbs or subshrubs 1-2 m, densely yellowish stellate-pubescent. Leaves cordate, broadly ovate or angulate to weakly 3-lobed, coarsely stellate-pubescent above and beneath, acute; stipules 6-8 mm, filiform. Pedicels 2-10(-15) cm, solitary in the leaf axils, densely yellowish-pubescent; involucellar bracts 12-20 × 3-5 mm, spatulate, pubescent; calyx 2-2.5 cm, accrescent in fruit, densely pubescent (hairs c. 2 mm), c. half-divided; petals 4-5.5 cm, pink. Capsules 1-1.5 cm, densely stellate-hispid (hairs 3-4 mm), subglobose, enclosed in calyx; seeds c. 1.8 mm, minutely papillate. *Rain forests, secondary growth, and disturbed sites.* P (*Hammel* 4313, MO). 200-1000 m. (Colombia, Venezuela, Guyanas, Ecuador, Peru, Brazil.)

15. *Hibiscus lavaterioides* Moric. ex Ser., *Bull. Bot.* 6: 174 (1830). Holotype:

Mexico, Veracruz, *Berlandier* 127 (G; isotypes: BM!, DS!, L, UC!, US!). Illustr.: Fryxell, *Fl. Bajío* 16: 66 (1993). N.v.: flor de campana colorada.

Hibiscus longipes Standley.

Shrubs 0.5-1.5 m tall, the stems stellate-pubescent. Leaves cordate-ovate or weakly 3-lobed, crenate-dentate to subentire, acute, stellate-pubescent above and beneath, with obscure nectary at base of midrib beneath; stipules 4-5 mm, subulate. Pedicels 2-8 cm, solitary in the leaf axils; involucellar bracts 8-10 × 3 mm (in flower) to 12-15 × 4.5-5.5 mm (in fruit), lanceolate to spatulate, pubescent; calyx 16-19 mm (in flower) to 22 mm (in fruit), c. half-divided, stellate-pubescent; petals 3-4 cm, lavender; androecium subequal to petals, the filaments 2-4 mm; styles with scattered white hairs, the stigmas capitate. Capsules 12-14 mm, stellate-pubescent, ovoid; seeds 3 mm, sericeous, the hairs 5 mm, castaneous. $2n = 22$. *Evergreen or deciduous forest and secondary vegetation, sometimes cultivated.* Ch (*Breedlove & Almeda* 47595, CAS); B (*Chanek* 50, MICH); G (*Lundell* 16625, LL); H (*Molina & Molina* 30855, F); ES (*Calderón* 820, US). 50-1200 m. (Also West Indies and in Tamaulipas and Veracruz in Mexico.)

16. *Hibiscus poeppigii* (Sprengel) Garcke, *Jahresber. Naturwiss. Vereins Halle* 2: 133 (1850). *Achania poeppigii* Sprengel, *Syst.* 3: 100 (1826). Isotype: Cuba, *Poeppig s.n.* (MO!). Illustr.: Fawc. & Rendle, *Fl. Jamaica* 5: 137, t. 52 (1926).

Shrubs 1(-2) m tall, the stems sparsely pubescent. Leaves ovate or weakly 3-lobed, truncate or rounded, dentate, acute, sparsely stellate-pubescent above and beneath, or the hairs often simple above; stipules 3-5 mm, subulate. Pedicels c. 2 cm, solitary in the leaf axils, sparsely scabridulous; involucellar bracts shorter than calyx, subulate, hispid; calyx 9-12 mm, stellate-pubescent, less than half-divided; petals 1.5-3.5 cm, red, erect, the corolla flaring; androecium exserted, the filaments 3-6 mm; styles glabrous, the stigmas capitate. Capsules 8-12 mm, stellate-pubescent; seeds 3 mm, sericeous, the hairs 3-4 mm, brownish. $2n = 22$. *Deciduous forest and matorral*. Ch (*Breedlove 25156*, DS); C (*Lundell 1150*, LL); Y (*Gaumer 496*, MICH); QR (*Sousa 10939*, MEXU); G (*Deam 6278*, US). 0-800 m. (Also in Florida, the West Indies, and in Tamaulipas, San Luis Potosí and Veracruz in Mexico.)

This species is sometimes cited erroneously as *H. pilosus* (Swartz) Fawcett & Rendle or *H. tubiflorus* DC. (see Fryxell, 1988: 220).

17. *Hibiscus phoeniceus* Jacq., *Hort. Bot. Vindob.* 3: 11, t.14 (1776). Type: *Jacquin s.n.* (BM!). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 219, t. 90 (1989). N.v.: mírame-linda, mañanit.

Hibiscus brasiliensis auct. non L.

Shrubs 1(-1.5) m, the stems green, sparsely stellate-pubescent to glabrescent. Leaves lanceolate to ovate (sometimes 3-lobed), subcordate to truncate, serrate-crenate, acute, sparsely stellate-pubescent to glabrescent; stipules 4-8 mm, subulate. Pedicels 0.5-6 cm, solitary in the leaf axils; involucellar bracts equaling or exceeding the calyx, linear; calyx 6-10 mm, ciliate-margined, c. 2/3-divided, the lobes acute or acuminate; petals 1-2 cm, lavender (sometimes white), spreading; androecium subequal to petals, the anthers yellowish; styles glabrous, the capitate stigmas purplish. Capsules 9-13 mm, antrorsely strigose; seeds 2.5 mm, densely sericeous, the hairs to 4 mm, brownish. $2n = 22$.

Deciduous forest and matorral. Ch (*Breedlove 31217*, DS); G (*Harmon & Dwyer 3488*, MO); H (*Molina 14202*, US); ES (*Standley 19939*, US); N (*Standley 9801*, US); CR

(Standley & Valerio 44889, US); P (Sinclair s.n., K). 0-1000 m. (Mexico, West Indies, Colombia, Venezuela.)

18. *Hibiscus purpusii* Brandegee, *Univ. Calif. Publ. Bot.* 6: 368 (1917). Lectotype (designated by Fryxell, 1980b): Mexico, Veracruz, *Purpus* 7546 (UC!; isolectotypes: GH! MO! NY! US!).

Dioecious shrubs, the stems glabrescent. Leaves short-petiolate, ovate or elliptic, truncate, dentate, acuminate, subglabrous above, stellate-pubescent beneath or subglabrous with pubescence confined to axils of principal veins, with an obscure nectary near base of midrib beneath; stipules 5-6 mm, subulate. Flowers subsessile in axillary glomerules of 1-6; involucellar bracts 6-8, 3-4 mm, subulate; calyx 6 mm, more than half-divided, stellate-pubescent; petals 7-9 mm, greenish yellow, prominently ciliate on claw; staminal column 3-4 mm, glabrous, the filaments c. 2 mm in staminate flowers (anthers rudimentary or absent in pistillate flowers); styles of pistillate flowers subequal to petals, glabrous, the stigmas 0.5 mm in diameter. Capsules 5-7 mm, oblate to ovoid, more or less fluted longitudinally, with large stellate hairs; seeds 2.5 mm, sericeous, the hairs 4 mm, creamy white. *Deciduous forest*. Ch (*Palacios* 1454, CHIP). 0-800 m. (Also Veracruz and Oaxaca, Mexico.)

The dioecious habit shown by *H. purpusii* is rare in the genus *Hibiscus*.

19. *Hibiscus mutabilis* L., *Sp. Pl.* 694 (1753). Lectotype (designated by Borssum Waalkes, 1966): Hortus Upsaliensis (microfiche! ex LINN-875.20; isolectotype: microfiche! ex S). N.v.: variable

Shrubs to 3 m tall, the stems stellate-pubescent with glandular hairs intermingled. Leaves cordate, palmately 5-7-lobed, the lobes shallow and triangular, serrate-crenate, acute to acuminate, stellate-puberulent beneath, sparsely so above; stipules 3-14 mm. Pedicels axillary, often aggregated apically in few-flowered inflorescence; involucellar bracts shorter than calyx, linear-lanceolate; calyx 2.5-3 cm, more than half-divided, puberulent; petals c. 4 cm, white fading pink, sometimes double (by petaloidy of stamens). Capsules c. 2 cm, hispid, internally pilose along suture of dehiscence; seeds c. 2 mm, patently hirsute (hairs 2 mm) on side away from hilum, the other half glabrous. $2n = 84, 92, 100, 110$. *In gardens*. Ch (*Valdivia* 2346, XAL); ES (*Calderón* 2053, US); G

(Standley 24311, US); H (Molina, 1975); N (Grijalva 5382, MO); CR (Skutch X2861, US). (Native to China, commonly cultivated in tropical, subtropical, and temperate-zone gardens.)

20. *Hibiscus syriacus* L., *Sp. Pl.* 695 (1753). Lectotype (designated by Abedin, 1979): "syriacus 9" (microfiche! ex LINN-875.24; isolectotype: microfiche! ex S). Illustr.: Bates, *Baileya* 13: 108, t. 30 (1965).

Shrubs to 3 m tall, stellate-puberulent to glabrescent. Leaves cuneate-rhomboid to somewhat 3-lobed, longer than wide, coarsely serrate, acute, glabrescent, with nectary at base of midrib beneath; stipules 4-10 mm, subulate. Pedicels solitary or paired in the leaf axils, subequal to subtending petiole, minutely pubescent; involucellar bracts shorter than to longer than calyx, linear-lanceolate; calyx 1-1.5 cm, broadly rounded, puberulent, half-divided or less; petals 3-4 cm, in various colors, single or double (by petaloidy of stamens). Capsules c. 2 cm, ovoid-beaked, densely yellowish-farinose; seeds 4-5 mm, peripherally hirsute opposite the hilum (hairs 4 mm). *In gardens.* Ch (Matuda 17953, MEXU); ES (Calderón 768, US); H (Molina, 1975). (Native to China, widely cultivated in temperate-zone gardens and sometimes in the tropics.)

21a. *Hibiscus rosa-sinensis* L., *Sp. Pl.* 694 (1753) var. **rosa-sinensis**. Lectotype (designated by Borssum Waalkes, 1966): herb. Hermann, vol. 3, fol. 4, Linn. no. 260 (BM). Illustr.: Camargo, *Cat. Ilustr. Pl. Cundinamarca* 4: 161, t. 57 (1970). N.v.: tulipán.

Shrubs 1-3(-4) m tall, sparsely puberulent to glabrescent. Leaves ovate or lanceolate, truncate or cuneate, serrate, acute, sparsely puberulent to glabrescent; stipules 5-10 mm, subulate. Pedicels exceeding the corresponding petioles, erect, solitary in the leaf axils; involucellar bracts c. half length of calyx, narrowly lanceolate; calyx 2-4 cm, more than half-divided, glabrescent; petals usually 6-10 cm (sometimes smaller), in a wide variety of colors (commonly red), the flowers single or double (by petaloidy of stamens); androecium more or less exserted, the filaments often 5-10 mm. Fruits seldom produced, obovoid, minutely pubescent; seeds 5 mm, minutely pubescent. $2n = 36, 46, 72, 92, 144, 168$. *In gardens.* T (García 600, CHAPA); Ch (Calzada 3504, XAL); Y (Valdez 86, US); B (O'Neill 171, NY); G (Donnell-Smith 1892, US); H (Saunders 221,

MO); ES (*Calderón* 770, NY); N (*Stevens* 19886, MO); CR (*Khan et al.* 1205, BM); P (*Moreno* 3220, MO). (Pantropical in cultivation, of unknown origin.)

21b. *Hibiscus rosa-sinensis* var. *schizopetalus* Dyer, *Gard. Chron.* n.s. 11: 568. (1879). *Hibiscus schizopetalus* (Dyer) J.D. Hook. Lectotype (designated by Cheek, 1989): Kenya, *Kirk s.n.* (photo Cheek 1989, t.1, ex K). Illustr.: Bates, *Baileya* 13: 123, t. 35 (1965). N.v.: canastita; clavel; avispilla.

Flowers pendent and drooping on long slender pedicels that exceed the corresponding leaves; involucellar bracts 2-3 mm, reduced to subulate teeth; petals 5-6 cm, strongly reflexed, complexly dissected; otherwise as in nominate variety. *In gardens, sometimes in hanging baskets.* Ch (*Breedlove & McClintock* 23541, CAS); B (*O'Neill* 8873, WIS); G (*Standley* 25073, US); H (*Saunders* 221, MO); ES (*Calderón* 769, NY); N (*Araquistain & Castro* 1815, MO); P (*Standley* 30533, US). (Pantropical in cultivation, originating in East Africa.)

3. ***Wercklea*** Pittier & Standley in Standley

By P.A. Fryxell.

Coarse herbs, shrubs, or trees 2-20 m tall, stellate-pubescent to glabrescent, the stems with prominent leaf and stipule scars, sometimes with ligneous prickles on stems and spinescent prickles or pungent hairs elsewhere. Leaves very large, deeply cordate, wider than long, more or less orbicular to flabellate or sometimes ovate, remotely dentate to subentire, subacute to obtuse, variously pubescent (sometimes prickly) to glabrescent; stipules 5-80 × 5-45 mm, sessile and amplexicaul, prominently foliaceous, deciduous. Pedicels erect, one or more in leaf axils, variously pubescent or prickly, often elongate and ligneous in fruit; involucel gamophyllous or of 3-10 distinct bracts, deciduous or persistent; calyx stellate-pubescent, sometimes also prickly; corolla 6-15 cm, campanulate or salverform; androecium shorter than to subequal to corolla; styles 5, distinct distally, the stigmas capitate. Capsules oblong or obovoid, sometimes angled or winged, densely pubescent or glabrous; seeds 2.5-4 mm, numerous, glabrous or pubescent. 13 spp. C. America, Jamaica, Hispaniola, Lesser Antilles, Colombia, Ecuador.

Literature: Fryxell, P.A. *J. Arnold Arbor.* 62: 457-486 (1981).

1. Calyx 2.5-6 cm at anthesis, spathaceous, accrescent to 9(-13) cm in fruit, prominently 10-fluted, enclosing the glabrous fruit; pedicels, stems, and often the leaves prominently prickly; flowers often fasciculate in the leaf axils. **1. Wercklea ferox**

1. Calyx 3-6.5 cm, neither accrescent nor spathaceous, c. half-divided; fruits equaling or exceeding calyx, prominently hispid; pedicels etc. not prickly (or occasionally with a few urticating hairs at apex of pedicel); flowers solitary (or paired) in the leaf axils.

2. Involucel 5 cm, gamophyllous and spathaceous, deciduous; petals 13 cm, more or less orange. **2. Wercklea grandiflora**

2. Involucel 1.5-4.5 cm, more or less gamophyllous or 3-10-parted, persistent or deciduous; petals 7.5-15 cm, yellow or pale lavender.

3. Petals yellow; involucellar bracts more or less distinct; capsules more or less pubescent internally along suture margin.

4. Involucel basally rounded, deciduous, the bracts 3, broadly ovate-sessile. **3. Wercklea lutea**

4. Involucel basally truncate, persistent, the bracts 8-9, narrowly triangular, with revolute margins basally. **4. Wercklea woodsonii**

3. Petals pale lavender; involucellar bracts more or less gamophyllous, irregularly lobed or divided; capsules glabrous internally.

5. Staminal column 3-4.5 cm, subglabrous; leaf blades glabrescent above, obscurely dentate or subentire; calyx sparsely stellate-pubescent; fruits hispid with hairs 3-4 mm. **5. Wercklea insignis**

5. Staminal column 8-10 cm, stellate-pubescent at least basally; leaf blades pubescent above (especially on nerves), dentate; calyx stellate-pubescent and with pungent hairs 1-2 mm toward base; fruits hispid with hairs 2 mm. **6. Wercklea cocleana**

1. Wercklea ferox (J.D. Hook.) Fryxell, *J. Arnold Arbor.* 62: 464 (1981). *Hibiscus ferox* J.D. Hook., *Bot. Mag.* 74: t.4401 (1848). Holotype: Colombia, *Purdie* s.n. (K!). Illustr.: Fryxell, *Fl. Ecuador* 44: 127, t. 17 (1992a).

Stout herbs, shrubs, or trees 0.5-5 m, the stems stellate-pubescent and usually with ligneous, conical prickles 4-8 × 4-6 mm. Leaves at least 35 × 50 cm, ovate or flabelliform, remotely serrate, stellate-pubescent and prickly above and beneath (prickles

rarely absent); stipules $3-5 \times 0.8-2.5$ cm (or larger), sessile-ovate, deciduous. Pedicels shorter than corresponding petiole, solitary or in fascicles of 2-5(-9) in the leaf axils, densely covered with prickles or pungent hairs and stellate hairs; involucellar bracts 4-6, $1.5-3 \times 0.4-1.2$ cm, lanceolate; calyx 2.5-6 cm (in flower) to 9(-13) cm (in fruit), gamosepalous and spathaceous, fluted, inflated, densely covered with pungent hairs; petals $6-9 \times 0.5-1.5$ cm, yellow, reflexed to form a salverform corolla; androecium subequal to petals but appearing exserted. Capsule 3-5 cm, oblong, glabrous; seeds 2.5-3 mm, minutely puberulent, numerous. $2n = 104$ or 112. *River banks, wet forests, and forest margins.* CR (*Pittier 9404, US*); P (*Croat 49756, MO*). 0-1000 m, rarely higher. (Costa Rica to Colombia, Ecuador, and Bolivia.)

2. Wercklea grandiflora Fryxell, *J. Arnold Arbor.* 62: 479 (1981). Holotype: Panama, Nee 9842 (MO!). Illustr.: Fryxell, *J. Arnold Arbor.* 62: 472, t. 19 (1981).

Tree to 8 m, the stems densely stellate-pubescent. Leaves at least 20×24 cm, cordate, weakly 5-angled or -lobulate, undulate-crenate, acute, stellate-pubescent, more densely so beneath; stipules $13-38 \times 12-21$ mm, broadly rounded, sessile, deciduous. Pedicels at anthesis subequal to corresponding petioles, usually solitary, stellate-pubescent; involucel 5 cm, gamophyllous and spathaceous, stellate-pubescent, deciduous; calyx 3.5-6.5 cm, c. half-divided; petals 13 cm, more or less orange; staminal column 10-11 cm, glabrous, the filaments 3-5 mm. Fruits c. 5 cm, obovoid, beaked, 5-winged, with both pungent hairs 1-3 mm and minute stellate hairs; seeds 3.5 mm, brownish pubescent, the hairs 2 mm. *Cloud forest.* P (*Knapp 3827, M*). 700-1300 m. (Endemic.)

3. Wercklea lutea Rolfe, *Kew Bull.* 1921: 118 (1921). Holotype: Costa Rica, Lankester s.n. (K!). Illustr.: Fryxell, *J. Arnold Arbor.* 62: 477, t. 25-26 (1981). N.v.: burío extranjero (CR).

Hibiscus rolfeanus A. Robyns.

Shrub or tree 3-10 m, the stems densely stellate-pubescent to glabrescent, sometimes with scattered conical prickles 3-5 mm. Leaves at least 21×35 cm, orbicular to ovate, more or less cordate, remotely dentate to subentire, sparsely stellate-pubescent, rarely prickly beneath; stipules $8-22 \times 8-22$ mm, sessile, deciduous. Pedicels usually exceeding the corresponding petiole, accrescent to 22 cm in fruit, becoming woody;

involucellar bracts 2-3 cm, basally rounded, usually 3, ovate-sessile, deciduous; calyx 3.5-4.5(-5.5) cm, c. half-divided, stellate-pubescent, at the base sometimes with pungent hairs 2 mm; petals 8-13 cm, yellow; staminal column nearly equaling corolla, the filaments 3-8 mm. Capsules 4-7 cm, obovoid, beaked, 5-angled or -winged, externally densely hispid (hairs 2-3 mm), internally hispid along suture margin; seeds 4 mm, sparsely pubescent, the hairs 1-2 mm. *Wet evergreen forests.* CR (Burger & Liesner 6412, F). 1500-2500 m. (Endemic.)

4. Wercklea woodsonii (A. Robyns) Fryxell, *J. Arnold Arbor.* 62: 481 (1981).

Hibiscus woodsonii A. Robyns, *Ann. Missouri Bot. Gard.* 52: 179 (1965). Holotype: Panama, Woodson & Schery 604 (US!). Illustr.: Fryxell, *J. Arnold Arbor.* 62: 482, t. 27-28 (1981). N.v.: amapola amarilla (CR).

Trees 4-20 m, the stems sparsely to densely stellate-pubescent, sometimes also prickly. Leaves at least 24 × 30 cm, cordate, pentangular to suborbicular, remotely dentate to undulate, minutely stellate-pubescent, more densely so beneath; stipules 12-30 × 10-20 mm, sessile-ovate, acute. Pedicels subequal to corresponding petiole at anthesis, accrescent and ligneous in fruit, solitary or paired in the leaf axils, stellate-pubescent; involucellar bracts 8-9, 1.5-3 cm, with revolute margins and connate basally into a cup with truncate base, persistent; calyx 3-5 cm, c. half-divided, densely stellate-pubescent and on tube with pungent hairs 1-2 mm; petals 8-13 cm, yellow. Capsules 5-7 cm, fusiform to obovoid, beaked, 5-angled or -winged, externally densely hispid (hairs 2-4 mm), internally sparsely pubescent along suture margin; seeds 3.5 mm, sparsely pubescent, the hairs 1-2 mm. *Rain forest and oak forest.* CR (Burger 8399, F); P (Nee 9999, MO). 1800-2700 m. (Endemic.)

5. Wercklea insignis Pittier & Standley ex Standley, *Contr. U.S. Natl. Herb.* 18: 112 (1916). *Hibiscus wercklei* Robyns. Holotype: Costa Rica, Wercklé s.n. (US!). Illustr.: Fryxell, *J. Arnold Arbor.* 62: 472, t. 20 (1981).

Trees 5-15 m, the older branches glabrescent. Leaves at least 26 × 38 cm, orbicular to flabelliform, cordate, obscurely dentate or subentire, sparsely stellate-pubescent to glabrescent; stipules 4-10 × 5-15 mm, sessile, semicircular. Pedicels sparsely pubescent to glabrescent, subequal to petioles at anthesis, accrescent to 20 cm in fruit, 1-3 in the

leaf axils; involucel 1.5-2.5 cm, gamophyllous and irregularly divided; calyx 3-5(-6) cm, c. half-divided, very sparsely pubescent; petals 10-15 cm, lavender; staminal column 3-4.5 cm, subglabrous, the filaments 0.5-1 mm. Capsules 4.5-7 cm, oblong to obovoid, beaked, winged, externally hispid (hairs 3-4 mm), internally glabrous; seeds 3 mm, prominently pubescent, the patent hairs 3 mm, red-brown. *Rain forests.* CR (*Khan et al.* 740, BM); P (*Knapp & Vodicka* 5600, MO). 750-1700 m. (Endemic.)

6. Wercklea cocleana (A. Robyns) Fryxell, *J. Arnold Arbor.* 62: 485 (1981).

Hibiscus cocleanus A. Robyns, *Ann. Missouri Bot. Gard.* 52: 176 (1965). Holotype: Panama, *Dwyer* 1918 (MO!). Illustr.: Fryxell, *J. Arnold Arbor.* 62: 482, t. 29-30 (1981).

Trees 5-12 m tall, the stems densely stellate-pubescent. Leaves at least 20 × 24 cm, orbicular, cordate, dentate, stellate-pubescent, densely so beneath; stipules semicircular, sessile. Pedicels densely stellate-pubescent, exceeding the corresponding petioles at anthesis, accrescent in fruit to 30 cm; involucel 1.5-3 cm, more or less gamophyllous and irregularly lobed, stellate-pubescent, deciduous; calyx 3-5.5 cm, c. half-divided, stellate-pubescent and basally with pungent hairs 1-2 mm; petals 7.5-12 cm, lavender; staminal column 8-10 cm, stellate-pubescent, the filaments 3-5 mm. Fruits 5-6.5 cm, obovoid, beaked, winged, externally densely hispid (hairs 2 mm), internally glabrous. *Rain forest.* CR (*Haber* 877, MO); P (*Gentry* 5633, MO). 700-900 m. (Endemic.)

4. Abelmoschus Medikus; chimbombó

By P.A. Fryxell.

Robust herbs or shrubs, annual or perennial, tomentose or hispid. Leaves large, long-petiolate, palmately lobed, crenate or dentate, lacking foliar nectaries. Flowers solitary in the leaf axils; involucel of 4-16 bracts, usually deciduous; calyx spathaceous, splitting asymmetrically at anthesis and falling with the corolla; petals large, yellow with a dark spot at base; style single with 5 sessile, capitate stigmas. Capsule elongate, pubescent or hispid, 5-loculed; seeds numerous, reniform, pubescent or squamose. C. 15 spp. from S.E. Asia, Malesia, and N. Australia, a few of which are introduced elsewhere and often naturalized.

Literature: Bates, D.M. *Baileya* 16: 99-112 (1968). Borssum Waalkes, J. van. *Blumea* 14: 89-105 (1966). Sivarajan, V.V. & A.K. Pradeep, *Malvaceae of Southern Peninsular India* pp. 45-73 (1996).

- 1. Pedicels 0.5-2 cm; involucellar bracts less than 1 mm wide; capsules minutely pubescent (hairs 0.5 mm). **1. Abelmoschus esculentus**
- 1. Pedicels 1.5-9 cm; involucellar bracts 1.5-8 mm wide; capsules hispid (hairs 1-3 mm).
 - 2. Hairs of capsule appressed; hispid hairs of pedicel (and stem) retrorse; involucellar bracts 1.5-2.5 mm wide. **2. Abelmoschus moschatus**
 - 2. Hairs of capsule spreading; hairs of pedicel (and stem) antrorse; involucellar bracts 5-8 mm wide. **3. Abelmoschus manihot**

1. Abelmoschus esculentus (L.) Moench, *Methodus* 617 (1794). *Hibiscus esculentus* L., *Sp. Pl.* 696 (1753). Syntype: "esculentus 15" (microfiche! ex LINN-875.31). Illustr.: Exell, *Fl. Zambesiaca* 1(2): 425, t. 84 (1961). N.v.: algalia; gombo; ñajú (P); ocrea.

Erect herbs 1-2 m tall, the stems sparsely hispid to glabrescent. Leaves palmately lobed or parted, often cordate, crenate, sparsely hispid above and beneath, especially on nerves. Pedicels 0.5-2 cm, solitary in the leaf axils, stout; involucellar bracts c. 9, 10-15 × 0.5 mm, hispid, deciduous after anthesis; calyx 15-17 mm, hispid, spathaceous; corolla 3.5-4.5 cm, yellow with dark red center; androecium shorter than corolla, the anthers yellow; stigmas maroon. Capsules to 13 × 3-4 cm, 5-angular, minutely pubescent; seeds 4 mm, numerous. $2n = 72, 118, 120, 122, 130, 132$. *In gardens, rarely naturalized.* T (Ortega et al. 908, F); B (Standley & Record, 1936); G (Lundell 16046, LL); ES (Calderón 1179, US); N (Atwood 6862, MO); CR (Jiménez 542, US); P (Standley 25279, US). (Nearly cosmopolitan in cultivation, unknown in the wild, presumably of Asiatic origin.)

2. Abelmoschus moschatus Medikus, *Malvenfam.* 46 (1787). *Hibiscus abelmoschus* L., *Sp. Pl.* 696 (1753). Lectotype (designated by Borssum Waalkes, 1966): ex Hortus Cliffortianus (BM). Illustr.: Bates, *Baileya* 16: 105, t. 1 (1968). N.v.: algalía; café extranjero.

Erect herbs 1-3 m tall, the stems retrorsely hispid. Leaves hastately to palmately lobed or parted, the lobes often narrowly linear, crenate-serrate, hispid above and beneath. Pedicels 5-9 cm, solitary in the leaf axils, retrorsely hispid; involucellar bracts c. 9, 8-20 mm × 1.5-2.5 mm, hispid, usually deciduous (sometimes persisting in fruit); calyx 30-35 mm, hispid; corolla 7-8 cm, yellow with dark red center; androecium shorter than corolla. Capsules 6-7 cm × 3-4 cm, fusiform, antrorsely hispid, the hairs appressed; seeds 4 mm. $2n = 72$. *In gardens, sometimes naturalized.* T (Fryxell 730, MEXU); Ch (Breedlove 28873, CAS); B (Lundell 4963, WIS); G (Contreras 7831, LL); H (Molina 10497, NY); ES (Calderón 1434, US); N (Ortíz 126, MO); CR (Tonduz 13150, US); P (Hammel 4237, MO). At low elevation. (Asia, Malesia, Australia — widely introduced elsewhere in the tropics.)

3. Abelmoschus manihot (L.) Medikus, *Malvenfam.* 46 (1787). *Hibiscus manihot* L., *Sp. Pl.* 696 (1753). Lectotype (designated by Borssum Waalkes 1966): ex herb. Clifford (BM). Illustr.: Bates, *Baileya* 16: 108, t. 2 (1968). N.v.: hierba de la culebra; tres de la tarde (CR).

Shrubs to 2.5 m tall, sparsely pubescent with short rigid hairs, the hairs more or less antrorsely oriented. Leaves usually 5-lobed, slightly wider than long, coarsely serrate, glabrescent above and beneath. Pedicels 1.5-7 cm, solitary in the leaf axils, antrorsely hispid; involucellar bracts 4-6, 5-8 mm wide, lanceolate to ovate, more or less persistent; calyx 2-2.5 cm, soft-pubescent; petals 6 cm, yellow. Capsule 5-6 cm, fusiform, acuminate apically, hispid with spreading simple hairs 3 mm; seeds 3.5 mm, minutely pubescent, striate. $2n = 130$. *In gardens, sometimes naturalized.* CR (Brenes 23142, NY); P (Hammel 5344, MO). At low elevation. (S. Asia to New Guinea and Australia — introduced elsewhere in the tropics.)

5. Thespesia Sol. ex Corr. Serr., nom. cons.

By P.A. Fryxell.

Shrubs or more commonly trees, glabrous or pubescent, minutely gland-dotted. Leaves ovate [or trilobulate], entire, obtuse to acuminate, often with abaxial foliar nectaries. Flowers large and showy, borne singly on axillary peduncles (sometimes aggregated

apically), sometimes with bracteate articulation; involucel of 3 to many elements, sometimes subtended by trimerous nectaries; calyx gamosepalous, truncate to 5-lobed; corolla yellow, [white, or rose,] with or without dark center; androecium pallid, usually included; style single, the stigmatic lobes decurrent. Fruits capsular, 3-5-celled, coriaceous or ligneous, [dehiscent or] indehiscent; seeds several per locule, glabrous or pubescent. 17 spp., pantropical.

Literature: Fosberg & Sachét, *Smithsonian Contr. Bot.* 7: 1-13 (1972). Fryxell, P.A. *Natural History of the Cotton Tribe*, 84-102 (1979).

1. Thespisia populnea (L.) Sol. ex Corr. Serr., *Ann. Mus. Nat. Hist. Paris* 9: 290, t.8, f.2 (1807). *Hibiscus populneus* L., *Sp. Pl.* 694 (1753). Lectotype (designated by Borssum Waalkes, 1966): Ceylon, herb. Hermann, vol. 4, fol. 34, Linn. no. 258 (BM). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 442, t. 110 (1988).

Trees 2-12 m, the young branches lepidote to glabrescent, the older trunks with fissured bark. Leaves ovate, deeply cordate, entire, acute or acuminate, glabrescent, minutely gland-dotted (especially on veins), with a nectariferous zone near base of midrib. Pedicels shorter than the corresponding petiole, solitary in the leaf axils, stout, erect; involucellar bracts 3, ligulate, irregularly inserted, deciduous; calyx 8-10 mm, truncate, lepidote; corolla 4-6 cm, yellow with maroon center, gland-dotted; staminal column c. half length of petals, glabrous; style exceeding androecium. Fruits 3-3.5 cm in diameter, oblate, indehiscent, leathery; seeds 8-9 mm, short-pubescent. $2n = 26$. *Littoral and mangrove habitats, sometimes cultivated as a shade tree.* QR (Cabrera & Cabrera 4725, MEXU); B (Dwyer 12386, MO); H (Blackmore & Heath 1853, BM); N (Sandino 2597, MO); CR (Neill 769, MO); P (D'Arcy & Hammel 12210, MO). 0-20 m. (Nearly pantropical strand plant.)

6. **Hampea** Schltdl.; jonote; majagua

By P.A. Fryxell.

Trees or shrubs, mostly dioecious, glabrescent or stellate-pubescent. Leaves elliptic, ovate, or weakly lobed, entire, minutely gland-dotted, with one or more abaxial foliar nectaries; stipules inconspicuous, deciduous. Flowers solitary or in axillary fascicles,

each flower subtended by an involucel of 3 inconspicuous bractlets, sometimes also by 3 involucellar nectaries; calyx gamosepalous, more or less truncate; petals white, reflexed, gland-dotted; staminate flowers with numerous exserted anthers, no gynoecium; pistillate flowers with rudimentary androecium, single recurved style, decurrent stigmatic lobes. Capsules densely puberulent, globose to elongate, dehiscent, 3-4-celled; seeds glabrous, arillate. 20 spp. from C. Mexico to Colombia, formerly placed in the Bombacaceae.

Literature: Fryxell, P.A. *Brittonia* 21: 359-396 (1969); *Natural History of the Cotton Tribe*, Texas A&M University Press, 72-79 (1979). Jones, R., P.A. Fryxell, and D.M. Baro. *Anales Inst. Biol. Univ. Nac. Autón. México, Ser. Bot.* 68: 21-42 (1997).

1. Foliar nectaries single, near base of midrib.
2. Leaves glabrescent, elliptic.
 3. Fruits 3 cm in diameter, greenish, solitary and pendent on elongated axillary pedicels (5-16 cm); petals 20-22 mm. **3. Hampea breedlovei**
 3. Fruits 1.5 cm in diameter, brownish, grouped on erect axillary pedicels (2-7 mm); petals 5-8 mm. **4. Hampea micrantha**
2. Leaves often densely and minutely pubescent beneath.
 4. Leaves trilobulate; pubescence of lower leaf surface coarse, the stellate hairs c. 0.5 mm in diameter. **6. Hampea trilobata**
 4. Leaves simple, ovate; pubescence of lower leaf surface very fine, the stellate hairs c. 0.1 mm in diameter. **5. Hampea ovatifolia**
1. Foliar nectaries 3 or more, usually more distally positioned.
 5. Leaves essentially glabrous or glabrescent.
 6. Leaves narrowly elliptic; pedicels 3-6 cm. **2. Hampea longipes**
 6. Leaves ovate; pedicels usually less than 3 cm.
 7. Fruits elongated (c. twice as long as broad); seeds 6-12 per locule.
 8. Petals 3 cm; flowers unisexual; leaves ciliate-margined; calyx yellowish-puberulent. **13. Hampea latifolia**
 8. Petals 1.5-2 cm; flowers perfect; leaves eciliate; calyx glabrescent. **14. Hampea rovirosae**
 7. Fruits subglobose; seeds 1-3 per locule.

9. Petals 5-8 mm; fruits 10-14 mm in diameter, yellowish-puberulent; seeds solitary. **10. Hampea sphaerocarpa**
9. Petals 10-15 mm; fruits 15-20 mm in diameter, greenish-puberulent; seeds 2-3 per carpel. **1. Hampea nutricia**
5. Leaves (at least the lower surface) manifestly pubescent.
10. Capsule elongated; seeds 8-10 per locule; flowers perfect; calyx transversely rugose; foliar nectaries 5-9, positioned 1/2-7/8 distance from base to tip of principal nerves. **15. Hampea platanifolia**
10. Capsule globose to somewhat obovoid; seeds usually fewer than 8 per locule, sometimes solitary; calyx smooth; foliar nectaries usually 3-5.
11. Capsules greenish at maturity.
12. Involucellar nectaries absent; involucel sometimes deciduous; seeds 1-2 per locule. **8. Hampea montebellensis**
12. Involucellar nectaries present; involucel persistent; seeds solitary. **7. Hampea bracteolata**
11. Capsules yellowish or brownish at maturity.
13. Leaves basally appendiculate.
14. Capsules yellowish. **16. Hampea punctulata**
14. Capsules brownish.
15. Leaves symmetrically lanceolate or ovate; stipules 3-9 mm; corolla 1-1.5 cm in diameter; filaments 4-5 mm; capsules 1-2.5 cm. **17a. Hampea appendiculata var. appendiculata**
15. Leaves asymmetrically elliptic or oblong; stipules less than 2 mm; corolla 2.5 cm in diameter; filaments 8-11 mm; capsules 2-3 cm. **17b. Hampea appendiculata var. longicalyx**
13. Leaves lacking basal appendages.
16. Flowers perfect; fruits brownish at maturity. **12. Hampea reynae**
16. Flowers unisexual; fruits yellowish at maturity.
17. Leaves c. as wide as long, somewhat 3-lobed; seeds 5-8 per locule; involucellar nectaries present. **11. Hampea mexicana**
17. Leaves c. twice as long as wide, ovate or elliptic; seeds 2-4 per locule; involucellar nectaries absent. **9. Hampea stipitata**

1. Hampea nutricia Fryxell, *Brittonia* 21: 372 (1969). Holotype: Mexico, Veracruz, Fryxell 526 (US!; isotypes: BH!, BM!, CTES!, F!, LE!, NY!, TAES!). N. v.: tecolistle (Ch).

Trees to 10 m, the young stems green, glabrescent, the bark grayish, gland-dotted more or less throughout. Leaves broadly ovate or slightly 3-lobed, about as broad as long, usually cordate, entire, acute or acuminate, glabrescent, with 5-7 small nectaries on principal nerves beneath. Pedicels 1-2.5 cm (in flower) to 1.5-4 cm (in fruit), yellowish-puberulent; involucellar nectaries absent; involucellar bracts 1-3(-8) mm, subulate, usually deciduous; calyx 4-8 mm, yellowish-puberulent, truncate; petals 1-1.5 cm; filaments (of staminate flowers) 5-9 mm. Capsule 1.5-2 cm, globose, greenish-puberulent; seeds c. 8 mm, 2-3 per carpel. $2n = 26$. *Lowland tropical rain forest, secondary forest, and disturbed sites.* T (Davidse et al. 29550, MO); Ch (Fryxell & Bates 883, BH). 0-1000 m. (E. Mexico, primarily in Veracruz.)

2. Hampea longipes Miranda, *Ceiba* 4: 133 (1954). Holotype: Mexico, Chiapas, Miranda 7769 (MEXU!; isotype: F!). Illustr.: Miranda, *Ceiba* 4: 134 (1954).

Trees 7-15 m, gland-dotted more or less throughout, the young stems brown-puberulent becoming glabrescent. Leaves narrowly elliptic (2.5-4 times as long as wide), cuneate, entire, acute or acuminate, essentially glabrous, without marginal cilia, with 3 small nectaries on principal veins beneath. Pedicels 3-6 cm, slender, somewhat puberulent to glabrescent; involucellar nectaries absent; involucellar bractlets 2-10 mm, subulate, persistent; calyx 4-8 mm, truncate, yellowish-puberulent basally, glabrescent on distal margin; petals 1-1.5 cm; staminal column c. 1 cm, the filaments (of staminate flowers) 5-8 mm. Capsules 1-2 cm, globose, greenish-puberulent; seeds 8-10 mm, solitary. *Evergreen rain forest.* Ch (Breedlove & Thorne 30758, LL); G (Steyermark 48709, F); H (Molina 30687, EAP). 900-1900 m. (Endemic.)

3. Hampea breedlovei Fryxell, *Phytologia* 37: 291 (1977). Holotype: Mexico, Chiapas, Breedlove & Smith 32601 (DS!; isotypes: DS!, MEXU!, MICH!, NY!, RSA!). Illustr.: Fryxell, *Phytologia* 37: 306, t. 3 (1977).

Trees to 7 m, the herbage glabrescent, gland-dotted more or less throughout. Leaves broadly elliptic (2-3 times as long as wide), truncate or cuneate, entire, acute or acuminate, glabrescent, with a small nectary near base of midrib beneath. Pedicels 3 cm (in flower) to 5-16 cm (in fruit), slender, solitary in the leaf axils; involucellar nectaries absent; involucellar bracts 1.5-2 mm, subulate, persistent; calyx 6-8 mm, truncate, basally puberulent, distally glabrescent; petals 20-22 mm, fringed and asymmetrically distorted distally; filaments (of staminate flowers) 4-7 mm. Capsules 3 cm, globose, pendulous, greenish-puberulent; seeds c. 1 cm, 2-3 per locule. *Rain forest*. Ch (Thorne & Lathrop 40375, LL). C. 1700 m. (Endemic.)

4. Hampea micrantha A. Robyns, *Ann. Missouri Bot. Gard.* 55: 53 (1968).

Holotype: Panama, Dressler 3227 (MO!).

Shrubs (or small trees) 1.5-4 m, the young stems puberulent but soon glabrescent, gland-dotted. Leaves lance-ovate or elliptic (c. twice as long as wide), truncate or cuneate, entire, acuminate, glabrescent, gland-dotted, with single nectary at base of midrib beneath. Flowers borne on short (4-6 mm) branched axillary peduncles, the pedicels 2-7 mm, brown-puberulent; involucellar nectaries absent; involucellar bracts 1-3 mm, subulate; calyces 3-4 mm, truncate, brown-puberulent; petals 5-8 mm, gland-dotted. Capsules 1.5 cm, globose to obovate, brown-puberulent; seeds 7-8 mm, 2 per locule. *Seasonally dry evergreen forest, rain forest, and cloud forest*. P (Mori & Kallunki 2168, MO). 150-900 m. (Endemic.)

5. Hampea ovatifolia Lundell, *Wrightia* 4: 140 (1970). Holotype: Guatemala, Contreras 8877 (LL!).

Shrubs or trees 3-12 m, gland-dotted more or less throughout, the twigs tomentulose. Leaves ovate, more or less truncate and minutely auriculate at base, entire, acuminate, very finely tomentulose beneath (hairs 0.1 mm in diameter), sparsely so above, discolorous, with a single foliar nectary at base of midrib beneath. Flowers 1-3 in the leaf axils; pedicels 1.5-2 cm, tomentulose; involucellar nectaries absent; involucellar bracts minute and inconspicuous; calyx 5-7 mm, truncate, tomentulose; petals c. 15 mm, gland-dotted; staminal column (of staminate flowers) 2 mm, the filaments 4-5 mm.

Capsules 1.5 cm, globose, woody; seeds 2-3 per locule. *Lowland rain forest.* B (*Dwyer 12622, MO*); G (*Lundell & Contreras 20168, LL*). 0-100 m. (Endemic.)

6. Hampea trilobata Standley, *Contr. U.S. Natl. Herb.* 23: 787 (1923). Holotype: Mexico, Campeche, *Goldman 488 (US!)*. N.v.: moho (Y).

Shrubs or trees 2-7(-10) m, gland-dotted more or less throughout, the twigs brown-tomentose, the bark grayish. Leaves usually truncate, variable in shape (ovate, elliptic, rotund, or obtriangular, often weakly 3-lobed), entire, acute to acuminate, discolorous, glabrescent above, pubescent beneath (stellate hairs 0.5 mm in diameter), with a single foliar nectary at base of midrib beneath. Pedicels 1.5-4 cm, slender, tomentose; involucellar nectaries absent; involucellar bracts 1-4 mm, linear, deciduous; calyx 4-7 mm, usually truncate, densely puberulent; petals 1-1.5 cm, gland-dotted; filaments (of staminate flowers) 3-5 mm. Capsules 1.5 cm, globose (often trigonally so), woody, externally gray-green-puberulent; seeds 4-5 mm, 3-4 per locule. *Lowland rain forest.* T (*Téllez & Martínez 908, MEXU*); Y (*Gaumer 845, MO*); C (*Goldman 488, US*); QR (*Sousa 11276, MEXU*); B (*Gentle 3356, MICH*); G (*Lundell & Contreras 20379, LL*). 0-100 m. (Endemic.)

7. Hampea bracteolata Lundell, *Wrightia* 5: 357 (1977). Holotype: Guatemala, *Lundell & Contreras 19756 (LL!)*.

Trees 7-15 m, gland-dotted more or less throughout, the stems brown-tomentose. Leaves lance-ovate to nearly elliptic, truncate to cuneate, entire, acuminate, glabrescent above, sparsely stellate-pubescent beneath (at least on nerves); foliar nectaries 3-5, obscure but present. Pedicels 2-3.5 cm, solitary or paired in the leaf axils, minutely puberulent; involucellar nectaries 3; involucellar bracts 6-9 mm, linear, persistent; calyx 6-8 mm, truncate (irregularly torn); petals c. 1.7 cm. Capsules c. 18 mm, subglobose, greenish-puberulent, 3-loculed; seeds c. 1 cm, apparently solitary. *Tall rain forest.* G (*Lundell & Contreras 21034, LL*). (Endemic.)

8. Hampea montebellensis Fryxell, *Phytologia* 37: 291 (1977). Holotype: Mexico, Chiapas, *Breedlove & Smith 32191 (DS!;* isotypes: MEXU!, MICH!, NY!). Illustr.: Fryxell, *Phytologia* 37: 307, t. 4 (1977).

Trees to 20 m, gland-dotted more or less throughout, the stems brown-puberulent. Leaves ovate-elliptic (2-3 times as long as broad), truncate, entire, acute to acuminate, glabrescent above, puberulent beneath, with 3 inconspicuous nectaries on principal veins beneath. Pedicels 3-5 cm long, 1-3 in the leaf axils, erect, densely puberulent; involucellar nectaries absent (?); involucellar bracts 5-6 mm, subulate, persistent or deciduous; calyx 5-8 mm, truncate, puberulent, becoming torn in fruit; flowers unknown. Capsules 1.5-2 cm, subspherical to ovoid, 3-loculed, externally green-puberulent, internally white-pubescent; seeds 8-10 mm, 1-2 per locule. *Rain forest.* Ch (Breedlove 41920, CAS). 900-1500 m. (Endemic.)

9. *Hampea stipitata* S. Watson, *Proc. Amer. Acad. Arts* 21: 460 (1886). Holotype: Guatemala, Watson 31 (GH!; isotype: K!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 186, t. 46 (1988).

Hampea euryphylla Standl.

Trees 5-20 m, gland-dotted more or less throughout, the stems brown-tomentose, the bark grayish. Leaves usually ovate (c. twice as long as wide), truncate, entire, acute or acuminate, tomentose, with 3-5(-7) nectaries on principal veins beneath. Pedicels c. 1 cm (in flower) to 3 cm (in fruit), densely yellowish brown-puberulent; involucellar nectaries absent; involucellar bracts 1-3 mm, subulate, often persistent; calyx 4-7 mm, truncate, puberulent basally, glabrescent on distal margin; petals 1 cm; filaments (of staminate flowers) 3-7 mm; style (of pistillate flowers) contorted, subequal to petals. Capsules 2-3.5 cm, globose, 3-loculed, externally yellow-puberulent; seeds 6-10 mm, 2-4 per locule. $2n = 26$. *Rain forest and pine-oak-Liquidambar forest.* Ch (Wendt et al. 2290, CHAPA); B (Dwyer 12317, MO); G (Lundell & Contreras 20701, LL); ES (Standley 19811, US). 250-1250 m. (Also in Veracruz and Oaxaca, Mexico.)

10. *Hampea sphaerocarpa* Fryxell, *Brittonia* 21: 380 (1969). Holotype: Honduras, Standley 52744 (F!).

Shrubs or trees 3-10 m, the stems puberulent. Leaves ovate, truncate, entire, acute or acuminate, sparsely puberulent to glabrescent beneath, glabrescent above, with 5-7 inconspicuous nectaries on principal veins beneath. Pedicels 0.5-1.5 cm (in flower) to 1-2.5(-4) cm (in fruit), puberulent, fasciculate in the leaf axils; involucellar nectaries

absent; involucellar bracts 1-2 mm, subulate, usually deciduous; calyx 3-5 mm, truncate, puberulent (except glabrous on distal margin); petals 5-8 mm, reflexed, with relatively few gossypol glands; filaments (of staminate flowers) 5-6 mm. Capsules 10-14 mm, globose, yellow-puberulent externally; seeds 7-8 mm, solitary. *Rain forests.* H (Fryxell 2819, F); G (Steyermark 41838, GH). 0-300(-900) m. (Endemic.)

11. Hampea mexicana Fryxell, *Brittonia* 21: 380 (1969). Holotype: Mexico, Oaxaca, Conzatti, Reko & Makrinius 3292 (US!); isotype: MICH!).

Trees 7-10 m, the stems densely fulvous-puberulent. Leaves broadly ovate (about as wide as long) to somewhat 3-lobed, cordate, entire, acute or acuminate, roughly pubescent above and beneath, with 1-5 small nectaries on principal veins beneath. Pedicels c. 1 cm (in flower) to 4 cm (in fruit), pubescent, becoming stout in fruit; involucellar nectaries prominent; involucellar bracts 4-8 mm, linear; calyx 5-12 mm, truncate, densely puberulent; petals 1.5 cm. Capsules 2.5-3.5 cm, ovoid or globose, 3-loculed, externally yellow-puberulent, internally glabrous; seeds 5-8 per locule.

Deciduous forest, seasonal evergreen forest, and rain forest. Ch (Miranda 7580/6, US); G (Aguilar 150, F). 100-1500 m. (Also in Oaxaca, Mexico.)

12. Hampea reynae Fryxell, *Syst. Bot.* 5: 442 (1980). Holotype: El Salvador, Reyna & Castro 129643 (MO!). Illustr.: Fryxell, *Syst. Bot.* 5: 443, t. 1 (1980).

Trees c. 8 m, the stems brown-puberulent. Leaves commonly 3-lobed (or simple and ovate), cordate, entire, c. as wide as long, acuminate, more or less stellate-pubescent, with 3 foliar nectaries near base of principal nerves beneath. Pedicels 0.5-1.5 cm, puberulent, 1-3 in the leaf axils; involucellar nectaries absent; involucellar bracts 5-9 mm, filiform; flowers perfect; calyx 7-10 mm, brown-puberulent, subtruncate (5 obscure teeth present); petals 1.5-2 cm, gland-dotted; androecium c. half length of petals; style exceeding androecium. Capsules 2-2.5 cm, subglobose, 3-loculed, externally brown-puberulent; seeds 9 mm, 2 per locule. *In transition zone between oak-pine forest and cloud forest.* ES (Reyna 1227, MO). C. 2000 m. (Endemic.)

13. Hampea latifolia Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 22: 90 (1940). Holotype: Guatemala, Hatch & Wilson 383 (F!).

Shrubs or small trees to 6 m, the herbage glabrescent more or less throughout. Leaves broadly ovate (sometimes weakly trilobulate), deeply cordate, entire, acute or abruptly acuminate, minutely ciliate-margined, with 3-5 small nectaries on principal veins beneath. Pedicels 0.5-2 cm (in flower) to 3 cm (in fruit), stout and woody; involucellar nectaries 3, somewhat irregularly inserted; involucellar bracts 5-7 mm, linear, puberulent, deciduous; calyx 7-12 mm, yellowish-puberulent, obsoletely 5-dentate; petals 3 cm, gland-dotted; staminal column (of staminate flowers) 4-5 mm, the filaments 4-10 mm. Capsules 3.5-4.5 × 1.5-2 cm, 3(-4)-loculed, externally yellow-green puberulent; seeds c. 8 mm, 8-12 per locule. *Lowland forest remnants of Soconusco region.* Ch (Fryxell 3218, MEXU); G (Standley 87993, US). 100-300 m. (Endemic.)

14. Hampea rovirosae Standley, *J. Wash. Acad. Sci.* 17: 397 (1927). Holotype: Mexico, Tabasco, *Rovirosa* 586 (US!); isotypes: K!, NY!, PH!). N.v.: majagua de playa (T).

Hampea macrocarpa Lundell.

Shrubs or small trees 2-7 m, gland-dotted more or less throughout, the herbage essentially glabrous (except meristems). Leaves broadly ovate (as broad as long) or weakly 3-lobulate, cordate, entire, acuminate, glabrous, with 3-5 small nectaries on principal nerves beneath. Pedicels 1-1.5 cm (in flower) to 1-3 cm (in fruit), usually solitary, glabrous; involucellar nectaries prominent, 3(-4), usually irregularly inserted; involucellar bracts minute, subulate, very early deciduous; flowers perfect; calyx 6-9 mm, often 5-toothed, glabrescent; petals 1.5-2 cm; filaments 3-6 mm. Capsules 3-3.5 × 1.5-2 cm, 3(-4)-loculed, obtuse or retuse, externally yellow-puberulent, internally glabrous; seeds 6-8 per locule. *2n = 26. Lowland forest remnants, river banks, and disturbed sites.* T (Wendt et al. 2369, CHAPA); Ch (Matuda 2676, MICH); G (Steyermark 46016, F). C. 100 m. (Endemic.)

15. Hampea platanifolia Standley, *J. Wash. Acad. Sci.* 17: 317 (1927). Holotype: Costa Rica, *Tonduz* 11667 (US!).

Small trees or large shrubs to 7 m, the young stems angular, brown-puberulent. Leaves 3-5-lobed, deeply cordate, entire, acute or obtuse, puberulent to glabrescent, with 5-9 elongate (2-8 mm) foliar nectaries on principal nerves beneath, all distally placed.

Pedicels 0.5-2 cm (in flower) to 2-3 cm (in fruit), densely yellow-puberulent, angular; involucellar nectaries 3, prominent; involucellar bracts 3-8 mm, linear to triangular, deciduous; flowers perfect; calyx 8-10 mm, yellow-puberulent, transversely rugose, minutely 5-toothed; petals 1.5-2 cm, gland-dotted; filaments to 8 mm; style and decurrent stigmatic lobes not exceeding androecium. Capsules 3-4.5 × 1.5-2 cm, 3-loculed, yellow-green puberulent; seeds 5-7 mm, 8-10 per locule. *Evergreen forest.* N (*Stevens 12000*, MO); CR (*Williams et al. 28485*, US); P (*Croat 22049*, MEXU). 0-1800 m. (Endemic.)

16. *Hampea punctulata* Cuatrecasas, *Phytologia* 4: 472 (1954). Holotype: Colombia, *Haught 4968* (US!).

Hampea dukei Robyns.

Trees up to 30 m, the young branches densely brown-puberulent. Leaves ovate to elliptic (c. 1.5 times as long as wide), with small auriculate appendages near base of blade, somewhat asymmetrical, truncate or slightly cuneate, entire, acute to acuminate, discolored (brown-puberulent beneath), with 3-5 foliar nectaries on principal nerves beneath. Pedicels 1.5-2 cm (in flower) to 2-3 cm (in fruit), brown-puberulent; involucellar nectaries sometimes present; involucellar bracts 1 mm, triangular, puberulent; calyx 5-8 mm, puberulent; petals 2 cm, reflexed, sparsely gland-dotted; filaments (of staminate flowers) 9-10 mm. Capsules 2.5 × 1.5 cm, obovoid, yellow-puberulent; seeds unknown. *Rain forest.* CR (*Grayum & Jacobs 3544*, MO); P (*Croat 25969*, MO). 100-900 m. (Also in Colombia.)

17a. *Hampea appendiculata* (J.D. Smith) Standley var. **appendiculata**, *J. Wash. Acad. Sci.* 17: 395 (1927). *Hampea integerrima* Schleidl. var. *appendiculata* J.D. Smith, *Bot. Gaz.* 27:331 (1899). Lectotype (designated by Fryxell, 1969b): Costa Rica, *Tonduz 7379* (US!).

Hampea panamensis Standley.

Shrubs or trees to 18 m, the young branches brown-puberulent, the bark roughened, dark brown. Leaves symmetrically ovate to lanceolate, truncate and with auriculate appendages at base of blade, entire, acute to acuminate, densely puberulent beneath, with 3-5(-7) foliar nectaries on principal veins beneath; stipules 3-9 mm. Pedicels 0.5-2 cm (in flower) to 1-5 cm (in fruit), in axillary cluster of 2-6, brown-puberulent; involucellar

nectaries absent; involucellar bracts adnate to (inserted on) calyx, deciduous; calyx usually 5-6 mm, brown-puberulent, truncate; corolla 1-1.5 cm in diameter, gland-dotted; filaments (of staminate flowers) 4-5 mm. Capsules 1-2.5 cm, brown-puberulent, 3-loculed; seeds 5-9 mm. *Rain forest.* H (*Blackmore & Heath 1685*, BM); N (*Sandino 3296*, MO); CR (*Liesner & Judziewicz 14998*, MO); P (*Croat 13218*, MO). 0-2000 m. (Endemic.)

17b. Hampea appendiculata (J.D. Smith) Standley var. **longicalyx** Fryxell, *Brittonia* 21: 391 (1969). Holotype: Panama, *Salvoza* 985 (GH!).

Leaves elliptic or oblong, more or less asymmetrical (especially as indicated by position of foliar nectaries); stipules 1-2 mm. Involucellar nectaries sometimes present; corolla 2.5 cm in diameter; filaments (of staminate flowers) 8-11 mm. Capsules 2-3 cm. Otherwise as in nominate variety. *Rain forest.* P (*Mori & Kallunki 3587*, MO). 0-1000 m. (Endemic.)

7. **Gossypium** L.; algodón

By P.A. Fryxell.

Shrubs or trees, stellate-pubescent or glabrescent, gland-dotted more or less throughout. Leaves ovate, weakly lobed, or deeply parted, entire, with one or more adaxial foliar nectaries (these rarely absent); stipules subulate to falcate, sometimes prominent. Flowers solitary in the axils or in sympodial inflorescences; pedicels usually surmounted by trimerous nectaries; involucel of 3 bracts that are often cordate, foliaceous, and laciniate or entire (sometimes much reduced); calyx gamosepalous, truncate or 5-dentate; corolla cream, yellow, [or rose,] sometimes with a dark center, campanulate; androecium included, the anthers numerous; style single, the stigmatic lobes decurrent. Capsules glabrous, 3-5-celled, often prominently gland-dotted; seeds lanate (sometimes subglabrous). C. 50 spp. from North and South America (especially Mexico), Africa and the Middle East, and Australia; several spp. are in cultivation as commercial cotton. Literature: Fryxell, P.A. *The Natural History of the Cotton Tribe*. Texas A. & M. University Press (1979); *Rheedia* 2: 108-165 (1992).

1. Capsules 3-celled, narrowly ovoid to elongate, pitted; calyx to 10 mm, truncate; stipules 1-5 cm; leaves 3-7-lobed, the central lobe ovate to lanceolate, usually more than 1.5 times as long as wide. **1. *Gossypium barbadense***
1. Capsules 3-5-celled, ovoid or subglobose, smooth; calyx usually less than 6 mm (excluding teeth), truncate or with acute lobes or acuminate teeth; stipules 0.5-1.5(-2) cm; leaves 3-5-lobed, the central lobe triangular to ovate, usually 1-1.5 times as long as wide. **2. *Gossypium hirsutum***

1. *Gossypium barbadense* L., *Sp. Pl.* 693 (1753). Lectotype (designated by Fryxell, 1968): Plukenet, *Phytographia*, t.188. f.1 (1692). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 114 (1892).

Gossypium acuminatum Roxb. ex G. Don, *G. peruvianum* Cav., *G. tridens* Cook & Hubbard, *G. vitifolium* Lam.

Shrubs 1-3 m tall, sometimes arborescent, sparsely stellate-pubescent to glabrescent. Leaves palmately 3-7-lobed, the lobes ovate to lanceolate; stipules 1-5 cm, subulate to falcate, often prominent. Involucellar bracts broadly ovate, foliaceous, laciniate; calyx to 10 mm, truncate; petals up to 8 cm, usually yellow with dark red spot at base. Capsule 3-celled, glabrous, prominently pitted, narrowly ovoid to elongate; seeds several per locule, free or fused together, lanate, the seed hairs (cotton) usually white. $2n = 52$. *In garden or houseyard cultivation.* T (Cowan 1854, CSAT); Ch (Miranda 7169, MEXU); H (Fryxell 2812, F); N (Ortíz 2175, MO); CR (Tonduz 11407, US); P (Hartman 12018, MO). 0-500 m. (South America, distributed widely in cultivation.)

2. *Gossypium hirsutum* L., *Sp. Pl.* ed. 2. 975 (1763). Lectotype (designated by Borssum Waalkes, 1966): Chelsea Physic Garden ex Carolina, *Miller s.n.* (BM-Sloane herb.vol. 294, fol. 45). Illustr.: Fryxell, *Fl. Bajío* 16: 56 (1993). N.v.: algodón; variable (N).

Gossypium mexicanum Tod., *G. nicaraguense* Ramírez-Goyena, *G. schottii* G. Watt, *G. volubile* Ramírez-Goyena.

Shrubs 1-2 m (or more) tall, more or less stellate-pubescent. Leaves weakly 3-5-lobed, cordate, the lobes triangular to ovate, entire, acute to acuminate; stipules 0.5-1.5(-2) cm, subulate. Flowers usually in sympodial inflorescences; pedicels 2-4 cm;

involucellar nectaries 3; involucellar bracts ovate, foliaceous, 3-19-laciniate; calyx 5-6 mm, truncate or 5-toothed; petals up to 5 cm, pale yellow or cream-colored, with or without dark basal spot; androecium included. Capsules 3-5-celled, glabrous, smooth, broadly ovoid or subglobose; seeds several per locule, lanate, the seeds hairs (cotton) white, tan, or red-brown. $2n = 52$. *In houseyard or field cultivation, sometimes naturalized on roadsides and disturbed sites.* T (Fryxell 689, MEXU); Ch (Breedlove 36885, CAS); Y (Davidse 29480, MO); C (Rzedowski 26379, ENCB); QR (Cabrera 381, MEXU); B (Dieckmann 224, MO); G (Fryxell 1193, F); ES (Tucker 838, PH); H (Molina, 1975); N (Stevens 17124, MO); CR (Khan et al. 491, BM); P (Croat 21898, MO). 0-1000 m. (World-wide in cultivation in suitable climates.)

The lectotype designated by Borssum Waalkes (1966) is confusingly cited by him as from Carolina and as collected by the Duchess of Beaufort, when in fact it was from cultivation and collected by Phillip Miller. The particulars of this situation are discussed more fully by Watt (1907: 184) and Fryxell (1968: 382-383).

8. Cienfuegosia Cav.

By P.A. Fryxell.

Perennial herbs or subshrubs, the stems procumbent, ascending, or erect, glabrous or pubescent, more or less gland-dotted. Leaves linear, elliptic, digitately divided, or reniform, entire or serrate, pubescent to glabrous, with or without adaxial foliar nectaries. Pedicels solitary or sympodial in the leaf axils, with or without trimerous involucellar nectaries; involucel of 9-10 bractlets [sometimes suppressed]; calyx 5-lobed, usually prominently gland-dotted; petals yellow, pink, or purple, with or without dark basal spot; style single, sometimes divided apically; stigmas 3(-5), [capitate or] decurrent. Capsules 3(-5)-locular, glabrous or pubescent; seeds several per locule, densely sericeous to minutely puberulent. 25 spp. from Florida, Mexico, the West Indies, Venezuela, Ecuador, Peru, Brazil, Paraguay, and Argentina; also in Africa and the Arabian peninsula.

Literature: Fryxell, P.A. *Ann. Missouri Bot. Gard.* 56: 179-250 (1969).

1. Cienfuegoscia yucatanensis Millsp., *Publ. Field Mus. Nat. Hist., Bot. Ser. 2: 74* (1900). Holotype: Mexico, Yucatán, *Millspaugh 1693* (F!). Illustr.: Fryxell, *Ann. Missouri Bot. Gard.* 56: 236, t. 20, E-G (1969a).

Erect perennial herbs or subshrubs, c. 0.5 m tall, gland-dotted more or less throughout (most prominently on calyx), the stems angulate, glabrous. Leaves oblong-lanceolate, 4-10 times as long as wide, entire, acute, glabrous. Pedicels 1-5 cm (subequal to leaf), solitary in the leaf axils; involucellar nectaries present or absent; involucellar bracts 6-9, 0.5-2 mm, subulate; calyx 8-12 mm, deeply divided, glabrous, costulate; petals 1-2 cm, yellow; staminal column half length of petals; style single, pallid, the stigmatic lobes decurrent. Capsules 6-8 mm, ovoid, 3-locular, externally glabrous, internally ciliate along suture of dehiscence; seeds 2-3 mm, densely lanate, the hairs 4-5 mm, brownish. $2n = 20$. *Open vegetation, usually near the coast.* Y (Lundell & Lundell 8017, MICH). 0-100 m. (Florida Keys, Cuban Cayos, Bahamian Archipelago, and Yucatan.)

9. Malvaviscus Fabr.; amapola; manzanilla, monacilla

By P.A. Fryxell.

Branching shrubs or small trees, sometimes scandent, pubescent or glabrous. Leaves elliptic, ovate, or 3-5-lobed, truncate or cordate. Flowers solitary in the leaf axils or sometimes in cyme-like groups; involucellar bracts usually 8-9, linear, lanceolate, or spatulate; calyx gamosepalous, campanulate or tubular, 5-lobed; petals usually red (rarely white), auriculate at the base, erect forming a tubular corolla; androecium usually exserted, the filaments short and retrorse; styles 10 with capitate stigmas. Fruits a fleshy schizocarp or berry, usually red (sometimes white), with 5 carpels, each 1-seeded. C. 10 spp., S. United States to Brazil and Peru, with one sp. pantropical in cultivation.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 288-298 (1988). Schery, R.W. *Ann. Missouri Bot. Gard.* 29: 183-244 (1942). Turner, B.L. and M. Mendenhall. *Ann. Missouri Bot. Gard.* 80: 439-487 (1993).

The spp. of *Malvaviscus* are not well distinguished, and individual specimens are often difficult to place. The following treatment attempts to recognize the most easily discerned forms, but recognizes that there is some intergradation and a residue of

variation that is not fully accounted for, much of it encompassed in the polymorphic *M. arboreus* and *M. concinnus*, which Mexican and South American spp. (respectively) overlap to some extent in Mesoamerica.

1. Androecium equaling corolla or barely exserted; calyx 15-18 mm, glabrous or with a few cilia on tips of lobes; leaves lance-ovate, glabrescent; plants only in cultivation, sterile, flowering freely (the flowers pendent) but not fruiting.

1. *Malvaviscus penduliflorus*

1. Androecium manifestly exserted; calyx usually less than 15 mm (if longer, then hirsute), hirsute to glabrescent; leaves variously shaped, often pubescent; plants with usually erect flowers, producing at least occasional fruits.
2. Calyx 16-19 mm, yellowish, densely and coarsely hirsute (hairs 1-2 mm); stems and petioles densely and uniformly pubescent (hairs 1-2 mm).

2. *Malvaviscus achanoides*

2. Calyx 7-15(-17) mm, green or somewhat yellowish, glabrous or pubescent (if pubescent, the hairs either sparse or less than 1 mm); stem pubescence like calyx pubescence.
3. Leaves elliptic, relatively large, broadest at the middle, the secondary nerves mostly at right angles to the 3 primary nerves. **3. *Malvaviscus palmanus***
3. Leaves lanceolate to ovate, broadest below the middle, occasionally at right angles but usually at acute angles to the primary nerves.
4. Involucellar bracts usually 2-3 mm wide; fruits white; calyx long-cylindric, enclosing and contracted above the fruit. **4. *Malvaviscus concinnus***
4. Involucellar bracts usually 1-2 mm wide; fruits red; calyx short-cylindric or campanulate, barely exceeding the fruit. **5. *Malvaviscus arboreus***

1. *Malvaviscus penduliflorus* DC., *Prodr.* 1: 445 (1824). *Malvaviscus arboreus* var. *penduliflorus* (DC.) Schery. Type: *Icones Florae Mexicanae* no. 100! (Torner Collection acc. no. 6331.1712, Hunt Institute). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 238, t. 93 (1989). N.v.: amapola (CR); tulipán.

Malvaviscus arboreus var. *longifolius* (Garcke) Schery, *M. longifolius* Garcke non (St.-Hil.) Spach.

Shrubs 1-3 m tall, sparsely pubescent (the hairs recurved) to glabrescent. Leaves lanceolate to ovate, truncate, crenate-serrate, acute or acuminate, glabrescent. Flowers pendent, solitary in the leaf axils or grouped apically; pedicels 2-4 cm, with recurved pubescence; involucellar bracts equaling or shorter than the calyx, spatulate, marginally ciliate; calyx 15-18 mm, tubular, often yellowish with darker veins, 5-lobed, the tips of the lobes ciliate, otherwise glabrous; petals usually 6 cm; androecium equaling corolla or slightly exserted, glabrous; styles often exserted. Fruits unknown. $2n = c. 28$. *Unknown outside of cultivation or former cultivation.* Ch (*Calzada 3493, XAL*); H (*Molina, 1975*); N (*Fryxell 2873, NY*); CR (*Khan et al. 294, BM*). (Pantropical in cultivation.)

Like many ornamentals, this species is more widely grown than the few herbarium specimens indicate.

2. *Malvaviscus achanoides* (Turcz.) Fryxell, *Syst. Bot.* 4: 253 (1979).

Abelmoschus achanoides Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 31: 196 (1858). Isotype: Mexico, Tabasco, *Linden* 938 [cited as "838" by Turczaninow] (photo F-23734! ex G, K, LE).

Malvaviscus cutteri Standley.

Shrubs 3-4 m tall, sometimes scandent, the stems and petioles densely pubescent, the hairs 1-2 mm. Leaves ovate or lanceolate, truncate, crenate-serrate to subentire, acuminate to acute, stellate-pubescent (especially on veins) above and beneath, sparsely so above. Pedicels 0.5-1.5 cm, erect; involucellar bracts c. 1 cm, linear, hirsute; calyx 16-19 mm, tubular, markedly and evenly hirsute (hairs 1-2 mm), yellowish with green veins; petals 4 cm, pink or red; staminal column 5.5-6 cm, exserted, the anthers purplish, the filaments 1 mm; styles slightly exceeding the androecium, the stigmas dark red. Fruits oblate, enclosed in calyx. *Rain forest.* T (*Cowan 3318, NY*); Ch (*Fryxell & Bates 888, CAS*); G (*Martínez et al. 23588, MO*); H (*Standley 54127, F*); CR (*Kress & Tuxill 94-4764, US*). 150-1000 m. (Veracruz, Mexico to Costa Rica.)

3. *Malvaviscus palmanus* Pittier & J.D. Smith, *Bot. Gaz.* (Crawfordsville) 23: 238 (1897). *Malvaviscus arboreus* var. *palmanus* (Pittier & J.D. Smith) Schery. Type: Costa Rica, *Tonduz* 9712 (US!). N.v.: amapola (CR); amapolilla (CR).

Shrubs or small trees 1-6 m tall, sparsely pubescent. Leaves elliptic (broadest at the middle), truncate or subcuneate, obscurely serrate or nearly entire, acuminate, sparsely pubescent to nearly glabrous, palmately 3-veined, the secondary nerves mostly at right angles to the primary nerves. Pedicels 1.5-2 (-4) cm, solitary in the leaf axils, hirsute; involucellar bracts subequal to calyx or somewhat shorter, 1.5-2.5 mm wide, linear; calyx 1.5 cm, c. half-divided, enclosing fruit, the lobes costate, hirsute; petals 3.5-4 cm, red; androecium exserted. Fruits oblate, 10-12 mm in diameter. *Rain forest and cloud forest.* N (Stevens 9604, MO); CR (Croat 46933, MO). 600-1800 m. (Endemic.)

4. *Malvaviscus concinnus* Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 286 [folio ed. p. 222] (1822). Holotype: "prope Loxam peruvianorum" [= Loja, Ecuador], *Humboldt & Bonpland s.n.* (microfiche! ex P-HBK). Illustr.: Fryxell, *Fl. Ecuador* 44: 77, t. 9 (1992a).

Malvaviscus spathulatus Garcke, *M. speciosus* Linden & Planchon ex Martius, *M. velutinus* Triana & Planchon.

Shrubs or small trees 1-8 m tall, the stems coarsely stellate-pubescent. Leaves ovate, usually longer than broad, truncate, obscurely to manifestly serrate, acuminate, palmately 5-7-nerved, stellate-pubescent (more sparsely so above than beneath). Pedicels 2.5 cm, solitary in the leaf axils or aggregated apically, coarsely stellate-pubescent; involucellar bracts subequal to calyx or somewhat shorter, 2-3 mm wide (rarely narrower), linear to spatulate, coarsely pubescent; calyx 12-17 mm in flower to 21 mm in fruit, coarsely stellate-pubescent; petals 3.5-4.5 cm, red, forming a tubular corolla; androecium manifestly exserted by 1-1.5 cm, the anthers purplish; styles glabrous, exserted. Fruits 1.5-2 cm in diameter, oblate, white. *Rain forest and cloud forest, secondary growth.* CR (Skutch 2368, US); P (Mori & Kallunki 2554, MO). 700-2000 m. (Central America, Colombia, Venezuela, Ecuador, Peru, Brazil.)

5. *Malvaviscus arboreus* Cav., *Diss.* 3: 131, t.48. f.1 (1787). *Hibiscus malvaviscus* L., *Sp. Pl.* 694 (1753) Syntype: "Hibiscus malvaviscus" (microfiche! ex LINN-875.22). Illustr.: Robyns, *Fl. Panama, Ann. Missouri Bot. Gard.* 52: 521, t. 4 (1966). N.v.: amapola (CR); obelisco; tulipancillo.

Malvaviscus lanceolatus Rose.

Shrubs 1.5-2.5 m tall, densely pubescent. Leaves elliptic, ovate, or more or less lobed, truncate or cordate, crenate, acute or acuminate, densely and softly tomentose especially beneath. Flowers solitary in the axils or grouped apically; pedicels 1-3 cm; involucellar bracts subequal to the calyx or a little shorter, lanceolate; calyx 10-15 mm, tubular, yellowish; petals 3-3.5 cm, red; androecium 4-6 cm, exserted, glabrous, the anthers purplish; styles slightly exserted from column. Fruits 1 cm in diameter, oblate, red. *Pine-oak forest, deciduous forest, rarely cloud forest, dry matorral, roadsides, sometimes cultivated.* T (*Menendez* 396, MEXU); Ch (*Breedlove* 37717, DS); Y (*Gaumer* 23686, F); C (*Dwyer* 14535, MO); QR (*Tellez* 3616, MEXU); G (*Contreras* 10387, LL); H (*Fryxell* 2807, F); ES (*Rohweder* 3079, MO); N (*Stevens* 17312, MO); CR (*Khan et al.* 1121, BM); P (*Blum & Tyson* 635, MO). 0-2000 m. (Mexico, West Indies, Colombia.)

10. Pavonia Cav., nom. cons.

Malache Vogel in Trew

By P.A. Fryxell.

Prostrate perennial herbs, erect subshrubs, or shrubs, often stellate-pubescent, sometimes viscid, sometimes glabrescent. Leaves ovate-elliptic, lanceolate, oblanceolate, deltate, sometimes lobed, sometimes asymmetrical, dentate or crenate (rarely entire). Flowers solitary or paired in the leaf axils or aggregated in racemes, panicles, or heads; involucellar bracts 4-24, the bracts distinct or basally connate; calyx gamosepalous, 5-lobed; petals white, lavender, purple, or yellow, sometimes with a basal spot; androecium included or exserted, sometimes declined with secund anthers; styles 10, exceeding the androecium; stigmas capitate. Fruits schizocarpic, dry, minutely pubescent or glabrous; mericarps 5, usually indehiscent, sometimes winged, 3-spined, rugose, or otherwise ornamented, the seeds solitary. C. 250 spp., over half of which are South American; extending northward through Mexico to S. United States and the West Indies; also Africa, Asia.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 309-342 (1988); *Fl. Neotrop.* *Monogr.* 76: 1-285 (1999). Kearney, T.H. *Leafl. W. Bot.* 7: 122-130 (1954); 8: 225-246 (1958).

1. Mericarps with 3 apical spines (reduced to cusps in *P. submutica*), these usually retrorsely barbed.
2. Corolla yellow; leaves ovate; spines on mericarps reduced to cusps, scarcely if at all barbed. **8. Pavonia submutica**
2. Corolla white, pink, or reddish; leaves oblanceolate or obovate; mericarps 3-spined, the spines retrorsely barbed.
 3. Flowers axillary, among the leaves; fruits 10-13 mm in diameter.
 4. Involucellar bracts 11-13, 3-4 times longer than calyx, ciliate; petals white. **7. Pavonia oxyphyllaria**
 4. Involucellar bracts ca. 8, subequal to calyx, pubescent; petals reddish. **6. Pavonia penduliflora**
 3. Flowers in inflorescences (heads, racemes or panicles), rising above the leaves; fruits 5-13 mm in diameter.
 5. Leaves subentire; fruits 9-13 mm in diameter; corolla 12-20 mm. **5. Pavonia integrifolia**
 5. Leaves manifestly serrate; fruits 5-9 mm in diameter; corolla 6-12 mm.
 6. Involucellar bracts 4-6, each 2-4 mm wide; spines of mericarps crowded apically. **2. Pavonia fruticosa**
 6. Involucellar bracts 7-11, each 0.5-2 mm wide; lateral spines of mericarp separated from apical central spine.
 7. Upper leaf surface with appressed simple hairs 0.5-2 mm. **4. Pavonia peruviana**
 7. Upper leaf surface with stellate hairs or subglabrous (if hairs simple, then less than 0.5 mm).
 8. Calyx clearly visible through sinuses of involucel, the bracts usually 1 mm wide or less, 4-8 mm long; mericarp body 5-6 mm, smooth. **1. Pavonia schiedeana**
 8. Calyx essentially hidden by involucel, the bracts 1.5 mm wide, 8-10 mm long; mericarp body 6-9 mm, with relatively prominent venation. **3. Pavonia castaneifolia**
 1. Mericarps smooth, rugose, or winged but not spined.

9. Plant decumbent, the leaves more or less deltate, asymmetrical; involucellar bracts c. 15, linear, arcuate, ciliate (hairs 2 mm). **9. Pavonia cancellata**
9. Plants more or less erect, the leaves ovate, symmetrical; involucellar bracts various.
10. Corolla white.
11. Petals 4-8 mm; involucellar bracts 7-9 mm, 6-8. **14. Pavonia alba**
11. Petals 30-40 mm; involucellar bracts 10-20 mm, 5. **15. Pavonia macdougallii**
10. Corolla red, lavender, yellow (or greenish yellow), or white (if white, then c. 12 mm).
12. Corolla yellow with dark red center; involucellar bracts 6, broadly lanceolate (2.5-4 mm wide). **10. Pavonia sidifolia**
12. Corolla red, lavender with darker center, yellow without dark center, or white; involucellar bracts 7-24, ligulate or lanceolate.
13. Involucellar bracts 12-18(-24); calyx concealed by involucel; petals 3-5 cm, rose or red; fruits viscid, blackish at maturity.
14. Involucellar bracts 12-13; petals 3.5-5 cm; androecium slightly exserted; leaves longer than wide. **16. Pavonia dasypetala**
14. Involucellar bracts 15-18(-24); petals c. 3 cm; androecium manifestly exserted; leaves as wide as long. **16. Pavonia malacophylla**
13. Involucellar bracts 7-10; calyx visible; corolla 1-3 cm, lavender, white, yellow, or yellow-green; fruits neither viscid nor blackish.
15. Corolla lavender or white; stems viscid and sometimes with simple hairs 2-3 mm.
16. Corolla lavender; stems with simple hairs 2-3 mm long in addition to minute glandular hairs; fruits pubescent. **11. Pavonia purpusii**
16. Corolla white; stems lacking long simple hairs; fruits glabrous or pubescent.
17. Fruits pubescent; calyx 7-9 mm with dense cilia 1.5 mm long; involucel viscid and pilose with hairs 1-2 mm long, especially at base. **13. Pavonia spuria**
17. Fruits glabrous; calyx 6-7 mm long with sparse cilia 1 mm long; involucel viscid. **12. Pavonia fonsecana**

15. Corolla yellow or yellowish green; stems viscid or not, lacking long simple hairs.

18. Flowers and fruits borne on leafless terminal racemes; petals 15-25 mm, yellowish green, erect; plants not viscid, of mangrove habitats.

19. Leaves ovate, cordate, palmately 5-7-nerved, c. twice as long as wide; pedicels 1-4 cm; fruits glabrous.

21. *Pavonia paludicola*

19. Leaves narrowly elliptic, palmately 3-nerved, 3-4 times as long as wide; pedicels 0.5-1.5 cm; fruits obscurely pubescent.

22. *Pavonia rhizophorae*

18. Flowers and fruits axillary or in paniculate inflorescences, usually leafy; petals 10-15 mm, yellow, spreading; plants sometimes more or less viscid, of upland habitats.

20. Involucellar bracts 10-12; plants pubescent but not viscid.

20. *Pavonia corymbosa*

20. Involucellar bracts 7-9; plants more or less viscid.

21. Stipules linear, erect; involucel c. twice length of calyx.

18. *Pavonia monticola*

21. Stipules falcate, recurved; involucel subequal to calyx.

19. *Pavonia paniculata*

1. *Pavonia schiedeana* Steudel, *Nomencl. Bot.* ed. 2. 2: 279 (1841). Lectotype (designated by Fryxell, 1999): Mexico, Veracruz, *Schiede s.n.* (GOET!; isotypes: photo F-9467! ex B, U!). N.v.: cadillo (T); mozote (B, G, H).

Malache rosea (Schltdl.) Kuntze, *Pavonia rosea* Schltdl. non Wallich ex Moris.

Subshrubs or shrubs 1-2 m tall, minutely stellate-pubescent. Leaves elliptic, oblong, or obovate, truncate, crenate-dentate, acute, slightly discolored, sparsely and minutely stellate-pubescent, palmately 3-nerved. Peduncles axillary, sometimes exceeding the corresponding leaf, with a dense head-like inflorescence that is actually a condensed raceme; pedicels up to 12 mm but usually shorter; involucellar bracts 4-8 mm long, 1 mm wide or less, exceeding the calyx, c. 8, basally gamophyllous; calyx 4-5 mm; petals 6-9 mm, pink; androecium subequal to the petals. Fruits 6-8 mm in diameter; mericarps 5-6 mm long (excluding spines), indehiscent, dorsally smooth, each mericarp with 3

retrorsely barbed spines 2.5-5 mm, the central one the longest, dorsally smooth; seeds 4.5 mm, glabrous. *Evergreen forest, pine-oak forest, stream banks, secondary growth, roadsides, fence rows.* T (*Conrad & Conrad 2910, MO*); Ch (*Cabrera & Cabrera 5298, MEXU*); C (*Cabrera 4779, MEXU*); B (*Dwyer 14944, MO*); G (*Lundell 16074, LL*); H (*Nelson & Romero 4679, MO*); ES (*Croat 42100, MO*); N (*Moreno 18245, HNMN*); CR (*Khan et al. 1218, BM*); P (*D'Arcy & D'Arcy 6743, MO*). 0-1500 m. (C. Mexico, Cuba, Jamaica, Colombia, Venezuela, Guyanas, Ecuador, Peru, Bolivia, Brazil.)

2. *Pavonia fruticosa* (Miller) Fawc. & Rendle, *Fl. Jamaica* 5: 130 (1926). *Sida fruticosa* Miller, *Gard. Dict.* ed. 8. no. 18 (1768). Holotype: in cult., *Miller s.n.* (photo NY-257! ex BM). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 87-I (1892).

Subshrubs or shrubs 0.5-1.5 m tall, minutely stellate-pubescent. Leaves elliptic or oblong to obovate, widest beyond the middle, truncate or cuneate, serrate, acute or acuminate, minutely stellate-pubescent, palmately 3-nerved but the 2 lateral nerves nearly suppressed (i.e., virtually pinninerved). Peduncles usually terminal (occasionally lateral), the inflorescence head-like, above the leaves, subtended by lanceolate bracts; pedicels usually 1-5 mm; involucellar bracts 4-6, 2-4 mm wide, ovate; calyx shorter than involucel; petals c. 1 cm, scarcely exceeding involucel, white. Fruits 5-6 mm in diameter, smooth, glabrous, lustrous; mericarps each with 3 retrorsely barbed spines up to 7.5 mm crowded at apex. $2n = 28$. *Wet forests, stream banks.* CR (*Burger et al. 9441, F*); P (*Mori 6927, MO*). 0-1400 m. (Costa Rica and West Indies to Colombia, Venezuela, Guyanas, Brazil Ecuador, Peru, Bolivia.)

3. *Pavonia castaneifolia* St.-Hil. & Naudin, *Ann. Sci. Nat. Bot. ser. 2.* 18: 44 (1842). Holotype: Brazil, *Blanchet 33* (photo F-35468! ex B destroyed; isotype fragment: CTES!). Illustr.: Fryxell, *Fl. Neotrop. Monogr.* 76: 189, t. 72 (1999).

Pavonia longipes Standley.

Subshrubs 0.5-1 m tall, minutely stellate-pubescent to glabrescent. Leaves elliptic to obovate, widest at middle or beyond, basally narrowed, serrate, acuminate, minutely stellate-pubescent to glabrescent, pinninerved. Peduncles terminal, leafless and rising above the leaves, sometimes branched; flowers occasionally solitary but usually clustered in short head-like racemes; pedicels 1 cm or less; involucellar bracts 8-10 mm, 8-10,

connate basally for c. 1/3 their length; calyx shorter than (and often concealed by) the involucel; petals c. 7 mm, white or lavender. Fruits glabrous, reticulate-veined; mericarps 6-9 mm (excluding spines), each mericarp with 3 retrorsely barbed spines 3-5 mm, the 2 lateral spines well separated from (and somewhat shorter than) the central spine. *Wet forests and along streams.* N (*Moreno & Sandino 12794*, MO); CR (*Burger & Burger 8071*, F); P (*Mori & Kallunki 3470*, MO). 0-1000 m. (C. America, Colombia, Venezuela, Guyanas, Ecuador, Peru, Bolivia, Brazil.)

4. *Pavonia peruviana* Gürke, *Martius Fl. Bras.* 12(3): 487 (1892). Lectotype (designated by Macbride, 1956): Peru, *Poepig 1584* (F!; isolectotype: OXF!). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 88-I (1892).

Malache maxonii Standley, *Pavonia rosea* var. *maxonii* (Standley) A.Robyns.
Subshrubs or shrubs 0.5-3 m tall, stellate-pubescent and coarsely hirsute (hairs 1-2 mm). Leaves broadly elliptic to obovate, widest at the middle or beyond, truncate or subcordate basally, serrate, acuminate, appressed-hirsute (hairs 0.5-2 mm, simple or bifurcate) to glabrescent, palmately 3-nerved but the 2 lateral nerves nearly suppressed. Peduncles terminal, leafless and rising above the leaves, sometimes branched, usually hirsute; flowers clustered in head-like groups or racemously disposed; pedicels 1-9 cm; involucellar bracts 8-10, connate basally for 1/3-1/2 their length, linear, hirsute; calyx shorter than the involucel; petals 7-12 mm, white or pink. Fruits 6-9 mm in diameter, glabrous, reticulate-veined; mericarps each with 3 retrorsely barbed spines 4-7 mm, the 2 lateral spines well separated from (and somewhat shorter than) the central spine. *Wet forests and cloud forests, along streams.* N (*Seymour 3102*, MO); CR (*Liesner 2858*, MO); P (*Folsom 4439*, MO). 1200-1700 m, sometimes lower. (Nicaragua, Ecuador, Peru.)

5. *Pavonia integrifolia* Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 8: 24 (1930). Holotype: Mexico, Veracruz, *Purpus 11118* (F!; probable isotypes: MO!, NY!).

Subshrubs 0.5-1 m tall, the stems with some stellate hairs. Leaves oblanceolate, truncate, essentially entire (or with minute serrulations), acuminate, palmately 3-nerved but with the 2 lateral nerves nearly suppressed, the margins ciliate (otherwise glabrescent). Inflorescence an open raceme or panicle; pedicels 2-9 cm, sparsely stellate-

pubescent; involucellar bracts c. 9, basally connate, narrowly triangular; calyx subequal to involucel; petals 1.5-2 cm, pink. Fruits 9-13 mm in diameter; mericarps each with 3 retrorsely barbed spines 5-7 mm. *Rain forest and pine-oak-Liquidambar forest.* Ch (Dressler 1560, US); G (Steyermark 51686, NY); H (Yuncker 6062, F). 300-1500 m. (Veracruz, Mexico to Honduras.)

6. *Pavonia penduliflora* (Standley) Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 4: 231 (1929). *Malache penduliflora* Standley, *Contr. U.S. Natl. Herb.* 18: 117 (1916). Holotype: Panama, Pittier 3188 (US!; isotype: NY!).

Shrubs 1-2.5 m tall, the young stems densely stellate-pubescent. Leaves ovate to oblong, basally truncate, serrulate, acuminate, palmately 3-5-nerved, stellate-pubescent (sparsely so above). Pedicels up to 6 cm (to 10 cm in fruit), solitary in the leaf axils, stellate-pubescent; involucellar bracts c. 8, 6-8 mm, linear, pubescent; calyx subequal to involucel, stellate-pubescent; petals 14-16 mm, reddish. Fruits 11-13 mm in diameter, glabrous, smooth, reddish; mericarps each with 3 retrorsely barbed spines 5 mm, the 2 lateral spines subequal to and widely separated from central spine. *Rain forests.* N (Moreno 8002, MO); CR (Herrera 3445, MO); P (Folsom 2182, MO). 600-2200 m. (Endemic.)

7. *Pavonia oxyphyllaria* J.D. Smith, *Bot. Gaz. (Crawfordsville)* 23: 237 (1897). Holotype: Costa Rica, Smith 6449 (US!). Illustr.: Robyns, Fl. Panama, *Ann. Missouri Bot. Gard.* 52: 539, t. 7 (1966).

Malache fulva Standley, *Pavonia costaricensis* Hochr., *P. fulva* (Standl.) Standl. Shrubs c. 1 m tall, the stems fulvous-hispida (hairs 2-3 mm, simple). Leaves elliptic or oblanceolate, slightly asymmetrical, truncate to cuneate, crenate-serrate (sometimes obscurely so), acuminate, pinninerved, appressed-pubescent above and beneath (hairs 1-3 mm, simple above, often bifurcate beneath). Pedicels to 8.5 cm, solitary in the leaf axils, fulvous-hispida; involucellar bracts 16-20 mm, 11-13, narrowly linear, fulvous-ciliate (hairs 1.5-2 mm); calyx 4-5 mm, cupuliform; petals c. 15 mm, white; genitalia included. Fruits 10-12 mm in diameter, glabrous, reticulate-veined; mericarps each with 3 retrorsely barbed spines 9-12 mm, widely separated and subequal. *Rain forests.* CR

(*Tonduz* 14863, K); P (*Hartman* 12216, MO). 200-1200 m. (C. America, Colombia, Ecuador, Peru, Bolivia, Brazil.)

8. *Pavonia submutica* Fryxell, *Phytologia* 37: 297 (1977). Holotype: Mexico, Chiapas, *Breedlove & Raven* 13715 (DS!; isotypes: F!, MEXU!, NY!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 340, t. 85 (1988).

Shrubs to 2 m tall, the stems stellate-pubescent. Leaves ovate, truncate to subcordate, finely serrate, acute, discolorous, stellate-pubescent. Pedicels 1-4 cm, solitary in the leaf axils, usually crowded apically, pubescent; involucellar bracts c. 15, 2-3 cm, filiform, arcuate, copiously ciliate; calyx 10-18 mm, pubescent, 5-lobed; petals c. 2 cm, yellow; staminal column 15 mm, the anthers and pollen yellow; styles and stigmas slightly exceeding androecium. Fruits 8-10 mm in diameter, glabrous; mericarps smooth, with 1 apical and 2 lateral cusps, these sometimes retrorsely barbed; seeds 4.5 mm, glabrous. *Deciduous forest and open matorral*. Ch (Koch et al. 73154, CHAPA). 600-900 m. (Endemic.)

9. *Pavonia cancellata* (L.) Cav., *Diss.* 3: 135 (1787). *Hibiscus cancellatus* L. *Pl. Surin.* 12 (1775). Holotype: Surinam, "cancellatus" (microfiche! ex LINN-875.8; isotype: microfiche! ex S). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 98-I (1892).

Pavonia guanacastensis Standley.
Decumbent perennial herbs, the stems trailing, hispid (hairs 1-2 mm) and with dense longitudinal lines of shorter hairs. Leaves asymmetrical, deltate-ovate to angular or weakly lobed, deeply cordate, crenate, acute, pubescent with simple hairs above, stellate hairs beneath. Pedicels usually equaling or exceeding the corresponding leaf, solitary in the leaf axils, pubescent; involucellar bracts c. 15, 10-12(-15) mm, linear, arcuate, hispid-ciliate (hairs c. 2 mm); calyx 7-8 mm, hirsute; petals c. 15 mm, yellow with dark red basal spot; androecium 8-9 mm; styles slightly exceeding androecium. Fruits glabrous, obovoid; mericarps 4.5 mm, indehiscent, with an obscure apical beak; seeds 3.5 mm. glabrous. $2n = 56$. *Dry deciduous forest, open savanna*. N (Stevens 10796, MO); CR (Khan et al. 1023, BM). 100-1000 m. (Venezuela, Guyanas, Bolivia, Brazil, Paraguay.)

10. *Pavonia sidifolia* Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 283 [folio ed. 220] (1822). Holotype: Inter Angosturam et Trapiche D. Felix Farreras, *Humboldt & Bonpland* 1077 (microfiche! ex P-HBK; isotype: microfiche! and photo F-9796! ex B-herb. Willdenow no. 12694). Illustr.: Fryxell, *Fl. Venez. Guyana* 6: t. __ (2000).

Malache chiapensis Standley, *Pavonia chiapensis* (Standley) Standley.

Widely branching shrubs or subshrubs to 1 m tall, the stems stellate-pubescent and with some glandular hairs. Leaves ovate, cordate, serrate, acute or acuminate, discolorous, soft-pubescent. Pedicels 3-7 cm, solitary in the leaf axils; involucellar bracts 6, exceeding the calyx, broadly lanceolate (2.5-4 mm wide); calyx 6-7 mm, hirsute; corolla c. 2 cm, yellow with maroon center; staminal column c. 5 mm, maroon, the anthers and pollen orange-yellow; styles exceeding androecium, glabrous. Fruits oblate, 6-8 mm in diameter, with appressed barbs along medial costa and lateral margins of mericarps; mericarps dehiscent; seeds 3 mm, glabrous, striate; $2n = 56$. *Deciduous forest, evergreen forest, rain forest, roadsides, often in grassy situations.* Ch (Fryxell 1165, MICH); P (Dwyer 4154, MO). 100-1000 m. (Oaxaca, Mexico, and Colombia, Venezuela, Peru, Bolivia, Brazil, Paraguay, Argentina.)

11. *Pavonia purpusii* Brandegee, *Zoe* 5: 250 (1908). *Malache purpusii* (Brandegee) Standley. Holotype: Mexico, Veracruz, *Purpus* 1946 (UC!; isotypes: BM!, CTES!, E!, F!, GH!, MO!, NY!, US!).

Pavonia liebmannii Ulbr.

Widely branching shrubs or subshrubs 1-1.5 m tall, the stems viscid and with simple hairs 2-3 mm. Leaves ovate, cordate, serrate or crenate, acuminate, somewhat discolorous, minutely pubescent. Pedicels exceeding the corresponding petioles, usually solitary in the leaf axils; involucellar bracts 7-9, exceeding the calyx, lance-linear, viscid and ciliate; calyx 6-7 mm, hirsute; petals 1.5-2.5 cm, lavender with an indistinct darker spot at base; staminal column 10-15 mm, glabrous, pallid, the anthers yellow; styles 10, exceeding the androecium. Fruits 6-8 mm in diameter, minutely pubescent; mericarps dehiscent; seeds 4 mm, minutely pubescent. *Deciduous forest.* Ch (Breedlove 37625, CAS); G (Fryxell 1187, ENCB); H (Blackmore & Chorley 4113, BM). 100-900 m. (Also Veracruz and Oaxaca, Mexico.)

12. *Pavonia fonsecana* (Standley) Fryxell, *Cuscatlania* 10(1): 173-8 (1997).

Malache fonsecana Standley, *J. Wash. Acad. Sci.* 14: 239 (1924). Holotype: El Salvador, Standley 20677 (US!).

Shrubs 1-2 m tall, the stems densely viscid. Leaves ovate, cordate, serrate, acute or acuminate, discolored, densely viscid above, whitish stellate-pubescent beneath; petioles 1-2 cm; stipules 3 mm, subulate. Pedicels exceeding the corresponding petioles, solitary, viscid; involucellar bracts 7-8, linear, viscid; calyx 6-7 mm, sparsely ciliate (hairs 1 mm), pallid with purplish veins; petals 12 mm, apparently white, pubescent on margins of claw. Fruits 7 mm in diameter, glabrous, oblate; mericarps 5 mm, smooth with a minute apical beak, dehiscent. *Deciduous forest* (?). ES (Standley 20677, US). (Endemic.)

13. *Pavonia spuria* Fryxell, *Fl. Neotrop. Monogr.* 76: 158 (1999). Holotype:

Mexico, Oaxaca, Koch et al. 78258 (CHAPA!); isotypes: BR!, CTES!, ENCB!, K!, MO!, NY!, WIS!). Illustr.: Fryxell, *Fl. Neotrop. Monogr.* 76: 159, t. 63 (1999).

Subshrubs 1.5 m tall, the stems viscid. Leaves ovate, cordate, serrate, acuminate, discolored, with mostly simple hairs 0.3-0.4 mm long and with glandular hairs at least on margin; petioles 1-3.5 cm long; stipules 2 mm, subulate. Pedicels exceeding the corresponding petioles, solitary, viscid; involucellar bracts 7-10, 1-2 mm, viscid and with basal cilia; calyx 7-9 mm long, prominently ciliate (hairs 1.5 mm); petals 12 mm long, white fading pink, externally pubescent but glabrous on margins of claw. Fruits 7 mm in diameter, minutely pubescent, oblate; mericarps 4 mm, dehiscent; seeds 3 mm, glabrous, striate. *Deciduous forest*. Ch. (Nelson 2716, US!). C. 350 m. (Endemic.)

14. *Pavonia alba* Seemann, *Bot. Voy. Herald* 81 (1853). Holotype: Panama,

Seemann 90 (photo MO! ex BM; isotypes: CTES!, GH!, K!).

Malache panamensis Standley, *Pavonia panamensis* (Standley) Standley.

Erect subshrubs to 2 m tall, the stems puberulent. Leaves ovate or lance-ovate, truncate, coarsely serrate, acuminate, somewhat discolored, sparsely pubescent with simple hairs above and stellate hairs beneath. Pedicels 2-3.5 cm, slender, solitary in the leaf axils or forming a leafy subpanicle inflorescence; involucellar bracts 7-9 mm, usually exceeding the calyx, 6-8, linear, hirsute; calyx 4-5 mm, pubescent; petals 4-8 mm, white; genitalia included. Fruits smooth, glabrous; mericarps c. 2.5 mm, muticous

and dorsally rounded, dehiscent; seeds c. 2 mm, puberulent. *Forest margins, roadsides.* G (Aguilar 1735, F); P (Standley 26846, US). 0-800 m. (Also Colombia and Venezuela.)

15. *Pavonia macdougallii* Fryxell, *Phytologia* 37: 296 (1977). Holotype: Mexico, Oaxaca, MacDougall H54 (NY!; isotype: TEX!). Illustr.: Fryxell, *Phytologia* 37: 312, t. 9 (1977).

Shrubs 1-2 m tall, the stems stellate-pubescent. Leaves ovate or weakly 3-lobulate, cordate, crenate-serrate to subentire, acuminate, discolorous, softly stellate-pubescent above and beneath. Pedicels 1-5 cm, solitary in the leaf axils, hirsute; involucellar bracts 10-20 mm, 5, lanceolate, hirsute; calyx 8-12 mm, densely pubescent; petals 3-4 cm, white, externally pubescent, the genitalia included. Fruits minutely pubescent; mericarps 5 mm, prominently carinate and reticulate-veined, often with 3 or 4 excrescences on each side. *In seasonally dry deciduous forest.* Oaxaca, near Tehuantepec, perhaps to be expected in Chiapas. 400-800 m. (Endemic.)

16. *Pavonia dasypetala* Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 31: 189 (1858). *Lopimia dasypetala* (Turcz.) Standley. Isotype: Venezuela, *Funck & Schlim* 1271 (CTES!, photo F-23695! ex G). Illustr.: Fryxell, *Fl. Venez. Guyana* 6: t. __ (2000). N.v.: majagüita (CR).

Shrubs or small trees 1-7 m tall, densely stellate-pubescent. Leaves to 24 cm, longer than wide, ovate, truncate or cordate, serrate or denticulate, acute, stellate-pubescent, discolorous. Flowers sometimes solitary but usually in narrow, dense terminal inflorescences; pedicels to 4 cm (usually shorter), densely pubescent; involucellar bracts 15-22 mm, 12-13, narrowly lanceolate, hirsute; calyx vestigial and hidden by involucel; petals 3.5-5 cm, erect, externally pubescent, glabrous on the claw; staminal column slightly exserted, glabrous, the filaments c. 1 cm, the anthers subequal to the petals; styles slender. Fruits c. 1 cm in diameter, viscid, blackish, glabrous. *Wet forest and cloud forest, along streams and in swampy areas.* H (Blackmore & Heath 1663, BM); N (Moreno 23248, MO); CR (Skutch 3900, US); P (Antonio 3234, MO). 0-1200 m. (Colombia, Venezuela.)

17. *Pavonia malacophylla* (Link & Otto) Garcke, *Jahrb. Bot. Gart. Mus. Berlin* 1: 221 (1881). *Sida malacophylla* Link & Otto, *Ic. Pl. Sel.* 67. t.30 (1822). Neotype (here designated): Berlin Bot. Gard. (specimen unknown); Brazil, Krapovickas et al. 40143 (NY!; isoneotypes: C, CEN, CTES!, F!, G, K!, UC!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: *frontispiece* (1988).

Lopimia malacophylla (Link & Otto) Martius. *Malache malacophylla* (Link & Otto) Standley.

Shrubs or small trees 2-5 m tall, the stems densely stellate-pubescent and with glandular hairs. Leaves to 21 cm, about as wide, ovate to weakly angulate, cordate, finely serrulate, acute, densely pubescent, somewhat discolored. Flowers aggregated into dense terminal inflorescences; pedicels of variable length, up to 3 cm, densely pubescent; involucellar bracts 15-18(-24), 12-18 mm, ligulate, valvate in bud, externally glandular-pubescent, internally long-hirsute; calyx 2-3 mm, hidden by involucel; petals c. 3 cm, rose or red (rarely white), externally pubescent, glabrous on claw, forming a tubular corolla; staminal column exserted, glabrous, the filaments 4-10 mm; styles exserted, slender. Fruits viscid, blackish, glabrous. *Wet forest, secondary growth, savanna, edges of swamps.* T (Ramamoorthy & Sousa 1700, MEXU); B (Wilbur & Weaver 11528, F); N (Stevens 7611a, MO); CR (Aguilar et al. 4445, TEX); P (Barclay 1045, BM). 0-400 m. (Also Guerrero, Veracruz, and Oaxaca in Mexico and in South America to Brazil and Bolivia.)

Specimens from San José Island, Gulf of Panama, have white petals and 20-24 involucellar bracts.

18. *Pavonia monticola* Fryxell, *Phytologia* 37: 300 (1977). Holotype: Mexico, Chiapas, Breedlove & Raven 13716 (DS!; isotypes: F!, MEXU!, MO!, NY!). Illustr.: Fryxell, *Phytologia* 37: 314, t. 11 (1977).

Shrubs to 2 m tall, the stems densely glandular-pubescent. Leaves narrowly ovate (c. twice as long as wide), cordate, serrate, acuminate, discolored, stellate-pubescent (and with glandular hairs above); stipules 5-12 mm, linear, erect. Pedicels to 5.5 cm, solitary or paired in the leaf axils, viscid; involucellar bracts 8, 8-15 mm, linear, viscid; calyx 6-8 mm, 5-lobed, ciliate, costate (the intercostal areas whitish); petals 10-12 mm, yellow; staminal column 6-7 mm, glabrous, the filaments 1-3 mm; styles slightly

exserted, glabrous. Fruits oblate or somewhat obovate, essentially glabrous; mericarps indehiscent, smooth or weakly reticulate, narrowly winged laterally, with a minute (0.3 mm) subapical cusp; seeds 4 mm, glabrous. *Evergreen forest and pine-oak forest, roadsides.* Ch (Fryxell & Lott 3233, MEXU). 700-1000 m. (Endemic.)

19. *Pavonia paniculata* Cav., *Diss.* 3: 135, t.46. f.2 (1787). Holotype: Peru, *Dombey s.n.* (photo! ex P, microfiche! ex P-LA). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 96-I (1892).

Subshrubs or shrubs to 3 m tall, the stems stellate-pubescent, also with glandular pubescence especially in the inflorescence. Leaves ovate, oblong, or 3-lobed, cordate, serrate, acute or acuminate, discolored, minutely pubescent; stipules 5-10 mm, falcate, recurved. Inflorescence a widely branched viscid panicle, at least the upper parts leafless; involucellar bracts 7-9, subequal to calyx, viscid and ciliate, often dark-pigmented; calyx c. 6 mm, often basally whitish; petals 10-15 mm, pale yellow to yellow-orange; staminal column pallid, the filaments as long as the column, the anthers bright yellow; styles glabrous, the stigmas slightly exceeding the stamens, reddish. Fruits 6-7 mm in diameter, oblate; mericarps reticulate-veined, subglabrous; seeds 3 mm. $2n = 112$. *Evergreen forest, pine-oak forest, secondary vegetation, disturbed sites.* Ch (Breedlove 33785, CAS); B (Dwyer & Liesner 12308, MO); G (Heyde & Lux 6070, US); H (Wilson 216, F); ES (Calderón 1959, US); N (Moreno 15099, HNMN); CR (Donnell-Smith 6452, US); P (Knapp 2260, MO). 0-2500 m. (C. Mexico, West Indies, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil.)

20. *Pavonia corymbosa* (Swartz) Willd. *Sp. Pl.* 3: 836 (1803). *Althaea corymbosa* Swartz, *Prodr.* 101 (1788). Holotype: Jamaica, Swartz s.n. (S!).

Pavonia paniculata var. *corymbosa* (Swartz) Gürke.

Shrubs 1-2 m tall, the stems with prominent longitudinal lines of dense recurved pubescence, very sparse stellate hairs, or prominent simple hairs 1.5-3 mm. Leaves ovate to somewhat 3-lobed, cordate, serrate, acute or acuminate; stipules falcate, recurved. Flowers in dense terminal inflorescences, the pedicels 1 cm or less; involucellar bracts 10-12, 12-15 mm, narrowly linear, setose; calyx 4-5 mm, ciliate; petals 12-15 mm, yellow. Fruits 8-9 mm in diam.; mericarps 3 mm, reticulate-angulate. *In a wide variety of*

habitats, including disturbed sites. H (*Wilson* 216, NY); N (*Moreno* 15099, NY); CR (*Hammel & Grayum* 20760, INB); P (*Dodge & Hunter* 8646, US). [elev.?](West Indies, C. America, Colombia, Ecuador, Peru, Bolivia, Brazil.)

21. *Pavonia paludicola* Nicolson ex R. Howard, *Fl. Lesser Antill.* 5: 241 (1989).

Type: Trew, *Pl. Select. t.90* (1772). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 238, t. 94 (1989).

Pavonia racemosa (Swartz) Swartz, *P. scabra* (Vogel) Cif. non K. Presl, *P. spicata* Cav. non *Malache scabra* Vogel.

Shrubs 1-3(-5) m tall, more or less scandent, the stems minutely pubescent. Leaves broadly ovate (twice as long as wide), cordate, obscurely crenulate to subentire, acuminate. Inflorescence a leafless terminal raceme; pedicels 1.5-4 cm, solitary; involucellar bracts 8, 8-10 mm × 2.5-4 mm, lanceolate, obscurely pubescent or glabrescent; calyx subequal to involucel; petals 1.5-2 cm, erect, yellow-green; androecium subequal to corolla; stigmas slightly exserted. Fruits 10-12 mm in diameter, glabrous, woody, sometimes with a crown of 5 points; carpels indehiscent. *Mangrove*. B (Dwyer 12895, MO); G (Deam 6051, US); H (Fryxell 2805, F); N (Moreno 12432, MO); CR (Tonduz 12687, US); P (de Nevers 4635, MO). 0-10 m. (S. Florida and throughout the West Indies, Colombia, Venezuela, Guyanas.)

22. *Pavonia rhizophorae* Killip ex Kearney, *Leafl. W. Bot.* 7: 118 (1954).

Holotype: Colombia, Killip & Cuatrecasas 38834 (US!; isotype: CAS!). Illustr.: Fryxell, *Fl. Neotrop. Monogr.* 76: 170, t. 67 (1999).

Shrubs 2-3 m tall, the young stems stellate-puberulent. Leaves narrowly elliptic (3-4 times as long as wide), truncate or subcordate, remotely denticulate to subentire, acuminate. Involucel a leafless terminal raceme; pedicels 0.5-1.5 cm, solitary; involucellar bracts 8, 6-8 mm × 1-2 mm, lanceolate, obscurely pubescent or glabrescent; calyx 9-11 mm (exceeding involucel); petals 1.5-2.5 cm, erect, cream or greenish-yellow; genitalia subequal to corolla. Fruits 9-10 mm in diameter, woody, obscurely pubescent, beaked; carpels indehiscent, minutely retrorsely barbed on margins. *Mangrove*. P (Dwyer 2286, MO). 0-10 m. (Also in Colombia and Ecuador.)

11. *Urena* L.

By P.A. Fryxell.

Shrubs 0.5-2 m tall, more or less stellate-pubescent. Leaves variable, often 3-5-angled, -lobed, or -parted, less often ovate, oblong, or lanceolate, serrate, with one or more prominent foliar nectaries on principal veins abaxially. Flowers solitary or glomerulate in the axils or forming terminal racemes; pedicels usually short; involucel 5-lobed, the lobes alternate with the 5 lobes of the calyx; petals rose or lavender; androecium included in the corolla, the anthers subsessile; styles 10, slender, with capitate stigmas. Fruits schizocarpic, 5-lobed, the lobes convex; mericarps 5, sometimes (always in ours) prominently glochidiate, indehiscent; seeds solitary, glabrous. 6-8 spp., 2 of which are pantropical, the remainder from Asia and Australia.

Literature: Gürke, M. *Bot. Jahrb. Syst.* 16: 330-385 (1892).

1. Leaves palmately parted, the sinuses broadly rounded; calyx 4-5 mm; petals 8-18 mm.

1. *Urena sinuata*

1. Leaves ovate, angulate, or shallowly lobed; calyx 5-9 mm; petals 15-20 mm.

2. *Urena lobata*

1. *Urena sinuata* L., Sp. Pl. 692 (1753). *Urena lobata* L. var. *sinuata* (L.) Hochr.

Lectotype (designated by Borssum Waalkes, 1966): Ceylon, herb. Hermann, vol. 4, fol. 34, Linn. no. 257 (BM). Illustr.: Robyns, Fl. Panama, *Ann. Missouri Bot. Gard.* 52: 523, t. 5 (1966).

Shrubs or subshrubs 0.5-2.5 m tall, the stems stellate-pubescent. Leaves broadly pentangular, palmately 5-parted, cordate, obscurely crenate-serrate, the central lobes constricted at base (the sinuses broadly rounded and open), discoloredous, stellate-pubescent, with 1-3 prominent bordered nectaries at base of principal nerves beneath. Pedicels up to 4 mm, solitary or paired in the leaf axils; involucel 4-5 mm, gamophyllous, subequal to calyx; petals 8-18 mm, lavender; staminal column glabrous. Fruits c. 1 cm in diameter, oblate, stellate-pubescent and with numerous glochidiate spines; seeds 3 mm. $2n = 28$. *Disturbed sites, fence rows, roadsides.* Ch (*Matuda 17087, MEXU*); ES

(Standley 19382, US); CR (Tonduz 4720, US); P (D'Arcy & Sytsma 14335, MO). 0-1000 m. (More or less pantropical.)

2. Urena lobata L., *Sp. Pl.* 692 (1753). Lectotype (designated by Borssum Waalkes, 1966): "lobata 1" (microfiche! ex LINN-873.1; isolectotype: microfiche! ex S). Illustr.: Acevedo-Rodríguez, Fl. St. John, *Mem. N.Y. Bot. Gard.* 78: 309, t. 140 A-F (1996).]

Much-branched subshrubs c. 1 m tall, the stems minutely pubescent. Leaves broadly to narrowly ovate, angulate to weakly lobulate, truncate to cordate, crenate, more or less acute, slightly discolored, minutely stellate-pubescent with one or more prominent bordered nectaries at base of midrib beneath. Pedicels up to 7 mm, solitary (or paired) in the leaf axils; involucel 5-6 mm, gamophyllous; calyx 5-9 mm, pubescent; petals 15-20 mm, lavender; staminal column glabrous. Fruits c. 8 mm in diameter, oblate, stellate-pubescent and with numerous glochidiate spines; seeds 3-3.5 mm, glabrous. $2n = 28, 56$. Rain forests, roadsides, disturbed sites. Ch (Breedlove 50573, CAS); B (Gentle 3807, US); H (Nelson & Romero 4223, MO); N (Fryxell 2879, F); CR (Jiménez 2923, US); P (Sytsma & Antonio 2361, MO). 0-1000 m. (More or less pantropical.)

12. Peltaea (K. Presl) Standley, nom. cons.

By P.A. Fryxell.

Shrubs or subshrubs, erect or decumbent, stellate-pubescent. Leaves elliptic to ovate to suborbicular, crenate-serrate, acute or obtuse. Inflorescences usually subtended by specialized foliose bracts, these subsessile, often broadly cordiform; flowers solitary in the leaf axils (two spp.) or more commonly (as in ours) grouped in head-like aggregations subtended by ovate floral bracts; pedicels usually short; involucellar bracts 8-13, spatulate or seemingly bifurcate; calyx 5-lobed; petals yellow (in ours) or lavender; androecium included in corolla; styles 10, with capitate stigmas. Fruit a schizocarp, glabrous or pubescent; mericarps smooth and without ornamentation, essentially indehiscent; seeds solitary, glabrous or pubescent. Sixteen spp., principally from Brazil and Bolivia, extending northward to the West Indies and Central America.

Literature: Krapovickas, A. and C.L. Cristóbal. *Kurtziana* 2: 135-216 (1965).

1. Fruits pubescent; leaves ovate, prominently serrate, c. twice as long as wide, basally truncate to subcordate **1. Peltaea ovata**
1. Fruits glabrous; leaves broadly ovate or suborbicular, serrate-crenate, c. 1.5 times as long as wide, basally cordate **2. Peltaea trinervis**

1. Peltaea ovata (K. Presl) Standley, *Contr. U.S. Natl. Herb.* 18: 113 (1916).

Malachra ovata K. Presl, *Reliq. Haenk.* 2: 125 (1835). Holotype: Panama, *Haenke s.n.* (PR?). Illustr.: Krapovickas & Cristóbal, *Kurtziana* 2: 176, t. 9 (1965).

Pavonia riedelii var. *ovata* (K. Presl) A. Robyns.

Subshrubs 1-2 m tall, the stems stellate-pubescent, sometimes with lines of denser hairs. Leaves ovate, serrate, basally truncate to subcordate, acute or somewhat acuminate, discolorous. Peduncles up to 10 cm below (but shorter upward), solitary in the leaf axils; floral bracts sessile, ovate-peltate, enclosing the flowers; involucellar bracts c. 10, spatulate and ciliate; calyx 4-7 mm (a little shorter than the involucel); petals 1.5-2 cm, yellow. Fruits 5-6 mm in diameter, oblate; mericarps smooth, pubescent. *Savanna, roadsides, disturbed sites.* H (*Abraham 122, MO*); N (*Sandino & Martínez 3849, MO*); CR (*Burger & Matta 4631, NY*); P (*Tyson & Blum 2593, MO*). 0-500 m. (Also Colombia.)

2. Peltaea trinervis (K. Presl) Krapov. & Cristóbal, *Kurtziana* 2: 168 (1965).

Malachra trinervis K. Presl, *Reliq. Haenk.* 2: 126 (1835). Neotype (here designated): Brazil, *Salzmann s.n.* (specimen unknown); Brazil, *Gardner 1458* (NY!; isoneotypes: F!, GH!, K!, OXF!, US!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 345, t. 87 (1988).

Shrubs or subshrubs to 1.5 m tall, openly branched, minutely and densely pubescent. Leaves broadly ovate or suborbicular, cordate, crenate-serrate, acute, discolorous. Peduncles 4 cm below (but shorter upward, eventually subsessile); floral bracts sessile, ovate-peltate, enclosing flowers; inflorescence a few-flowered head; involucellar bracts c. 9, bifurcate; petals 1.5-2.5 cm, yellow, exceeding the floral bracts; androecium subequal to corolla, yellowish. Fruits oblate; mericarps glabrous. *Savannas, roadsides, disturbed sites.* N (*Fryxell 2878, MO*); CR (*Gómez 18986, CR*); P (*Sytsma*

3085, MO). 0-500 m. (Also Colombia, Venezuela, Guyana, Brazil.) Standley (1937) and Robyns (1966) treated this sp. as *Pavonia sessiliflora* H.B.K.

13. Malachra L.

By P.A. Fryxell.

Herbs or subshrubs, sometimes puberulent, commonly hispid, often with urticating hairs. Leaves suborbicular to broadly ovate, angular, palmately lobed to digitately divided, truncate, serrate, acute to obtuse, usually pubescent. Flowers in condensed, bracteate, head-like racemes, the "heads" axillary or terminal; specialized floral bracts subtending the inflorescences broadly cordate-ovate, sessile, often with prominent nerves basally alternating with white intercostal tissue, distally green and foliaceous; involucel absent (except present in *M. radiata*); calyx small, 5-lobed; corolla white, yellow, or lavender, often inconspicuous; styles and stigmas 10. Fruit a schizocarp, minutely puberulent or glabrous; mericarps 5, usually smooth; seeds solitary, glabrous. Eight to ten neotropical spp., some of which are adventive in the paleotropics.

Literature: Gürke, M. *Bot. Jahrb. Syst.* 16: 330-385 (1892).

1. Corolla 2-2.5 cm, lavender; involucel present; flowers in dense terminal heads.

1. Malachra radiata

1. Corolla up to 1.5 cm, yellow or white (rarely pale lavender); involucel absent; flowers mostly in axillary glomerules.
2. Corolla white (rarely pale lavender); calyx 4-5 mm; leaves more or less palmately lobed, the lobes more or less linear; stems hispid (hairs 2-4 mm or longer).

2. Malachra fasciata

2. Corolla yellow; calyx 6-8 mm; leaves mostly unlobed or angulate (if lobed, the lobes obovate, the sinuses broadly rounded); stem hairs up to 1.5 mm.
3. Heads sessile or short-pedunculate; stems hispid, the hairs c. 1 mm; floral bracts acuminate.

3. Malachra alceifolia

3. Heads manifestly pedunculate; stems usually only stellate-pubescent, without hispid hairs; outer floral bracts rounded to acute.

4. Malachra capitata

1. Malachra radiata (L.) L., *Syst. Nat.* ed. 12. 459 (1767). *Sida radiata* L., *Sp. Pl.* ed. 2. 965 (1763). Type: Plumier, *Pl. Amer.* 2: t. 19 (1756). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 83 (1892).

Coarse herbs or subshrubs 1-2 m tall, densely hispid (hairs 2-3 mm). Lower leaves palmately 3-7-lobed, the lobes occasionally secondarily divided, the central lobe basally constricted and lanceolate, the uppermost leaves simple and triangular to ovate (forming a transition to the floral bracts), serrate, acute or acuminate, hispid (hairs mostly simple above, stellate beneath). Inflorescence a terminal head, the subtending floral bracts sessile, ovate, serrate, acute; involucellar bracts c. 10, subequal to calyx, linear, hispid; calyx 8-10 mm, deeply 5-lobed, hispid; corolla 2-2.5 cm, lavender with darker throat; anthers and pollen bluish; styles pink. Mericarps 4.5 mm, obovoid, reticulately veined, glabrous; seeds 3 mm, glabrous. $2n = 56$. *River banks, lake shores, swamps.* T (*Orozco-Segovia* 352, XAL); B (Standley & Record, 1936); ES (*Calderón* 2412, US); N (*Nee & Robleto* 28163, MO); P (*Tyson* 5478, MO). 0-200 m. (West Indies, Guyanas, Brazil, Africa.)

2. Malachra fasciata Jacq., *Collectanea* 2: 352 (1789). *Malachra alceifolia* var. *fasciata* (Jacq.) A. Robyns. Holotype: ex herb. Jacquin (photo F-32649! ex W, left-hand specimen). Illustr.: Gürke, *Martius Fl. Bras.* 12(3): t. 81 (1892).

Herbs or subshrubs 0.5-1(-2) m tall, the stems hispid with pungent hairs 2-4(-7) mm, the herbage often suffused with red. Leaves ovate, usually lobed or deeply parted (the lobes ovate if shallowly lobed, more or less linear-lanceolate if deeply parted), the sinuses more or less acute, basally truncate, crenate-serrate, acute, sparsely hispid. Inflorescence short-pedunculate axillary heads; floral bracts lance-ovate, acute, prominently hispid; involucel absent; calyx 4-5 mm, deeply lobed; petals 6-8 mm, white (rarely pale lavender). Fruits minutely puberulent to glabrous; mericarps c. 3 mm, reticulately veined; seeds glabrous. $2n = 112$. *Rain forest, roadsides, disturbed sites, often in wet soil.* T (*García* 596, CHAPA); Ch (*Matuda* 18428, MEXU); Y (*Darwin* 2397, NO); C (*Chavelas* 1224, MEXU); B (*Gentle* 534, MEXU); G (*Contreras* 9524, LL); ES (*Rohweder* 3072, MO); H (*Molina*, 1975); N (*Stevens* 22644, MO); CR (*Opler* 1986, MO); P (*Castro* 2437, MO). 0-1000 m. (C. Mexico, West Indies, Colombia, Venezuela, Guyanas, Brazil, Ecuador; adventive in paleotropics.)

This species is dimorphic for leaf form, the one form being deeply digitately parted, the other ovate-simple or shallowly lobed.

3. Malachra alceifolia Jacq., *Collectanea* 2: 350 (1789). Holotype: ex herb.

Jacquin (photo F-32649! ex W, right-hand specimen). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 266, t. 67 (1988).

Herbs or subshrubs 0.5-2 m tall, the stems usually hispid (sometimes sparsely so), the hairs c. 1 mm. Leaves orbicular to ovate, 5-angled or slightly lobulate, truncate, serrate, acute or obtuse, sparsely hispid to glabrescent. Inflorescence a series of compact axillary glomerules, short-pedunculate to sessile; floral bracts cordate, acuminate, often hispid; involucel absent; calyx 6-8 mm, deeply 5-lobed, hispid; petals 1-1.5 cm, yellow. Fruits minutely puberulent; mericarps c. 3 mm, brownish with reticulate veins; seeds glabrous. $2n = 56$. *Deciduous forest, secondary vegetation, pastures, roadsides, often in wet soil.* T (*García* 597, CHAPA); Ch (*Matuda* 2691, MEXU); Y (*Gaumer* 1762, US); B (*Gentle* 6701, LL); G (*Contreras* 7557, LL); ES (*Standley* 21903, US); H (*Molina*, 1975); N (*Moreno* 4933, MO); CR (*Grayum* 4230, MO); P (*Knapp & Sytsma* 2467, MO). 0-500 m. (Mexico, West Indies, Colombia, Venezuela, Guyanas, Ecuador, Peru.)

4. Malachra capitata (L.) L., *Syst. Nat.* ed. 12. 458 (1767). *Sida capitata* L., *Sp. Pl.* 685 (1753). Lectotype (designated by Borssum Waalkes, 1966): ex hort. Upsalianesis, "capitata 10" (microfiche! ex LINN-867.1; isolectotype: microfiche! ex S). Illustr.: Fryxell, *Fl. Veracruz* 68: 143, t. 15 (1992b).

Herbs or subshrubs to 1.5 m tall, the stems densely stellate-pubescent, occasionally also with longer simple hairs. Leaves ovate, lyrate, or 3-5-lobed (the lobes basally constricted, the sinuses broadly rounded), truncate to subcordate, crenate-serrate, acute or obtuse, stellate-pubescent. Inflorescence a capitulum terminating an axillary peduncle (that exceeds the corresponding petiole); floral bracts deeply cordate, sessile, entire, rounded to acute, often hispid; involucel absent; calyx 6-8 mm, deeply 5-lobed, hispid; petals 7-10 mm, yellow. Fruits schizocarpic, glabrous; mericarps reticulately veined; seeds glabrous. $2n = 56$. *Roadsides, pastures, secondary growth, often in wet soil.* T (*Ventura* 20634, ENCB); Ch (*Breedlove* 28740, DS); Y (*Enríquez* 343, MEXU); C (*Lundell* 931, LL); QR (*Barrera et al.* 266, MEXU); B (*Croat* 24405, MO); G (*Contreras*

9523, LL); H (Molina, 1975); N (*Stevens 3566*, MO). 0-100(-1000) m. (S. United States, Mexico, West Indies; adventive in paleotropics.)

14. *Bastardiastrum* (Rose) D. Bates

Wissadula sect. *Bastardiastrum* Rose

By P.A. Fryxell.

Shrubs or subshrubs 0.5-2 m tall, densely stellate-pubescent to glabrescent, sometimes viscid, the stems often with purplish nodes. Leaves ovate, usually cordate, serrate to subentire, acute or acuminate, usually soft-pubescent, often discolored. Peduncles solitary (or clustered) in the leaf axils, commonly aggregated into racemes or panicles; involucel absent; calyx usually ribbed, usually pubescent, clasping and enclosing the fruit; petals 0.5-1.5 cm, white to pale lavender; staminal column nearly obsolete, the filaments 3.5-9 mm, erect, slender; styles 3-4, slender; stigmas capitate, dark-colored. Fruits schizocarpic, ovoid, pubescent; carpels 3 or 4, divided into upper and lower chambers, the upper chamber dehiscent and 2-seeded, the lower chamber indehiscent and 1-seeded. Eight spp. confined to the Pacific coast of Mexico.

Literature: Bates, D.M. *Gentes Herb.* 11: 311-328 (1978).

1. *Bastardiastrum gracile* (Hochr.) D. Bates, *Gentes Herb.* 11: 326 (1978).

Wissadula gracilis Hochr., *Annuaire Conserv. Jard. Bot. Genève* 6: 30 (1902). Holotype: Mexico, Oaxaca, *Jürgensen* 48 (photo F-23756!, ex G). Illustr.: Fryxell, *Fl. Chiapas* 3: 62, t. 6 (1990).

Herbs or subshrubs 0.5-1.5 m tall, the stems minutely stellate-pubescent, sometimes evenly purplish-pigmented. Leaves ovate, truncate to cordate, finely and obscurely serrulate, acuminate, stellate-pubescent. Flowers solitary in the leaf axils or on cymose lateral branches; pedicels 0.5-2 cm; calyx 6-10 mm, 10-ribbed, densely hirsute (hairs 0.5-1 mm); petals 7-10 mm, white to pale lavender; filaments 4-6 mm; styles 3, slender. Fruits c. 7 mm in diameter, ovoid, stellate-pubescent; mericarps 3, each with 1-3 seeds; seeds 2.5 mm, verruculate. *Deciduous and evergreen forests, roadsides, disturbed sites.* Ch (*Breedlove 41546*, CAS). 100-600 m. (Also in Oaxaca, Mexico.)

15. **Wissadula** Medikus

By P.A. Fryxell.

Herbs or subshrubs, usually erect, stellate-pubescent or glabrescent. Leaves broadly ovate to narrowly triangular, entire or crenate-dentate. Flowers sometimes solitary in the leaf axils, usually in condensed or open terminal panicles; involucel absent; calyx usually 3-4 mm, 5-lobed; petals usually small, yellow or white; androecium included in corolla; styles 3-6, slender; stigmas capitate. Fruits schizocarpic (but septicidal dehiscence often imperfect), exceeding the calyx, obscurely puberulent or glabrescent; mericarps 3-6, divided by constriction into indehiscent lower chamber and dehiscent upper chamber, apically acute or apiculate; seeds 1 in lower chamber, usually 2 in upper chamber, the lower seed more densely pubescent than the upper seeds. C. 26 spp., Africa and South America north to the West Indies, Mexico, and S. United States.

Literature: Fries, R.E. *Kongl. Svenska Vetenskapskad. Handl.* 43(4): 1-114 + 10 plates (1908). Krapovickas, A. *Bonplandia* 9: 89-94 (1996).

1. Leaves narrowly triangular with straight margins, shallowly cordate at base; corolla 3-4 mm, yellow or white, sometimes with a red center. **1. Wissadula periplocifolia**
1. Leaves elliptic or broadly ovate with curved margins, truncate or deeply cordate at base; corolla 4-8 mm, yellow or white, without red center.
 2. Leaves truncate at base, elliptic to nearly ovate, often broadest above the base; herbage ferrugineous-tomentose. **2. Wissadula excelsior**
 2. Leaves deeply cordate at base, broadly ovate, broadest at base; herbage sometimes ferrugineous but usually paler.
 3. Inflorescence a crowded, narrow, racemiform panicle; corolla white; mericarps with imperfectly developed medial constriction. **6. Wissadula contracta**
 3. Inflorescence an open panicle; corolla yellow; mericarps with pronounced medial constriction.
 4. Stems with long simple hairs (2-3 mm) in addition to stellate pubescence. **3. Wissadula amplissima**
 4. Stems lacking long simple hairs.

5. Fruits 6-7 mm long; the upper leaf surface stellate-pubescent; leaf margin entire.

4. Wissadula hernandiooides

5. Fruits 11-15 mm long; the upper leaf surface with simple hairs or glabrescent; leaf margin often crenate.

5. Wissadula costaricensis

1. Wissadula periplocifolia (L.) K. Presl ex Thwaites, *Enum. Pl. Zeyl.* 27 (1858).

Sida periplocifolia L., *Sp. Pl.* 684 (1753). Lectotype (designated by Borssum Waalkes, 1966): herb. Hermann, vol. 3, fol. 11, Linn. no. 251 (BM). Illustr.: Fryxell, *Fl. Venez. Guyana* 6: t. __ (2000).

Wissadula zeylanica Medikus.

Shrubs 1-2 m tall, stellate-pubescent (the hairs frequently stipitate). Leaves narrowly ovate-triangular, shallowly cordate, entire (the margins straight), acute, markedly discolored, glabrescent above. Inflorescence a more or less leafless panicle; calyx 2.5-3 mm; corolla 3-4 mm, yellow or white, sometimes with a red center; androecium included in corolla, the filaments longer than the column. Mericarps 5-6 mm, 4-5, puberulent, constricted below, bulbous-apiculate above; seeds 2.5 mm, patchily to densely pubescent. $2n = 14$. *Savannas, pastures, roadsides, secondary vegetation, sometimes in wet soil.* T (Cowan 2812, MEXU); Ch (Fryxell 3197, MEXU); Y (Lundell 1341, LL); H (Nelson & Romero 4394, MO); ES (Standley 22156, US); N (Moreno 3804, MO); CR (Opler 1987, MO); P (Standley 25335, US). 100-1000 m. (Mexico, West Indies, Colombia, Asia.)

2. Wissadula excelsior (Cav.) K. Presl, *Reliq. Haenk.* 2: 118 (1835). *Sida excelsior* Cav., *Diss.* 1: 27, t.5. f.3 (1785). Holotype: Peru, *J. de Jussieu s.n.* (microfiche! ex P-JU no. 12310). Illustr.: Fryxell, *Fl. Veracruz* 68: 253, t. 26 (1992b).

Wissadula patens (A. St.-Hil.) Garcke, *W. zeylanica* var. *guatemalense* E.G. Baker.

Shrubs 1-2 m tall, ferruginous-pubescent with stipitate hairs. Leaves more or less elliptic, truncate (rarely subcordate), entire, acuminate, discolored, glabrescent on upper surface. Inflorescence a somewhat leafy terminal panicle; calyx 3 mm, c. half-divided; petals 4-5 mm, whitish; androecium yellowish, the filaments longer than the column. Mericarps 6-7 mm, 5-6, minutely puberulent, constricted below, bulbous-apiculate

above; seeds 1.5 mm, minutely and evenly pubescent or scabridulous. $2n = 14$. Evergreen forest, disturbed forest, river banks, roadsides. T (Cowan 2819, NY); Ch (Ton 3809, CAS); B (Gentle 9002, LL); G (J.D. Smith 4749, US); H (Blackmore & Heath 1838, BM); N (Stevens 6356, MO); CR (Burger & Matta 4626, US); P (D'Arcy 5212, MO). 0-900 m. (C. Mexico, Colombia, Guyanas, Peru, Bolivia, Brazil, Paraguay.)

3. Wissadula amplissima (L.) R.E. Fries, *Kongl. Svenska Vetenskapsakad. Handl.* 43(4): 48 (1908). *Sida amplissima* L., *Sp. Pl.* 685 (1753). Lectotype (designated by Krapovickas, 1996): Plumier, spec. 2 (*Pl. amer. 2: t. 3*, 1755).

Wissadula hirsuta K. Presl.

Subshrubs 1-2.5 m tall, the stems minutely puberulent and with spreading simple hairs 2-3 mm. Leaves broadly ovate, deeply cordate (the sinus often closed), entire (the margin curved), acuminate, discolorous, glabrescent above, densely soft-tomentose beneath. Inflorescence an open more or less leafless terminal panicle; pedicels 1-4 cm; calyx 3-4 mm; petals 7-8 mm, yellow. Mericarps 7-9 mm, 5, minutely puberulent, basally constricted, apically bulbous-apiculate; seeds 2 mm, patchily pubescent. Rain forests, roadsides, secondary vegetation. ES (Croat 32796, MO); CR (Williams et al. 26433, F); P (Calderón 14, MO). 0-600 m or higher. (Also Hispaniola, Puerto Rico, Venezuela, Peru, Bolivia, Brazil.)

4. Wissadula hernandioides (L'Hér.) Garcke, *Zeitschr. Naturw.* 63: 122 (1890). *Sida hernandioides* L'Hér., *Stirp. Nov.* 2: 121, *t. 58* (1789). Type: in hort. Paris, ex Hispaniola, *Anon. s.n.* (G?). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 452, *t. 115* (1988).

Wissadula mucronulata A. Gray ex Torrey.

Shrubs to 2 m tall, the stems puberulent and with scattered stipitate stellate hairs (these more prominent at distal ends of petioles). Leaves ovate, usually deeply cordate, entire (the margins curved), acuminate, discolorous, the upper surface stellate-pubescent. Inflorescence an open, more or less leafless terminal panicle; calyx 3 mm; petals 5 mm, yellowish. Fruits 6-7 mm, puberulent; mericarps 3-5, constricted below, bulbous-apiculate above; seeds 2.5 mm, patchily pubescent. $2n = 14$. Deciduous forest, evergreen forest, pine-oak forest, savannas, along streams, roadsides, disturbed sites. Ch (Breedlove 42233, CAS); Y (Krapovickas & Cristóbal 23555, CTES); ES (Standley

22159, US); H (*J.D. Smith 5149*, US); N (*Stevens 11193*, MO); CR (*Liesner 4804*, MO); P (*Standley 27038*, US). 0-1200 m. (Texas, Louisiana, Mexico, West Indies, Colombia, Venezuela, Brazil, Africa.)

5. Wissadula costaricensis Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 18: 678 (1937). Holotype: Costa Rica, *Standley & Valerio 44156* (US!).

Shrubs 1-2.5 m tall, the stems obscurely puberulent and with large scattered stipitate-stellate hairs. Leaves ovate, deeply cordate, entire or more or less distinctly crenate (the margin curved), acuminate, somewhat discolored, with simple hairs above or glabrescent, with stellate hairs beneath. Flowers solitary in the leaf axils or in terminal panicles; pedicels 1.5-5 cm, slender; calyx 3-4 mm; petals 5 mm, yellow; androecium included in corolla, the column pubescent. Fruits 11-15 mm, obscurely puberulent; mericarps 5, basally constricted, apically bulbous-apiculate. *Forests and roadsides*. CR (*Khan et al. 630*, BM). 1500-1600 m. (Endemic.)

6. Wissadula contracta (Link) R.E. Fries, *Kongl. Svenska Vetenskapsakad. Handl.* 43(4): 60 (1908). *Sida contracta* Link, *Enum. Hort. Berol. Alt.* 2: 204 (1822). Neotype (here designated): grown in Berlin Botanic Garden ex Madagascar, *Anon. s.n.* (B-destroyed); Brazil, *Anderson et al. 9074* (TEX!; isoneotype: NY!).

Shrubs to 2.5 m tall with several stems from the base, little-branched, the stems soft-puberulent and with larger stellate hairs intermixed. Leaves ovate, deeply cordate, entire (the margin curved), acuminate, discolored, softly and minutely tomentose. Inflorescence a crowded terminal panicle forming a narrow racemoid structure, essentially leafless; pedicels short; calyx 3-3.5 mm; petals 4-7 mm, white; androecium included in corolla, the column pubescent. Fruits 5-6 mm, puberulent; mericarps 5, imperfectly constricted below, bulbous-apiculate above; seeds 2 mm, patchily pubescent. $2n = 14$. *Roadsides, open habitats*. Ch (*Fryxell & Lott 3335*, MEXU); G (*Heyde & Lux 6068*, US); ES (*Standley 20362*, US); H (*Molina, 1975*); N (*Stevens 16359*, MO); CR (*Tonduz 1591*, US). 0-2000 m. (West Indies, Central America, Venezuela, Guyanas, Brazil; introduced (?) in India, Ceylon, etc.)

16. Briquetia Hochr.

By P.A. Fryxell.

Herbs or subshrubs 0.5-1.5 m tall, usually with a single erect stem branching only in inflorescence, more or less soft-pubescent with stellate and simple hairs. Leaves broadly ovate, long-petiolate below to sessile immediately below the inflorescence, deeply cordate, serrate to subentire, acuminate. Inflorescence a leafless terminal spike or panicle, the flowers generally subtended by small trifid bractlets; involucel absent; calyx small, gamosepalous, 5-lobed; petals less than 1 cm, yellow. Fruits schizocarpic, strigose or glabrous; mericarps 5-14, usually 2-chambered, the chambers separated by an endoglossum, the lower chamber 1-seeded, the upper chamber 1-2-seeded; seeds more or less pubescent. 5 spp. from N. Mexico to Brazil and Bolivia.

Literature: Fryxell, P.A. *Brittonia* 28: 318-325 (1976); *Syst. Bot. Monogr.* 25: 133-136 (1988).

1. *Briquetia spicata* (Kunth) Fryxell, *Brittonia* 28: 321 (1976). *Abutilon spicatum* Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 271 [folio ed. p. 211] (1822). Holotype: Brazil, *Humboldt & Bonpland s.n.* (microfiche! ex P-HBK; isotype: microfiche! ex B-herb. Willdenow no. 12712). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 137, t. 32 (1988).

Wissadula spicata (Kunth) K. Presl, *Pseudabutilon spicatum* (Kunth) R.E. Fries. Annual herbs or subshrubs to 1.5 m tall, branching widely in the inflorescence, the leafy portion of the stem densely stellate-pubescent, sparsely so in the inflorescence. Leaves long-petiolate below to sessile and amplexicaul immediately below the inflorescence, broadly ovate, cordate, obscurely crenate, acuminate, somewhat discolorous, minutely stellate-pubescent. Inflorescence a terminal leafless spiciform raceme, also with subsidiary lateral inflorescences; flowers subsessile; calyx 3 mm, minutely pubescent; petals 4-5 mm, yellow. Fruits 7-9 mm in diameter, minutely strigose; mericarps 5-7, 2-chambered, the lower chamber 1-seeded, the upper chamber with 2 collateral seeds; seeds 2 mm, minutely strigose. *Evergreen forest, pine-oak forest, deciduous forest, secondary vegetation, roadsides, usually in shade.* Ch (Calzada et al. 3822, XAL); G (Bernoulli 3084, K); H (Thieme 5623, US); ES (Bernhardt & Montalvo

107, ITIC); N (*Stevens* 5284, MO); CR (*Morales* 3483, TEX); P (*Pittier* 2365, US). 0-1000 m. (N. Mexico, Cuba, Guyanas, Ecuador, Bolivia, Brazil.)

17. *Pseudabutilon* R.E. Fries

By P.A. Fryxell.

Shrubs or subshrubs, the stems usually densely stellate-pubescent (rarely glabrescent), sometimes also with long simple hairs. Leaf blades ovate to elliptic, basally cordate to truncate, crenate-serrate (rarely subentire), acute or acuminate, minutely pubescent, sometimes with long appressed simple hairs; petioles much shorter than the blades to subequal to the blades; stipules 1-11 mm, subulate or linear. Flowers solitary or glomerate in the axils, or borne in small axillary umbels or racemes, sometimes aggregated into terminal inflorescences; involucel absent; calyx basally rounded, small, ecostate, about half-divided or less, stellate-pubescent and sometimes also with long simple hairs; petals 4-15 mm, yellow (sometimes white); staminal column shorter than the corolla, pallid, usually more or less stellate-pubescent, the filaments short; styles 5-10, with capitellate stigmas. Fruits 5-10 mm in diameter, stellate-pubescent or hirsute; mericarps 5-10, apically acute to spinescent, with or without an endoglossum (of dorsal origin), the lateral walls sometimes striate-reticulate basally, especially in spp. with a well-developed endoglossum, 3-seeded. 19 spp., from southernmost Texas and Mexico to Argentina.

Literature. Fryxell, P.A. *Contr. Univ. Michigan Herb.* 21: 175-195 (1997).

1. Mericarps 13-14 mm, with divergent spines 2-4 mm; petals 8-15 mm; upper leaf surface with appressed simple hairs 1-2 mm; endoglossum absent.

4. *Pseudabutilon ellipticum*

1. Mericarps 4-11 mm, rounded or with small or large spines; petals 5-10 mm; upper leaf surface with minute stellate hairs; endoglossum present or absent.
2. Mericarps 10-11 mm, with spines up to 2 mm; endoglossum absent.

3. *Pseudabutilon cymosum*

2. Mericarps 4-9 mm, apically rounded or with spines up to 4 mm; endoglossum present or absent.

3. Calyx 6-8 mm, often long-hirsute; flowers solitary or in axillary umbels; spines of mericarps 2-4 mm; endoglossum absent. **5. Pseudabutilon umbellatum**
3. Calyx 3-6 mm, stellate-pubescent; flowers solitary and pedicellate or subsessile and in terminal racemes or panicles; spines of mericarps absent or up to 1.5 mm; endoglossum present.
4. Flowers pedicellate, solitary, axillary; mericarps 5, apically acute.

2. Pseudabutilon orientale

4. Flowers subsessile, disposed in terminal racemes or panicles; mericarps 8-10, apically rounded or acute. **1. Pseudabutilon scabrum**

1. Pseudabutilon scabrum (K. Presl) R.E. Fries, *Kongl. Svenska Vetenskapsakad.*

Handl. 43(4): 103 (1908). *Wissadula scabra* K. Presl, *Reliq. Haenk.* 2: t.69 (1835).

Holotype: Mexico, *Haenke s.n.* (PR!).

Abutilon barrancae M.E. Jones, *Pseudabutilon inornatum* Standley & Steyermark., *P. paniculatum* (Rose) R.E. Fries.

Shrubs 1-2(-3) m tall, minutely stellate-pubescent, the older branches glabrescent. Leaves ovate, truncate to somewhat cordate, obscurely serrate, acute to acuminate, minutely stellate-pubescent. Inflorescence racemiform or paniculate, simple or more often branched; flowers short-pedicellate or subsessile; calyx 3-6 mm; petals 5-10 mm, yellow; staminal column sparsely pubescent to glabrous, the filaments almost as long as the column; styles 8-10, slender, pallid. Fruits 4-6 mm, stellate-pubescent; mericarps 8-10, rounded to acute apically, with endoglossum internally; seeds 2 mm, papillate. $2n = 16$. *Deciduous forest, dry matorral, secondary vegetation.* Ch (Fryxell & Lott 3373, MEXU); G (Standley 61425, US); H (Molina et al. 31252, EAP). 0-1200 m. (W. Mexico to Honduras.)

2. Pseudabutilon orientale (Standley & Steyermark.) Fryxell, *Contr. Univ. Michigan Herb.* 21: 186 (1997). *Abutilon orientale* Standley & Steyermark. *Publ. Field Mus Nat Hist., Bot. Ser.* 23: 173 (1944). Holotype: Guatemala, Standley 74420 (F!).

Abutilon demissum Fryxell.

Branching subshrubs to 1 m tall, the branches often supported on other vegetation and drooping, the stems green, with both stellate and simple hairs. Leaves ovate, cordate,

crenate, acuminate, slightly discolored, minutely stellate-pubescent. Peduncles 4-15 mm, usually solitary in the leaf axils; calyx 4 mm, with both glandular and stellate hairs; petals 5-7 mm, yellow; staminal column 2-3 mm, stellate-pubescent; styles exceeding the androecium, glabrous. Fruits 5-6 mm, pseudocapsular, with both stellate and glandular hairs, closely invested by the calyx; mericarps 5 (4-6), apically acute, with broad endoglossum internally; seeds c. 1.6 mm, glabrous. *Seasonally dry deciduous forest.* G (Standley 74420, F). 0-400 m. (Also W. Mexico as far north as Colima.)

3. *Pseudabutilon cymosum* (Triana & Planch.) Fryxell, *Contr. Univ. Michigan Herb.* 21: 181 (1997). *Abutilon cymosum* Triana & Planch., *Ann. Sci. Nat. Bot.* ser. 4, 17: 185 (1862). Lectotype (designated by Robyns, 1966): Panama, *Seemann* 1628 (K!).

Shrubs 1-2 m tall, stellate-pubescent. Leaves ovate (c. twice as long as wide), shallowly cordate, serrate, acuminate, somewhat discolored, minutely stellate-pubescent. Flowers and fruits in terminal racemes or panicles; calyx c. 7 mm, stellate-pubescent; petals c. 8 mm, yellow; staminal column 4-5 mm, stellate-pubescent, the filaments 3-4 mm; styles 7-8, slender, pallid. Fruits 10-11 mm, coarsely stellate-pubescent; mericarps 7-8, apically spinescent (the spine up to 2 mm); endoglossum absent; seeds c. 1.8 mm, glabrous or papillose. P (*Seemann* 1628, K). (Also in Colombia.)

This species is very similar to *A. ellipticum* Schldl. but is allopatric; Triana & Planchon noted its evident alliance with *A. umbellatum* in their original description.

4. *Pseudabutilon ellipticum* (Schldl.) Fryxell, *Contr. Univ. Michigan Herb.* 21: 182 (1997). *Abutilon ellipticum* Schldl., *Linnaea* 11: 368 (1837). Holotype: Mexico, Michoacán, Keerl s.n. (HAL!; isotype BR!). Illustr.: Fryxell, *Fl. Bajío* 16: 11 (1993).

Abutilon hemsleyanum Rose, *A. sidoides* Hemsl.

Shrubs 1-2(-3) m tall, coarsely stellate-pubescent. Leaves ovate to elliptic (c. twice as long as wide), truncate, serrate, acute or acuminate, more or less discolored, the upper surface with appressed simple hairs 1-2 mm. Flowers and fruits in terminal racemes or panicles; calyx 6-8 mm, stellate-pubescent; petals 8-15 mm, yellow or yellow-orange; staminal column 4-6 mm, stellate-pubescent at base, the filaments c. 2 mm; styles slender, pallid. Fruits 13-14 mm, coarsely stellate-pubescent; mericarps 5-7, apically spinose, the spines 2-4 mm, divergent; endoglossum absent; seeds c. 2 mm, minutely

squamose. $2n = 16$. *Deciduous forest, pine-oak-Liquidambar forest, disturbed sites.* Ch (García 594, CHAPA); G (Molina et al. 15965, US); H (Molina 25919, US). 1200-2600 m. (Mexico to Honduras.)

5. Pseudabutilon umbellatum (L.) Fryxell, *Contr. Univ. Michigan Herb.* 21: 190 (1997). *Sida umbellata* L., *Syst. Nat.* ed. 10. 1145 (1759). Holotype: Jamaica, Browne s.n. (microfiche! ex LINN-866.16). Fryxell, *Fl. Venez. Guyana* 6: t. __ (2000).

Abutilon umbellatum (L.) Sweet.

Shrubs 1-2 m tall, densely stellate-pubescent. Leaves broadly ovate or weakly 3-lobulate, cordate, serrate, acute or acuminate, minutely stellate-pubescent, somewhat discolored. Flowers solitary or in few-flowered axillary umbels, these often aggregated into a terminal compound inflorescence; calyx 6-8 mm, often hirsute (hairs 3-4 mm); petals 6-8 mm, yellowish; androecium yellow. Fruits 6-8 mm, hirsute; mericarps 6-8 with divergent apical spines 2-4 mm; endoglossum absent; seeds 2 mm, papillate. $2n = 16$. *Dry deciduous forest, matorral, disturbed sites.* Y (Darwin et al. 2176b, NO); C (Stewart & Percival 84-18B, NY); ES (Standley 23184, NY); H (Molina 5221, US); N (Fryxell 2860, F); CR (Liesner 4299, MO). 0-1000 m. (Mexico, West Indies, Colombia, Venezuela, Ecuador, Peru, Bolivia.)

18. **Abutilon** Miller

By P.A. Fryxell.

Subshrubs or shrubs to small trees, glabrescent or pubescent, sometimes glandular-pubescent. Leaves elliptic, ovate, or cordiform, sometimes lobed or parted, usually crenate or dentate. Flowers axillary and solitary or aggregated into racemes or panicles, less commonly in umbels; involucel absent; calyx pentamerous, gamosepalous, the lobes lanceolate, ovate, or cordate; petals often yellow or orange, less often white, lavender, or rose; anthers numerous; styles 5 to many; stigmas capitate. Fruits schizocarpic (but sometimes pseudocapsular); mericarps 5 to many, usually apically acute or acuminate to spinescent (rarely rounded), usually with 3-6 seeds each; seeds glabrous or slightly pubescent. C. 160 spp. from the Americas, Africa, Asia, and Australia.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 24-68 (1988). Kearney, T.H. *Leafl. W. Bot.* 7: 241-254 (1955); 8: 201-216 (1958).

1. Carpels (and styles) 5.

2. Calyx 6-8 mm; petals 8-15 mm; stems terete.

7. *Abutilon percaudatum*

2. Calyx 3-4 mm; petals 4-6 mm; stems trisulcate.

6. *Abutilon trisulcatum*

1. Carpels (and styles) 6-25.

3. Carpels (and styles) 20-25, muticous; stems with viscid hairs and with long (2-5 mm) spreading hairs; corolla with dark center.

17. *Abutilon hirtum*

3. Carpels (and styles) 6-15, rounded or acute to spinescent apically; stems variously pubescent or glabrescent; corolla usually without dark center.

4. Carpels (and styles) c. 7, often with divergent apical spines 2-4 mm.

11. *Abutilon brenesii*

4. Carpels (and styles) 8-15, apically rounded to acute or spinescent (if spines more than 2 mm, then carpels 10 or more).

5. Leaves moderately 3-lobed to deeply 5-parted; plants glabrescent; petals 3.5-4.5 cm, yellow with dark red claw and conspicuous dark red venation.

14. *Abutilon striatum*

5. Leaves ovate, unlobed or weakly lobed; plants glabrescent or pubescent; petals of various sizes and colors, without dark venation (or if dark-veined in *A. tridens*, then plants tomentose).

6. Calyx tubular, 5-dentate, inflated, purplish, nearly equaling yellow corolla; androecium purplish, manifestly exserted; plants glabrescent; stipules ovate-sessile, prominent and persistent.

15. *Abutilon vexillarium*

6. Calyx campanulate (sometimes reflexed), 5-lobed, not inflated, usually green or yellowish, equaling or shorter than corolla; androecium usually pallid, usually not exserted or if so (in *A. tridens*) then plants tomentose (although appearing exserted in species with reflexed petals); plants usually pubescent; stipules various.

7. Calyx 15-35 mm.

8. Calyx 15-25 mm; flowers usually solitary.

10. *Abutilon purpusii*

8. Calyx 25-35 mm; flowers in 2-4-flowered umbels.

9. Petals 5.5 cm, wine-red; androecium included.

13. *Abutilon pachecoanum*

9. Petals 3-3.5 cm, orange-yellow with reddish veins; androecium exserted.

12. *Abutilon tridens*

7. Calyx 3-15 mm.

10. Calyx divided nearly to the base, the lobes (sepals) narrow and fully reflexed in fruit; mericarps 12-20 mm, strongly keeled dorsally.

11. Simple hairs of stems and petioles dense, 1-2 mm, spreading or somewhat retrorse; petal spot present.

4a. *Abutilon divaricatum* var. *divaricatum*

11. Stems and petioles minutely stellate-pubescent, lacking long simple

hairs; petals spot absent. **4b. *Abutilon divaricatum* var. *hintonii***

10. Calyx 1/2-2/3-divided, the lobes not reflexed; mericarps usually less than 12 mm, not strongly keeled.

12. Mericarps with 4-6 seeds each; petals c. 20 mm, pale rose-lavender.

9. *Abutilon hulseanum*

12. Mericarps with 3 seeds each; petals 5-18 mm, yellowish or yellow-orange.

13. Mericarps 12-15; pedicels stout (1.5-2 mm in diameter); petals markedly reflexed; staminal column 5-9 mm, glabrous, the filaments 4-5 mm.

5. *Abutilon giganteum*

13. Mericarps 8-15; pedicels slender (up to 1 mm in diameter); petals reflexed or not; staminal column 2-7 mm, glabrous or pubescent, the filaments 1-4 mm.

14. Annual herb, introduced; mericarps c. 15.

16. *Abutilon theophrasti*

14. Shrubs; mericarps 8-12.

15. Calyx 10-15 mm, pentangular in bud.

8. *Abutilon permolle*

15. Calyx 4-13 mm, rounded in bud.

16. Calyx 9-13 mm; inflorescence an interrupted raceme; filaments 2-3 mm.

3. *Abutilon bracteosum*

16. Calyx 5-10 mm; inflorescence paniculate; filaments 1-1.5 mm.
17. Mericarps puberulent (hairs 0.2-0.5 mm), blunt to acute apically.
1. **Abutilon andrieuxii**
17. Mericarps hirsute (hairs 1-1.5 mm), acuminate apically.
2. **Abutilon haenkeanum**

1. Abutilon andrieuxii Hemsley, *Diagn. Pl. Nov. Mexic.* 2: 24 (1879). Holotype: Mexico, Oaxaca, *Andrieux* 522 (K!; isotypes: photo F-23764! ex G, K!, OXF!). Illustr.: Fryxell, *Madroño* 23: 333, t. 5. f. A-D (1976).

Abutilon calderonii Standley.

Shrubs 2-5 m tall, the herbage puberulent (hairs 0.2-0.5 mm). Leaves orbicular to ovate, deeply cordate, obscurely serrate, acuminate; stipules auriculate-clasping, asymmetrical, deciduous. Inflorescence a terminal panicle; flowers subtended by deciduous floral bracts (of stipular origin); calyx 5-8 mm, campanulate; petals 8-14 mm, orange, reflexed; staminal column densely pubescent, the filaments 1-1.5 mm, crowded at apex of column; styles c. 10, slender, reddish. Fruits 8-10 mm, puberulent (hairs 0.2-0.5 mm); mericarps c. 10, rounded to acute apically; seeds 2 mm, sparsely pubescent, 3 per carpel. $2n = 14$. *Deciduous forests*. Ch (*Breedlove & Thorne* 30590, CAS); G (*Williams et al* 22443, F); H (*Molina et al.* 31250, MO); ES (*Calderón* 1639, US); N (*Greenman* 5808, MO). 650-1600 m. (Also Oaxaca, Mexico.)

2. Abutilon haenkeanum K. Presl, *Reliq. Haenk.* 2: 115 (1835). Holotype: Mexico, *Haenke s.n.* (PR!; isotypes: BM!, MICH!, MO!, PR!.photo F-32631! ex W). Illustr.: Fryxell, *Madroño* 23: 333, t. 5. f. E (1976).

Shrubs 2-3(-6) m tall, the herbage finely puberulent (hairs 0.1 mm). Leaves broadly ovate, deeply cordate, obscurely serrate, acuminate, discolorous; stipules auriculate-clasping, asymmetrical, deciduous. Inflorescence a terminal panicle; calyx 6-10 mm, hirsute (hairs 0.5-1 mm); petals 6-9 mm, orange, more or less reflexed; staminal column stellate-pubescent at least at base, the filaments 1-1.5 mm; styles 8-10. Fruits c. 1 cm, hirsute (hairs 1-1.5 mm); mericarps 8-10, apically acuminate; seeds 2 mm, minutely verruculate. *Forest margins, disturbed areas, roadsides*. Ch (*Matuda* 16340, MEXU). 0-500 m. (W. Mexico, as far north as Sinaloa.)

3. *Abutilon bracteosum* Fryxell, *Brittonia* 32: 262 (1980). Holotype: Mexico, Oaxaca, Koch & Fryxell 78408 (CHAPA!; isotypes: CTES!, ENCB!, MICH!, NY!, TEX!).

Shrubs to 2 m tall, the stems sparsely hirsute, more densely so at base of petioles. Leaves ovate (almost as broad as long), cordate, remotely and shallowly denticulate, acuminate, stellate-pubescent beneath, with appressed simple hairs above; stipules auriculate-clasping, sessile, deciduous. Inflorescence an interrupted raceme surpassing the leaves; pedicels 0.3-2 cm; calyx 9-13 mm, campanulate, deeply 5-lobed, prominently ciliate, basally rounded; petals 9-15 mm, orange-yellow, slightly reflexed; staminal column 5-7 mm, more or less pubescent, the filaments 2-3 mm; styles 10-11, with purplish stigmas. Fruits 8-9 mm, minutely and evenly stellate-pubescent; mericarps 10-11, rounded-acute, 3-seeded. *Evergreen forest and seasonally dry deciduous forest, sometimes on roadsides and in disturbed vegetation.* Ch (Breedlove 44442, CAS); N (Harmon & Fuentes 5041, MO). 0-1000 m, generally below 500 m. (Also W. Mexico as far north as Colima.)

4. *Abutilon divaricatum* Turcz, *Bull. Soc. Imp. Naturalistes Moscou* 31: 204 (1858). Lectotype (designated by Fryxell, 1976): Mexico, Veracruz, Galeotti 4071 KW!; isolectotypes: BR!, photo F-23765! ex G, K!).

4a. *Abutilon divaricatum* Turcz var. ***divaricatum***. Illustr.: Fryxell, *Madroño* 23: 328, t. 3. f. D-G (1976).

Abutilon chiriquinum A. Robyns.

Shrubs 2-3 m tall, pilose with simple hairs 1-2 mm, the stem hairs slightly retrorse, and with smaller stellate hairs. Leaves ovate, deeply cordate, serrate, acuminate, slightly discolored, pubescent; stipules auriculate-clasping, deciduous. Inflorescence a terminal panicle; pedicels 0.5-2(-3) cm; calyx 4-8 mm, divided nearly to the base, the lobes (sepals) narrowly lanceolate, fully reflexed in fruit; petals 7-9 mm, pale yellow, generally with diffuse dark spot at base, sometimes reflexed; staminal column 4-5 mm, densely pubescent basally. Fruits 12-20 mm, hirsute; mericarps 8-12, prominently keeled, basally rounded, apically acute; seeds 2 mm, essentially glabrous. *Pine-oak forest, secondary*

vegetation. Ch (Breedlove 8984, F); G (Heyde & Lux 4445, US); H (Nelson et al. 4059, MO); N (Molina 27289, US); CR (Standley & Valerio 43488, F); P (Bro. Maurice 705, MO). 1200-2300 m, occasionally lower. (Also Veracruz, Mexico.)

This sp. was mistakenly identified as *A. giganteum* in Standley (1923), Standley & Steyermark (1949), and presumably in Molina (1975).

4b. *Abutilon divaricatum* var. *hintonii* Fryxell, *Brittonia* 32: 265 (1980).

Holotype: Mexico, Edo. México, *Hinton et al.* 7431 (K!; isotypes: K!, MICH!).

Stems and petioles minutely stellate-pubescent, lacking long simple hairs. Petals lacking petal spot. Otherwise as in nominate variety. ES (González 1999, MO). C. 1900 m. (Also in W. Mexico.)

5. *Abutilon giganteum* (Jacq.) Sweet, *Hort. Brit.* ed. 1. 1: 53 (1826). *Sida gigantea* Jacq., *Hort. Schoenbr.* 2: 8 (1797). Type: *Hort. Schoenbr.* 2: t. 141 (1797). Illustr.: Fryxell, *Madroño* 23: 328, t. 3. f. A-C (1976).

Shrubs or small trees 2-6 m, minutely stellate-pubescent. Leaves broadly ovate, deeply cordate, denticulate to subentire, acuminate. Inflorescence a terminal panicle; calyx 8-11 mm, c. half-divided or more, campanulate; petals 8-12 mm, reflexed, yellow, sometimes with a reddish spot at base; staminal column 5-9 mm, glabrous, the filaments 4-5 mm; styles 12-15. Fruits 8-12 mm, pubescent; mericarps 12-15, more or less acuminate apically, 3-seeded. *Evergreen forest, secondary vegetation, dry shrubland.* N (Stevens 6041, MO); P (Allen 2094, NY). 0-1000 m. (Also Venezuela and Colombia.)

This sp. was confused with *A. divaricatum* in Standley (1923), Standley & Steyermark (1949), and presumably also in Standley & Calderón (1925).

6. *Abutilon trisulcatum* (Jacq.) Urban, *Repert. Spec. Nov. Regni Veg.* 16: 32 (1919). *Sida trisulcata* Jacq., *Enum. Syst. Pl.* 26 (1760). Neotype (here designated): Insula Domingo, *Jacquin s.n.* (specimen unknown); Jacquin, *Select. Stirp. Amer. Hist.* t. 184 (1780).

Sida triquetra L.

Robust herbs or shrubs 1-2.5 m tall, the stems prominently trisulcate when young, puberulent, usually viscid, especially in the inflorescence. Leaves ovate, cordate,

crenulate-serrulate, acuminate, minutely velutinous, slightly discolorous. Flowers usually in lax terminal panicles; calyx 3-4 mm, puberulent; petals 4-6 mm, yellow, often with red spot at base, often reflexed; styles 5. Fruits 6-8 mm, columnar but slightly constricted near center, puberulent, loculicidally dehiscent; mericarps uniformly 5, apiculate at apex; seeds 2 mm, minutely pubescent or glabrous. $2n = 14$. *Disturbed sites, roadsides, secondary vegetation.* Y (Gaumer 954, US); C (Goldman 480, US); G (Steyermark 51487, F); ES (Tucker 910, US); H (Molina, 1975); N (Araquistain & Moreno 1313, MO). 100-500 m. (Texas, Mexico, and the West Indies to Nicaragua.)

The Jacquin plate designated as neotype is authentic material in the sense that the plate is Jacquin's original drawing and was accepted by him as representing this species. However, it was published subsequent to the protologue and thus is not eligible to be named as a lectotype.

7. *Abutilon percaudatum* Hochr., *Annuaire Conserv. Jard. Bot. Genève* 21: 438 (1920). Holotype: Mexico, San Luis Potosí, Palmer 19 (NY!; isotypes: CM!, F!, GH!, K!, MO!, US!).

Widely branched shrubs to 2 m tall with glandular pubescence, the stems terete. Leaves ovate, deeply cordate, crenate, acuminate, very sparsely pubescent. Flowers solitary or in lax panicles; calyx 6-8 mm, yellowish at base, campanulate; petals 8-15 mm, yellowish with maroon spot at base; staminal column purplish, the anthers orange; styles 5, pallid, with purplish stigmas. Fruits 9-12 mm, puberulent, loculicidally dehiscent; mericarps 5, apically acute; seeds 2.8 mm, scabridulous. $2n = 28$. *Deciduous forest and dry scrubland.* Ch (Ton 3144, CAS); CR (Janzen T-65, MO). 1000-1600 m. (Also C. Mexico.)

8. *Abutilon permolle* (Willd.) Sweet, *Hort. Brit.* ed. 1. 53 (1826). *Sida permollis* Willd., *Enum. Pl. Hort. Berol.* 728 (1809). Holotype: ex Hort. Bot. Berol., Anon. s.n. (microfiche! and photo F-9794! ex B-herb. Willdenow no. 12689).

Shrubs 1-2 m tall, softly stellate-pubescent. Leaves ovate, deeply cordate, serrate, acuminate, more or less discolorous, densely whitish-pubescent beneath, sparsely pubescent above. Flowers solitary in the axils or in terminal panicles, long-pedunculate; calyx 1-1.5 cm, soft-puberulent, campanulate, the buds 5-angulate; petals 10-18 mm,

yellow or yellow-orange; staminal column glabrous; styles 10-12, slender. Fruits subequal to calyx, hirsute; mericarps 10-12, apically acute; seeds 2 mm, papillate. *Evergreen forest, thorn forest, and disturbed sites, often on limestone soils.* Ch (*Breedlove 24178, CAS*); Y (*Gaumer 23481, F*); C (*Lundell 949, LL*); QR (*Sousa 10901, MEXU*); B (*Dwyer 9850, MO*); G (*Lundell 16604, LL*); H (*Molina 11634, US*). 0-1200 m. (Also West Indies, Florida Keys.)

9. *Abutilon hulseanum* (Torrey & A. Gray) Torrey ex A. Gray, *Mem. Amer. Acad. Arts* n.s. 4 (Pl. Fendler.): 23 (1849). *Sida hulseana* Torrey & A. Gray, *Fl. N. Amer.* 1: 233 (1838). Holotype: U.S.A., Florida, *Hulse s.n.* (NY!). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 204, t. 82 (1989).

Subshrubs 1-1.5 m tall, the stems stellate-tomentulose and with simple hairs 2-3 mm. Leaves ovate, cordate, crenate, rounded-acute, softly tomentulose. Pedicels up to 5.5 cm, solitary in the leaf axils; calyx 12-15 mm, stellate-tomentulose, more than half-divided, pentangular in bud; corolla c. 2 cm, pale rose-lavender; styles c. 12. Fruits 2-2.5 cm in diameter, prominently hirsute (hairs 1-2 mm); mericarps c. 12, apiculate at apex; seeds c. 2 mm, minutely pubescent, 4-6 in each carpel. $2n = 14$. *Roadsides, disturbed sites, and secondary vegetation.* T (*Cowan 2814, NY*); H (*Saunders 551, TEX*). 0-100 m. (Also S. Texas, E. Mexico, S. Florida, and the West Indies.)

10. *Abutilon purpusii* Standley, *Contr. U.S. Natl. Herb.* 23: 750 (1923). Holotype: Mexico, Veracruz, *Purpus 4332* (US!); isotypes: BM!, F!, GH!. Illustr.: Fryxell, *Fl. Bajío* 16: 18 (1993).

Shrubs or small trees 2-6 m tall, the stems densely stellate-pubescent. Leaves ovate, cordate, crenate-serrate, acuminate, minutely stellate-pubescent, very sparsely so above. Flowers solitary in the leaf axils, long-pedunculate; calyx 1.5-2.5 cm, minutely stellate-pubescent, basally brownish, campanulate; petals (2.5-)4 cm, bright yellow, with long glabrous claws; staminal column 2.5 cm, glabrous, the filaments 5-7 mm; styles c. 10. Fruits 2-2.5 cm, subglobose, blackish at maturity, minutely stellate-pubescent; mericarps c. 10, apically blunt, c. 6-seeded; seeds 3 mm, short-pubescent. $2n = 16$. *Deciduous forest, evergreen forest, pine-oak forest, sometimes in disturbed areas.* Ch (*Matuda 85, US*); G (*Standley 68904, US*); CR (*Morales 2343, TEX*). 750-1450 m. (Also C. Mexico.)

11. *Abutilon brenesii* Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 18: 664 (1937). Holotype: Costa Rica, *Brenes* 3587 (F!).

Shrubs 2-3 m tall, the stems densely stellate-pubescent. Leaves ovate, cordate, coarsely crenate, acuminate, minutely stellate-pubescent, very sparsely so above. Flowers solitary in the leaf axils or apically subracemose, long-pedunculate; calyx 1.5-2 cm, densely stellate-pubescent, basally brownish; petals 3 cm, yellow, with long glabrous claws; staminal column subequal to petals, glabrous, the filaments c. 4-5 mm; styles c. 7. Fruits stellate-pubescent; mericarps c. 20 mm, c. 7, apically rounded to subacute, several-seeded; seeds 2.5-3 mm, short-pubescent. *Deciduous and evergreen forest.* CR (*Brenes* 3587, F); P (*Davidson* 498, F). 800-1000 m. (Endemic.)

12. *Abutilon tridens* Standley & Steyermark, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 23: 173 (1944). Lectotype (designated by Fryxell, 1988): Guatemala, *Steyermark* 43439 (F-1132511!); isolectotype: F-1132507!. Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 64, (1988).

Shrubs 2-4 m tall, more or less densely pubescent with minute stellate hairs and simple hairs 1-2 mm. Leaves broadly ovate, deeply cordate, subentire, acuminate, markedly discolored, sparsely pubescent above, densely canescens beneath. Peduncles 11-18 cm, solitary in the leaf axils, generally bearing 2-4-flowered umbels; calyx up to 3.5 cm, densely brown-pubescent, campanulate, prominently nerved; petals 3-3.5 cm, orange, glabrous, erect, forming a tubular corolla; staminal column 4.5-5.5 cm, exserted, glabrous, the filaments 3-8 mm; styles 10-13, exceeding androecium, the stigmas purplish. Fruits 3.5 cm, stellate-hispid, truncate with a crown of divergent spines 2-4 mm; mericarps c. 12, c. 8-seeded; seeds 4 mm, minutely pubescent. *Pine-oak forest, evergreen or cloud forest, deciduous forest.* Ch (*Ton* 4155, MEXU); G (*Steyermark* 43439, F). 1300-2500 m. (Endemic.)

13. *Abutilon pachecoanum* Standley & Steyermark, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 23: 173 (1944). Holotype: Guatemala, *Standley* 83528 (F!).

Shrubs or trees 3-6 m tall, the stems densely stellate-tomentulose and with spreading simple hairs. Leaves ovate (or sometimes weakly 3-lobed), deeply cordate,

entire, acuminate, discolorous, densely stellate-tomentose beneath. Peduncles 10-28 cm, solitary in the leaf axils, usually bearing 3-flowered umbels; calyx 28 mm, densely brown-stellate-pubescent and with simple glandular hairs, campanulate; petals 5.5 cm, deep wine-red; androecium subequal to corolla; styles c. 10. Fruits 3.5-4.5 cm, densely viscid-puberulent; mericarps c. 10, apically spinescent (the spine 4-5 mm), c. 8-seeded.
Wet forests. G (Standley 83528, NY). 2200-2500 m. (Endemic.)

14. *Abutilon striatum* Dickson ex Lindley, *Bot. Reg. app.* 39 (1839). Type:
 Dickson in Maund, *Botanist* 3: t. 144 (1839). Illustr.: Schumann, *Martius Fl. Bras.* 12(3): t. 76 (1891). N.v.: campanilla, farolillo (CR).

Abutilon insigne Planch., *A. pictum* auct. non (J.D. Hook.) Walp., *A. venosum* Lemaire.

Shrubs 2-4 m tall, largely glabrescent. Leaves moderately 3-lobed to deeply 5-parted, truncate to cordate, the lobes lanceolate, serrate, acuminate. Pedicels 6-15 cm, solitary in the leaf axils, slender; calyx 1.5-3 cm, sparsely and minutely stellate-pubescent; petals 3.5-4.5 cm, yellow with dark red claw and conspicuous red venation; androecium equaling or slightly exceeding corolla, yellow; styles 8-10. Fruits c. 2 cm in diameter, minutely stellate-pubescent; mericarps 8-10, apically rounded. *In cultivation, occasionally naturalized.* Ch (Fryxell 3204, MEXU); G (Shannon 219, US); ES (Calderón 566, US); H (Molina, 1975); CR (Rodríguez et al. 1591, TEX). (Native to Brazil [?], introduced elsewhere as an ornamental.)

15. *Abutilon vexillarium* E. Morren, *Belgique Hort.* 14: 289, t. 16 (1864). Type:
 Morren, *Belgique Hort.* 14: t. 16 (1864). Illustr.: Schumann, *Martius Fl. Bras.* 12(3): t. 73 (1891).

Abutilon megapotamicum auct. non (Sprengel) A. St.-Hil. & Naudin.
 Erect shrubs 1 m tall, the stems very sparsely and minutely stellate-pubescent to glabrescent, the young stems often purplish. Leaves triangularly ovate, more or less cordate, crenate-serrate, acute or acuminate, concolorous, essentially glabrous; stipules subequal to petioles, broadly ovate, sessile and amplexicaul, often purplish, deciduous. Pedicels 1.5-2 cm, solitary in the axils, purplish; calyx 1.5-2.5 cm, tubular and inflated, 5-dentate, purple; petals 2.5-3 cm, yellowish, forming a tubular corolla; androecium

exserted, purple; styles c. 8 (?), purple, included in the androecium. $2n = 16$. *In cultivation.* CR (Standley, 1937). (Native to S. Brazil, widely cultivated in the tropics.)

16. *Abutilon theophrasti* Medikus, *Malvenfam.* 28 (1787). Lectotype (designated by Borssum Waalkes, 1966): ex hortus Cliffortianus (BM-Herb.-Cliff.). Illustr.: Abedin, *Fl. W. Pakistan* 130: 62, t. 13, f. A-B (1979).

Abutilon avicennae Gaertner, *Sida abutilon* L.

Erect annual herbs to 1 m tall or more, softly tomentose. Leaves broadly ovate to suborbicular, deeply cordate, crenulate, abruptly acuminate, softly tomentose. Pedicels shorter than the petioles, usually solitary in the leaf axils; calyx c. 10 mm, campanulate, deeply 5-lobed, tomentose; petals 10-13 mm, yellow, glabrous; androecium shorter than corolla, glabrous; styles c. 15. Fruits 12-15 mm, densely hirsute; mericarps c. 15, apically spinescent (spines 3-5 mm), 3-seeded; seeds 3.5-4 mm, minutely puberulent. *Disturbed sites.* P (Johnston 1353, GH). 0-200 m. (Introduced weed, of uncertain Old World origin, usually in temperate zones, rare in Meso-America.)

17. *Abutilon hirtum* (Lam.) Sweet, *Hort. Brit.* ed. 1. 53 (1826). *Sida hirta* Lam., *Encycl.* 1: 7 (1783). Holotype: India, Sonnerat s.n. (microfiche! ex P-LA). Illustr.: Sivarajan & Pradeep, *Malvac. So. Peninsular India* 191, t. 69 (1996).

Robust herbs c. 1 m tall, the stems viscid and with simple hairs 2-5 mm. Leaves subrotund, cordate, finely serrate, acuminate, sparsely pubescent above, softly tomentose beneath. Pedicels 2-3.5 cm, solitary in the leaf axils but inflorescence becoming paniculate; calyx 12-17 mm, c. half-divided, stellate-tomentulose; corolla 18-20 mm, orange-yellow with dark red center; styles 20-25. Fruits exceeding calyx, c. 2 cm in diameter, stellate-hirsute (hairs c. 1 mm); mericarps 20-25, apically blunt to subacute; seeds 2.4-2.8 mm, scabridulous. $2n = 42$. *Roadsides, secondary vegetation.* T (Matuda 3280, MEXU); Y (Schott 121, F); B (Lundell 4966, MO); ES (Standley 19358, NY); H (Molina & Molina 25877, NY); N (Cháves 79, US); CR (Tonduz 13486, US); P (Barclay 1006, BM). 0-300 m. (Sporadic adventive in West Indies, S. Florida, E. Mexico, Peru; native to tropical Africa and Asia.)

19. *Bakeridesia* Hochr.

By P.A. Fryxell.

Shrubs or small trees 1-8 m tall, densely stellate-pubescent, often ferrugineous. Leaves broadly ovate, cordate (or narrower and truncate in inflorescence), entire (the venation camptodrome), acute or acuminate, minutely stellate-pubescent (the hairs often stipitate), sometimes discolored. Flowers solitary or paired in the leaf axils or aggregated into axillary or terminal inflorescences; involucel absent; calyx gamosepalous, pentamerous, usually ribbed; corolla 1.5-6 cm, white or yellow often with a reddish center; staminal column included or exserted, usually pubescent. Fruits blackish, stellate-pubescent; mericarps 7-27, often with a lacerate dorsal wing, 2-7-seeded; seeds reniform, more or less pubescent. Fourteen spp. from Mexico and Central America, one of which also occurs from Venezuela to Ecuador.

Literature: Bates, D.M. *Gentes Herb.* 10: 425-484 (1973).

1. Young growth orange-pubescent; petals white (or pale yellow), narrowly spatulate (1.5 cm wide), erect. **2. Bakeridesia yucatana**
1. Young growth more or less ferrugineous (or green); petals yellow or orange (sometimes with red spot at base), broadly obovate, spreading or reflexed.
 2. Petals 1.5-3.5 cm; calyx 6-14(-18) mm.
 3. Petals 1.5-2 cm, yellow throughout; pedicels usually less than 1.5 cm; mericarps with greatly reduced or missing dorsal wing. **3. Bakeridesia gaumeri**
 3. Petals 2-3.5 cm, with or without reddish spot at base; pedicels usually more than 1 cm long; mericarps with or without a dorsal wing.
 4. Mericarps (and styles) c. 15, with lacerate wing on dorsal margin; staminal column 5-7 mm. **6. Bakeridesia integerrima**
 4. Mericarps (and styles) 11-13, the dorsal wing present or absent; staminal column 10-12 mm.
 5. Mericarps lacking dorsal wing; petals 25-35 mm, yellow with reddish base; calyx 7-14 mm. **4. Bakeridesia pittieri**
 5. Mericarps with lacerate wing on dorsal margins; petals 25-30 mm, yellow throughout; calyx 12-17 mm. **5. Bakeridesia molinae**
 2. Petals 3-6 cm; calyx 15-37 mm.

6. Calyx 30-37 mm, the lobes strongly twisted in bud; staminal column 30-45 mm (appearing exserted); mericarps 21-27.
7. Calyx lanate with stipitate stellate hairs and digitiform appendages, more or less rounded at base. **9. Bakeridesia nelsonii**
7. Calyx minutely stellate-pubescent, strongly 5-keeled at base.
- 8. Bakeridesia vulcanicola**
6. Calyx 15-33 mm, the lobes twisted or not in bud; staminal column 11-20 mm, included, mericarps 14-18.
8. Mericarps 14-16, lacking dorsal wing; calyx in bud weakly or not at all twisted; pedicels 1-3 cm in flower. **1. Bakeridesia exalata**
8. Mericarps 16-18, with lacerate wing on dorsal margin; calyx in bud strongly twisted; pedicels 2-9 cm. **7. Bakeridesia gloriosa**

1. Bakeridesia exalata D. Bates, *Gentes Herb.* 10: 449 (1973). Holotype: Guatemala, Steyermark 30691 (F!). Illustr.: Bates, *Gentes Herb.* 10: 450, t. 10 (left) (1973).

Shrubs to 3 m tall, the young growth tomentose. Leaves broadly ovate, deeply cordate, acuminate. Pedicels 1-3 cm in flower to 7.5 cm in fruit, solitary in the leaf axils; calyx 15-27 mm, reddish tomentose, in bud longitudinally pleated but not (or slightly) twisted; petals c. 4 cm, yellowish with dark red base, obovate, spreading; staminal column 12-14 mm, sparsely pubescent at base; styles 14-16. Fruits c. 2 cm in diameter, ferruginous-pubescent; mericarps 13-18 × 6-9 mm, 14-16, lacking dorsal wings, 7-seeded; seeds to 4.5 mm, copiously pubescent. *Dry deciduous forest and matorral.* G (Pittier 1823, US); ES (Tucker 932, MICH); H (Molina et al. 31253, WIS); N (Stevens 11228, MO). 500-1000 m. (Endemic.)

2. Bakeridesia yucatana (Standley) D. Bates, *Gentes Herb.* 10: 452 (1973). *Abutilon yucatanum* Standley, *Contr. U.S. Natl. Herb.* 23: 751 (1923). Holotype: Mexico, Quintana Roo, Goldman 634 (US!). Illustr.: Bates, *Gentes Herb.* 10: 450, t. 10 (right) (1973).

Shrubs to 3 m tall, the young growth densely orange stellate-pubescent. Leaves broadly ovate, cordate, entire or obscurely denticulate, acute or acuminate, somewhat

discolorous, densely pubescent beneath, sparsely so to glabrescent above. Pedicels to 6-8 cm, solitary in the leaf axils; calyx c. 2 cm, orange-pubescent, less than half-divided, tubular-campanulate; petals c. 4 cm, narrowly spatulate (1.5 cm wide), erect, white or pale yellow; staminal column c. 3 cm, glabrous, the filaments 2-4 mm; styles c. 10, slender, pubescent. Fruits c. 17 mm in diameter, densely pubescent; mericarps c. 10, with narrow lacerate wing on dorsal margin; seeds c. 3 mm, pubescent. *In acahual with palms.* QR (Quero & Grether 2652, MEXU). 0-50 m. (Endemic.)

3. Bakeridesia gaumeri (Standley) D. Bates, *Gentes Herb.* 10: 480 (1973).

Abutilon gaumeri Standley, *Publ. Field Columbian Mus., Bot. Ser.* 8: 24 (1930).

Holotype: Mexico, Yucatán, Gaumer 24072 (F!); isotypes: A!, BM!, F!, GH!, MO!, NY!, US!). Illustr.: Bates, *Gentes Herb.* 10: 481, t. 21 (1973).

Shrubs to 6 m tall, the young growth densely stellate-pubescent, the hairs more or less ferruginous. Leaves ovate (progressively smaller and narrower upward), cordate, acuminate, somewhat discolorous, minutely stellate-pubescent. Pedicels 0.5-1.5(-3) cm, solitary in the leaf axils; calyx 7-10 mm, stellate-pubescent, c. half-divided; petals 1.5-2 cm, yellow, obovate, spreading; staminal column 4-6 mm, the filaments 2-4 mm; styles 8-10, slender, glabrous. Fruits 10-12 mm in diameter, pubescent; mericarps 8-10, dorsally with a wing that is reduced to a ridge or obsolete; seeds c. 3 mm, pubescent. *Deciduous forest and secondary vegetation.* Y (Lundell 7407, LL); QR (Téllez 1311, MEXU); H (Molina 6792, US). 0-300 m. (Endemic.)

4. Bakeridesia pittieri (J.D. Smith) D. Bates, *Gentes Herb.* 10: 478 (1973).

Abutilon pittieri J.D. Smith, *Bot. Gaz.* 56: 51 (1913). Holotype: Guatemala, Pittier 138 (US!); isotype: US!). Illustr.: Bates, *Gentes Herb.* 10: 479, t. 20 (left) (1973).

Shrubs or small trees 2-3 m tall, densely pubescent and more and less ferruginous. Leaves ovate, cordate or truncate, entire, acute or acuminate, discolorous, minutely pubescent. Pedicels 1-2 cm, solitary or sometimes paired in the leaf axils, generally grouped at the ends of branches; calyx 7-14 mm, stellate-pubescent, c. half-divided; petals 2.5-3.5 cm, yellow with red base, obovate, spreading; staminal column c. 1 cm, pubescent, the filaments 3-5 mm; styles 11-12, glabrous. Fruits 11-13 mm in diameter, oblate, stellate-pubescent; mericarps 11-12, apically acute, lacking wing on dorsal

margin, 3-4-seeded; seeds c. 3 mm, sparsely pubescent. *Deciduous forest and disturbed sites.* Ch (Neill 5522, MO); G (Harmon 3206, ENCB). 400-1400 m. (Endemic.)

5. Bakeridesia molinae D. Bates, *Gentes Herb.* 10: 466 (1973). Holotype: Honduras, *Molina* 33049 (GH!). Illustr.: Bates, *Gentes Herb.* 10: 464, t. 15 (1973).

Shrubs 1-4 m tall, the branches slender, obscurely stellate-pubescent. Leaves broadly to narrowly ovate, truncate or subcordate, entire, acuminate. Pedicels to 5 cm, solitary or paired in the leaf axils, slender; calyx 12-17 mm, deeply 5-lobed, the lobes twisted in bud; petals 25-30 mm, yellow, obovate, spreading; staminal column to 12 mm, basally stellate-pubescent, the filaments to 5 mm; styles 11-13, glabrous. Fruits stellate-pubescent; mericarps 11-13, 3-seeded, with a lacerate wing on dorsal margin. *Dry deciduous forest.* H (*Molina* 7309, US). 700-1800 m. (Endemic.)

6. Bakeridesia integerrima (J.D. Hook.) D. Bates, *Gentes Herb.* 10: 467 (1973). *Sida integerrima* J.D. Hook. *Bot. Mag.* 74: 4360 (1848). Lectotype (designated by Bates, 1973): Hooker's plate in *Bot. Mag.* 74: t. 4360 (1848). Illustr.: Bates, *Gentes Herb.* 10: t. 3 (1973).

Abutilon chittendenii Standley, *A. integerrimum* (J.D. Hook.) Triana & Planchon. Shrubs or small trees 3-6 m tall, the young growth densely stellate-pubescent. Leaves broadly ovate, cordate, entire or obscurely denticulate, acuminate, minutely stellate-pubescent, slightly discolored. Pedicels 0.5-5 cm, solitary or paired in the leaf axils, often aggregated at the ends of lateral branches; calyx 8-18 mm, ferruginous-pubescent, half-divided or more; petals 2-3 cm, yellow, usually with a red spot at base, obovate, spreading; staminal column 5-7 mm, pubescent at base, the filaments 4-5 mm; styles c. 15, slender, pallid or purplish. Fruits 1.5-2 cm in diameter, globose to oblate; mericarps c. 15, dorsally with a lacerate wing bearing stipitate hairs, 3-seeded; seeds 3 mm, pubescent. $2n = 30$. *Dry open shrublands and secondary vegetation.* H (*Molina* 8422, F); N (Stevens 20293, MO). 0-500 m. (Also in E. Mexico and Colombia, Venezuela, Ecuador.)

7. Bakeridesia gloriosa D. Bates, *Gentes Herb.* 10: 452 (1973). Holotype: Mexico, Chiapas, Breedlove 9044 (F!; isotypes: BH, F!, MICH!). Illustr.: Bates, *Gentes Herb.* 10: 453, t. 11 (1973).

Shrubs or small trees to 6 m tall, the young growth densely ferrugineous stellate-pubescent. Leaves broadly to narrowly ovate, cordate, acuminate, slightly discolored, minutely stellate-pubescent. Pedicels 2-9 cm, solitary in the leaf axils; calyx 2-3 cm, ferrugineous-pubescent, half-divided or more, the tips of the lobes strongly twisted in bud; petals 3.5-6 cm, yellow, sometimes with an orange or reddish base, obovate, spreading; staminal column 15-20 mm, basally pubescent; styles 16-18, pubescent. Fruits 16-28 mm in diameter, oblate, pubescent; mericarps 16-18, dorsally with a broad lacerate wing with stipitate hairs, c. 6-seeded (?); seeds 3.5 mm, pubescent. *Dry deciduous and evergreen forest.* Ch (Breedlove & McClintock 23580, CAS); G (Tún Ortiz 2194, MICH). 900-1400 m. (Also adjacent parts of Oaxaca and Veracruz, Mexico.)

8. Bakeridesia vulcanicola (Standley) D. Bates, *Gentes Herb.* 10: 457 (1973). *Abutilon vulcanicola* Standley, *J. Wash. Acad. Sci.* 14: 238 (1924). Holotype: El Salvador, Standley 21514 (US!). Illustr.: Bates, *Gentes Herb.* 10: 458, t. 13 (1973).

Shrubs or small trees 3-8 m tall, the young growth densely brownish stellate-pubescent. Leaves broadly ovate, deeply cordate, acuminate. Pedicels 5-10 cm (or more), solitary or paired in the leaf axils, stout, often aggregated terminally; calyx 30-37 mm, densely ferrugineous-pubescent, conspicuously 5-keeled at base, deeply 5-lobed, the lobes strongly twisted in bud; petals 4-5.5 cm, yellow-orange, pubescent dorsally, obovate, somewhat reflexed; staminal column 3-4 cm, basally pubescent, the anthers in a globose "head" at apex of column; styles 21-25, pubescent. Fruits 2.5-3.5 cm in diameter, oblate or subglobose, densely pubescent; mericarps 1.5-2 cm, with a lacerate wing dorsally; seeds c. 3 mm, pubescent. *Mixed forest and secondary growth.* G (Steyermark 33170, F); H (Molina 11318, US); ES (Reyna 1329, MO); CR (Morales & Abarca 5219, TEX). 1000-2000 m. (Endemic.)

9. Bakeridesia nelsonii (Rose) D. Bates, *Gentes Herb.* 10: 455 (1973). *Abutilon nelsonii* Rose, *Contr. U.S. Natl. Herb.* 5: 134 (1897). Holotype: Guatemala, Nelson 3562 (US!; isotypes: BM!, GH!). Illustr.: Fryxell, *Fl. Chiapas* 3: 60, t. 4 (1990).

Shrubs or sometimes trees to 6 m tall, the young growth densely and loosely ferrugineous stellate-pubescent. Leaves broadly ovate, deeply cordate, entire, acuminate, discolorous, minutely stellate-pubescent. Pedicels 9-15 cm (or more), solitary or paired in the leaf axils, densely pubescent; calyx c. 3 cm, densely ferrugineous stellate-pubescent with stipitate hairs and digitiform appendages, c. half-divided, the lobes twisted in bud, the base more or less rounded; petals 4-5 cm, yellow or orange, more or less reflexed, pubescent basally, obovate, spreading; staminal column c. 3 cm, stellate-pubescent basally; styles 22-27, pubescent. Fruits and seeds unknown. *Presumably in forests.* Ch (Matuda 2039, MEXU); G (Steyermark 51063, US). 1000-1800 m. (Endemic.)

The only collection known from Chiapas (Matuda 2039) is geographically problematical.

20. **Hochreutinera** Krapov.

By P.A. Fryxell.

Subshrubs with scattered to dense stellate and simple pubescence. Leaves ovate, deeply cordate, serrate-crenate, acute or acuminate, more or less discolorous. Flowers solitary in the leaf axils or in terminal racemes or lax panicles; involucel absent; calyx pubescent, half-divided or more, the lobes more or less cordate, acuminate, more or less accrescent; petals equaling calyx to 3 times as long as calyx, yellow; androecium included in corolla, glabrous. Fruits pubescent, blackish at maturity; mericarps 10 or more, apically acute or aristate, dehiscent, 5-seeded, with small endoglossum below the seeds; seeds minutely scabridulous (appearing glabrous). 2 spp., 1 sp. from Mexico and Mesoamerica, 1 sp. from Paraguay and Argentina.

Literature: Fryxell, P.A. *Brittonia* 28: 318-325 (1976).

1. Hochreutinera amplexifolia (DC.) Fryxell, *Brittonia* 28: 322 (1976). *Sida amplexifolia* DC., *Prodr.* 1: 469 (1824). *Abutilon amplexifolium* (DC.) G. Don. Type: *Icones Florae Mexicanae* s.n.! (Torner Collection acc. no. 6331.1731, Hunt Institute). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 235 (1988).

Subshrubs 1-2 m tall, moderately hirsute mostly with simple hairs 1-2 mm. Leaves long-petiolate below to sessile and amplexicaul immediately below the inflorescence,

ovate, deeply cordate, serrate, acuminate, hirsute to glabrescent, discolorous. Flowers usually in terminal panicles; calyx 6-8 mm in flower to 12 mm in fruit, hirsute, more than half-divided; corolla rotate, the petals 12-21 mm, yellow; staminal column c. 3 mm, glabrous, the filaments 3-5 mm; styles 10-12. Fruits glandular-pubescent; mericarps 1-2.5 cm, 10-12, apically acute (rarely rounded), 5-seeded, with glandular-pubescent endoglossum; seeds 2.5 mm, essentially glabrous. *Evergreen forest and disturbed areas.* Ch (*Breedlove 39085, DS*); G (*Steyermark 51191, F*); ES (*Calderón 1945, NY*). 200-1000 m. (Also widespread in Mexico.)

21. **Bastardia** H.B.K.

By P.A. Fryxell.

Herbs or shrubs 0.5-3 m tall, pubescent with stellate, simple, and often glandular hairs. Leaves ovate, rarely lobulate, cordate, subentire to serrate, acute or acuminate. Flowers solitary or paired in the leaf axils, often aggregated into terminal leafy panicles; involucel absent; calyx divided almost to the base, pentamerous; petals usually less than 1 cm, yellow; androecium included in corolla; styles 5-8, with capitate stigmas. Fruits schizocarpic but functionally capsular; mericarps 5-8, rounded or apiculate, 1-seeded; seeds minutely pubescent or glabrous. 3 or 4 spp. from the Neotropics.

1. *Bastardia viscosa* (L.) Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 256 [folio ed. 199] (1822). *Sida viscosa* L., *Syst. Nat.* ed. 10. 1145 (1759). Type: Sloane, *Voy. Jamaica* 2: t. 139, f. 4 (1788). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 119, t. 24 (1988).

Subshrubs or shrubs 0.5-1.5 m tall, the stems glandular-pubescent (often malodorous) and often with simple hairs 1-2 mm. Leaves ovate (rarely weakly lobulate), cordate, serrate to subentire, acute to acuminate, stellate-pubescent, often viscid beneath, essentially concolorous. Flowers long-pedicellate in the leaf axils, often in terminal leafy panicles; calyx 4-5 mm, viscid; petals 5-7 mm, yellow; staminal column glabrous; styles 6-8. Fruits oblate, loculicidally dehiscent, 6-8-celled, stellate-pubescent, muticous; seeds 2 mm, pubescent. *Deciduous forest, matorral, disturbed ground.* Ch (*Breedlove 54377, CAS*); Y (*Enríquez 345, MEXU*); C (*Cabrera & Cabrera 2249, MEXU*); QR (*Moreno*

281, MEXU); H (*Molina* 14294, US); N (*Stevens* 18629, MO); P (*Croat* 9707, NY). 0-500 m. (S. Texas, Mexico, West Indies, Colombia, Venezuela, Ecuador.)

22. *Herissantia* Medikus

Bogenhardia Reichb., *Gayoides* (Endl.) Small

By P.A. Fryxell.

Herbs, subshrubs, or shrubs, erect or decumbent, pubescent or hirsute, sometimes viscid. Leaves ovate, cordate, dentate or subentire, acute or acuminate. Flowers usually solitary in the leaf axils; involucel absent; calyx gamosepalous, 5-lobed, the lobes lanceolate or ovate; petals yellow or white; androecium included in the corolla. Fruits oblate, inflated, pendulous; mericarps 10 or more, pubescent or hispid, dehiscent, with fragile walls, 1-3-seeded; seeds scabridulous. 6 or more spp., principally from the Neotropics.

Literature: Brizicky, G.K. *J. Arnold Arbor.* 49: 278-279 (1968).

1. *Herissantia crispa* (L.) Briz., *J. Arnold Arbor.* 49: 279 (1968). *Sida crispa* L., *Sp. Pl.* 685 (1753). Lectotype (designated by Borssum Waalkes, 1966): Dillenius, *Hort. Eltham.* t. 5 (1732). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 191, t. 48 (1988). N.v.: farolitos chinos.

Abutilon crispum (L.) Medikus, *Bogenhardia crispa* (L.) Kearney, *Gayoides crispum* (L.) Small.

Perennial herbs or subshrubs, usually trailing or decumbent, occasionally scandent, stellate-pubescent and usually with long simple hairs. Leaves ovate, cordate, crenate, acute, petiolate below to subsessile above. Pedicels 6-7 mm, solitary in the leaf axils, slender, recurved; calyx 4-7 mm, reflexed in fruit; petals 6-11 mm, white; staminal column 2-2.5 mm, glabrous; styles 10-11, greenish, the capitate stigmas maroon. Fruits 1.5-2 cm in diameter, hispid; mericarps 10-14, rounded, laterally compressed, dorsally dehiscent, 3-seeded; seeds 1.7 mm. *Roadsides, disturbed sites, thorn forests, grasslands, deciduous forests.* T (*Cowan* 2053, CAS); Ch (*Fryxell & Lott* 3244, MEXU); Y (*Gaumer* 1462, US); B (*Bartlett* 12951, US); G (*Standley* 24341, US); ES (*Standley* 20356, US); H (*Zelaya* 76, MO); N (*Stevens* 11195, MO); CR (*Opler* 1983, MO); P (*Hammel* 5256,

MO). 0-2200 m. (Throughout the Neotropics and subtropics, adventive in some parts of the Old World.)

23. *Modiola* Moench

By P.A. Fryxell.

Perennial procumbent herbs, usually with little pubescence. Leaves orbicular in outline, symmetrical, more or less palmately parted or dissected, crenate. Flowers solitary in the leaf axils; involucel trimerous, shorter than the calyx; calyx gamosepalous, 5-lobed, with simple hairs; corolla dark orange or salmon-colored, drying rose; styles 16-22, the stigmas truncate. Fruits schizocarpic, hirsute; mericarps 16-22, each with 2 apical spines, divided into 2 chambers by an endoglossum, each chamber 1-seeded. Monotypic, from the United States to Argentina, and in the Old World.

1. *Modiola caroliniana* (L.) G. Don, *Gen. Hist.* 1: 466 (1831). *Malva caroliniana* L., *Sp. Pl.* 688 (1753). Lectotype (here designated): "7 caroliniana" (microfiche! ex LINN-870.15; isolectotype: microfiche! ex S). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 307, t. 76 (1988).

Modiola multifida Moench.

Trailing herbs. Leaves palmately 5-7-parted, symmetrical, about as wide as long; stipules 3-4 mm, ovate. Pedicels shorter than the corresponding petiole, more or less pubescent; involucellar bracts 4-5 mm, lanceolate; calyx 5-7 mm, pubescent (hairs 1-2 mm); corolla 6-8 mm; androecium yellowish. Mericarps 5-6 mm, black at maturity, with 2 apical spines 1.5-3 mm, divided into 2 chambers by an endoglossum; lower chamber indehiscent, manifestly rugose, the upper chamber dehiscent, smoother, pubescent; seeds c. 1.5 mm, sparsely pubescent. $2n = 18$. *Oak forests, roadsides, disturbed sites, urban habitats.* Ch (Ton 2870, DS); H (Nelson 10931, TEFH); CR (Molina 27381, US). 500-2200 m. (S. United States to N. Argentina; also in the Old World.)

24. *Anoda* Cav.

By P.A. Fryxell.

Annual or perennial herbs or subshrubs, erect or decumbent, hispid or stellate-pubescent or -puberulent to glabrescent. Leaves linear, lanceolate, ovate, cordate, hastately lobed or palmately parted, crenate or dentate to subentire. Flowers solitary in the leaf axils or aggregated into open terminal racemes or panicles; involucel absent; calyx gamosepalous, 5-lobed, sometimes accrescent in fruit, usually 5 or 10 nerved; petals yellow, whitish, lavender, or purple; androecium shorter than to equaling the corolla; styles 5-20, slender, the stigmas abruptly capitate. Fruits oblate or disk-like, puberulent to hispid; mericarps 5-20, with [or without] spur or spine at dorsal angle, the lateral walls disintegrating at maturity; seeds solitary, sometimes enclosed in a persistent reticulate endocarp. 24 spp., principally Mexican but extending from the S. United States to Argentina.)

Literature: Fryxell, P.A. *Aliso* 11: 485-522 (1987).

1. Corolla 6-8 mm, pale yellow; stems densely and evenly stellate-puberulent (hairs 0.1-0.3 mm); persistent endocarp enclosing seed present. **5. Anoda crenatiflora**
1. Corolla often longer than 8 mm, lavender or purplish; stem pubescence otherwise; endocarp absent or imperfectly developed.
 2. Upper leaf surface stellate-pubescent. **4. Anoda guatemalensis**
 2. Upper leaf surface with appressed simple hairs or glabrescent.
 3. Mericarps with persisting lateral reticulations, apically dehiscent; stems glabrescent.
 - 1. Anoda pristina**
 3. Mericarps with evanescent lateral walls, not dehiscing apically; stems usually hispid.
 4. Mericarps 10-18, with a horizontal dorsal spine 1.5-4 mm, the suture between the mericarps depressed. **3. Anoda cristata**
 4. Mericarps 7-11, the dorsal spur absent or vestigial (rarely to 1.5 mm), the suture between the mericarps not depressed, the fruits therefore seemingly inflated.
 - 2. Anoda acerifolia**

1. *Anoda pristina* Fryxell, *Syst. Bot.* 4: 253 (1979). Holotype: Mexico, Chiapas, *Breedlove* 7546 (DS!; isotypes: F!, MICH!). Illustr.: Fryxell, *Syst. Bot.* 4: 254, t. 1 (1979).

Perennial herbs or subshrubs, the stems reddish, with short pungent hairs and some glandular hairs, becoming glabrescent. Leaves palmately 3(-5)-lobed, subentire, acute, glabrescent except appressed-ciliate on margins, discolorous. Pedicels solitary in the leaf axils, evenly hispid; calyx 5-6 mm in flower, to 12-14 mm in fruit, nearly glabrous; petals 7-9 mm, purplish; androecium c. 4 mm, glabrous. Fruits 10-13 mm in diameter, oblate, subglabrous; mericarps 12-13, apically dehiscent, the lateral walls evanescent but with a persistent coarse reticulum; seeds 3 mm, seemingly glabrous but with short appressed pubescence, not enclosed in persistent endocarp. *Pine-oak forest*. Ch (*Breedlove* 7546, MICH). C. 1500 m. (Endemic.)

2. *Anoda acerifolia* Cav., *Anales Ci. Nat.* 6: 336 (1803). Type (cf. Garilleti, 1993: 108): in cult., Madrid Bot. Gard. *Anon. s.n.* (MA-29756). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 204, t. 84 (1989).

Anoda zuccagnii (Sprengel) Fryxell, *Sida acerifolia* Zuccagni non (Cav.) Medikus, *Sida zuccagnii* Sprengel.

Herbs or subshrubs, annual or perennial, erect or decumbent to prostrate, the stems prominently or obscurely hispid or almost glabrous. Leaves palmately lobed below to narrowly hastate above, subentire, acute, sparsely pubescent to glabrescent, sometimes with an irregular purple blotch along the midrib. Flowers long-pedunculate in the leaf axils; calyx 6-11 mm in flower to 10-15 mm in fruit, often hispid; petals 12-18 mm, purple or lavender; staminal column glabrous basally, hispid apically. Fruits 8-11 mm in diameter, oblate, densely hispid, with short spurs (or these absent); mericarps 7-11, indehiscent, the lateral walls evanescent; seeds 2.5 mm, glabrous, the endocarp absent. *Roadsides, cultivated fields, disturbed sites*. Ch (*Breedlove* 33488, DS); Y (*Gaumer* 1611, F); G (*Standley* 66650, F); H (*Williams & Molina* 11248, MICH). 0-1000 m. (Mexico, C. America, Galápagos Islands.)

3. *Anoda cristata* (L.) Schltdl., *Linnaea* 11: 210 (1837). *Sida cristata* L., *Sp. Pl.* 685 (1753). Lectotype (here designated): herb. Linnaeus (microfiche! ex LINN-866.31). N.v.: violeta.

Anoda hastata Cav., *A. lavateroides* Medikus.

Erect or sprawling perennial herbs, the stems usually hispid, the hairs patent or retrorse. Leaves variable (ovate, hastate, or palmately lobed), crenate to subentire, acute, sparsely pubescent (hairs mostly simple and appressed), often with a purple blotch along midrib. Flowers long-pedunculate in the leaf axils; calyx 5-10 mm in flower to 12-20 mm in fruit, hispid; petals 8-26 mm, purple or lavender (rarely white); staminal column pubescent. Fruit 8-11 mm in diameter (excluding spines), a flattened disk, densely hispid; mericarps 10-18, each with spine 1.5-4 mm at dorsal angle, the lateral walls evanescent; seeds 3 mm, glabrous, the enclosing endocarp poorly developed or absent. $2n = 30, 60, 90$. *In a variety of habitats, including roadsides, cultivated fields, and disturbed sites.* T (Cowan 1958, MEXU); Ch (Breedlove 52647, CAS); B (Standley & Record, 1936); G (Contreras 7285, LL); ES (Carlson 382, F); H (Molina 12948, F); N (Moreno 15358, MO); CR (Burger 3853, F); P (Greenman & Greenman 5016, MO). 0-2650 m. (S. United States to Argentina and Chile; adventive in Australia.)

4. *Anoda guatemalensis* Fryxell, *Aliso* 11: 498 (1987). Holotype: Guatemala, *Molina & Molina* 26698 (ENCB!; isotypes: EAP, F!, MICH!). Illustr.: Fryxell, *Fl. Chiapas* 3: 59, t. 3 (1990).

Erect herbs 1 m tall, the stems, petioles, and pedicels scabridulous. Leaves usually palmately 3-lobed, cordate, the central lobe lanceolate-ovate to linear-lanceolate, serrate to obscurely crenate, acute, concolorous, evenly and minutely stellate-pubescent. Flowers axillary or somewhat aggregated apically; pedicels often equaling or exceeding the corresponding leaf; calyx 7 mm in flower to 10 mm in fruit, evenly stellate-pubescent; petals 11-14 mm, lavender; staminal column 7 mm, densely hispid; styles 10, glabrous. Fruits oblate, stellate-pubescent; mericarps 10, dorsally spurred (spur 0.5 mm), the lateral walls evanescent; seeds 3 mm, not enclosed in persistent endocarp. *Pine-oak forest.* Ch (Nelson 3169, US); G (*Molina & Molina* 26698, MICH). 1800-2500 m. (Also in Oaxaca, Mexico.)

5. *Anoda crenatiflora* Ortega, *Nov. Pl. Descr. Dec.* 8: 96 (1798). Neotype (designated by Fuertes & Fryxell, 1993b): Mexico, Sessé & Mociño 3477 (MA! photo F-46853). Illustr.: Fryxell, *Fl. Bajío* 16: 39 (1993).

Anoda parviflora Cav.

Erect annual herbs to 1 m tall, stellate-puberulent, the hairs 0.1-0.3 mm. Leaves ovate to hastate, narrowly so upwards, coarsely crenate-dentate to subentire, minutely and obscurely pubescent (the hairs stellate beneath, simple or stellate above). Inflorescence a terminal raceme or panicle; pedicels 2-7 cm; calyx 3-7 mm in flower to 6-8 mm in fruit, densely tomentose; petals 6-8 mm, pale yellow; staminal column c. 2 mm, glabrous or with a few hairs apically, the anthers subsessile. Fruits 7-9 mm in diameter, oblate, densely stellate-pubescent; mericarps 10-13, dorsally spurred (spur 1-2 mm), the lateral walls evanescent; seeds completely enclosed in persistent reticulate endocarp c. 2.5 mm. *Deciduous forests*. Ch (Breedlove 52347, CAS). 1000-2300 m. (From Arizona and Texas to Chiapas.)

25. ***Periptera* DC.**

By P.A. Fryxell.

Perennial herbs or subshrubs, pubescent or glabrescent. Leaves ovate, triangular, or hastate, sometimes 3-lobed, crenate or subentire, often with a purple blotch along the midrib. Flowers axillary and solitary or aggregated in terminal racemes or panicles; involucel absent; calyx pentamerous, gamosepalous; petals erect, red, often narrowly spatulate; androecium exserted, the column more or less pubescent; styles 7-15, the stigmas clavate. Fruits schizocarpic, pubescent; mericarps 7-15, dorsally spurred, the lateral walls disintegrating at maturity; seeds solitary, glabrous. 5 spp., all Mexican.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 344-352 (1988).

1. *Periptera punicea* (Lagasca) DC., *Prodr.* 1: 459 (1824). *Anoda punicea* Lagasca, *Elench. Pl. t. 21* (1816). Neotype (designated by Fuertes & Fryxell, 1993b): Mexico, Sessé & Mociño 3237 (MA! photo F-46791). Illustr.: Fryxell, *Fl. Bajío* 16: 121 (1993).

Anoda incarnata Kunth., *A. periptera* (Sims) Hochr.

Erect herbs or subshrubs 1-1.5 m tall, with minute stellate pubescence. Leaves usually triangular or hastate, reduced upward, sometimes with a purple blotch along the midrib. Flowers solitary in the leaf axils or aggregated into a terminal panicle; calyx 5-8 mm, 5-lobed, the lobes apiculate; petals 12-18 mm × 1-5 mm, erect, spatulate; androecium 1.5-3 cm, the anthers purplish, the pollen yellow. Fruits 7-9 mm in diameter, oblate, puberulent; mericarps 3 mm, 10-12, with dorsal spur 0.5 mm; seeds 2 mm, rugulose. $2n = 26$. *Deciduous forest, oak forest, often in open grassy areas.* Ch (*Breedlove & Raven 13159, MEXU*); G (*Molina & Molina 26453, F*). 1400-2000 m. (Widely distributed in Mexico.)

26. Sidastrum E.G. Baker

By P.A. Fryxell.

Erect subshrubs 1-2 m tall, more or less stellate-pubescent. Leaves ovate to elliptic, crenate or serrate, acute or obtuse. Flowers solitary in the leaf axils, on short axillary racemes, or forming ample terminal racemes or panicles; pedicels long or short, sometimes capillary, often subtended by 3 stipuliform bractlets; involucel absent; calyx small, ecostate, 5-lobed; petals small, white or yellow-orange (purple in one sp.); anthers few (5-20); styles 5-10, slender, capitellate. Fruits schizocarpic, oblate to conical, smooth or rugulose, often pubescent; mericarps 5-10, essentially indehiscent; seeds solitary, sparsely pubescent to glabrous. 8 spp. of the Neotropics, to which several others should be added, especially from Australia.

Literature: Fryxell, P.A. *Brittonia* 30: 447-462 (1978).

1. Corolla reflexed, dark purple; panicle diffuse with capillary pedicels; mericarps and styles 5. **1. Sidastrum paniculatum**
1. Corolla rotate, pale yellow; mericarps and styles 5-10.
 2. Mericarps and styles 8-10; flowers in axillary glomerules; stipules laciniately divided into 2-3 elements; leaves lance-ovate or elliptic. **3. Sidastrum quinquenervium**
 2. Mericarps and styles 5(-7); inflorescence a congested terminal panicle; stipules simple; leaves often cordate-ovate. **2. Sidastrum micranthum**

1. Sidastrum paniculatum (L.) Fryxell, *Brittonia* 30: 453 (1978). *Sida paniculata* L., *Syst. Nat.* ed. 10. 1145 (1759). Holotype: herb. Linnaeus (microfiche! ex LINN-866.17). Illustr.: Fryxell, *Fl. Chiapas* 3: 83, t. 27 (1990).

Sida atrosanguinea Jacq., *S. floribunda* Kunth.

Shrubs 1-3 m tall, roughly stellate-pubescent, the hairs slightly ferrugineous. Leaves ovate or lanceolate, truncate or subcordate, dentate, acute, stellate-pubescent, slightly discolored; stipules simple. Inflorescence a prolific terminal panicle with capillary pedicels; calyx 2-3 mm, stellate-pubescent; petals 3 mm, purple, reflexed; staminal column 2.5 mm, purple, pubescent, the anthers 10-20, yellowish; styles 5, pallid, exserted. Fruits 4-5 mm in diameter, oblate to subconical, minutely pubescent; mericarps 2.5 mm, 5; seeds solitary, glabrous. $2n = 32$. *Rain forest, pine-oak forest, dry thorn scrub.* T (Cowan 2813, MEXU); Ch (Breedlove 23842, DS); B (Standley & Record, 1936); G (von Türckheim 489, US); H (Nelson & Romero 4464, MO); P (Hemsley, 1879). 0-1000 m. (S. Texas, Mexico, West Indies, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Paraguay, Argentina, Hawaii.)

2. Sidastrum micranthum (A. St.-Hil.) Fryxell, *Brittonia* 30: 452 (1978). *Sida micrantha* A. St.-Hil., *Fl. Bras. Merid.* 1: 190 (1827). Holotype: Brazil, St.-Hilaire s.n. (P). Illustr.: Schumann, *Martius Fl. Bras.* 12(3): t. 59 (1891).

Subshrubs 1-3 m tall, the stems stellate-pubescent. Leaves ovate, progressively reduced upward, more or less cordate, crenate, acute, stellate-pubescent; stipules simple. Inflorescence a more or less leafy terminal panicle, the flowers and fruits crowded; pedicels 1-4(-7) mm; calyx 2.5-3 mm, stellate-pubescent; petals c. 3 mm, yellowish, rotate; staminal column 1.5-2 mm, glabrous, the anthers c. 10; styles usually 5(-7), exserted. Fruits c. 3 mm in diameter, oblate-beaked, minutely stellate-pubescent; mericarps 2 mm, usually 5(-7), laterally reticulate, 1-seeded, indehiscent; seeds 1.5 mm, glabrous. $2n = 32$. *Deciduous forest.* CR (Brenes 1912, NY). 100-600 m. (Also Cuba, Colombia, Venezuela, Guyanas, Brazil.)

3. Sidastrum quinquenervium (Duchass. ex Triana & Planch.) E.G. Baker, *J. Bot.* 30: 137 (1892). *Sida quinquenervia* Duchass. ex Triana & Planch., *Ann. Sci. Nat. ser. 4.* 17: 176 (1862). Holotype: Panama, *Duchassaing* s.n. (P).

Sida guianensis Schumann.

Subshrubs 1-1.5 m tall, the stems stellate-pubescent. Leaves lance-ovate or elliptic, progressively reduced upward, truncate, serrate, acute or acuminate, stellate-pubescent, discolorous; stipules divided into 2 or 3 subulate elements. Flowers and fruits in dense axillary glomerules, these together forming an interrupted leafy spiciform inflorescence; flowers subsessile and congested with numerous subtending stipules; calyx c. 5 mm, pubescent; petals rotate, barely exceeding calyx, yellowish. Fruits c. 5 mm in diameter, minutely pubescent becoming glabrescent, oblate; mericarps 2.5 mm, 8-10, rounded dorsally, smooth laterally, dehiscent at least apically; seeds 1.5 mm, sparsely pubescent to glabrous. *Rain forests, roadsides.* P (*Sytsma 3511, MO*). 0-200 m. (Also Guyanas and Brazil.)

27. *Allosidastrum* (Hochr.) Krapov. Fryxell & D. Bates

Pseudabutilon sect. *Allosidastrum* Hochr.

By P.A. Fryxell.

Shrubs 1-3 m tall, with pubescence of both stellate and simple hairs, sometimes viscid. Leaves ovate [or lanceolate], cordate, crenate, acuminate. Flowers in terminal, more or less leafless panicles or racemes; involucel absent; calyx small, rounded, ecostate, twisted in bud (the tips of the acuminate lobes divergent); petals white or yellow, with or without dark basal spot. Fruits squizocarpic, oblate-conical, pubescent or glabrescent; mericarps 5-9, essentially indehiscent, more or less rounded dorsally, with relatively fragile walls, with a minute endoglossum; seeds solitary. 4 spp. from Mexico and the West Indies to Colombia, Venezuela, Ecuador, and Brazil.

Literature: Krapovickas, A., P.A. Fryxell, and D.M. Bates. *Bol. Soc. Bot. México* 48: 23-34 (1988) [1989].

1. Flowers in axillary glomerules forming an interrupted raceme, sometimes branched; floral bracts frequently more than 1 mm wide; mericarps 8-9.

3. *Allosidastrum interruptum*

1. Flowers not glomerulate, forming a much-branched panicle; floral bracts linear, narrow; mericarps 5-7.

2. Calyx 6-8 mm, stellate-pubescent and usually with simple hairs 1-2 mm; petals 5-8 mm, yellow with a conspicuous red basal spot; fruits oblate; mericarps 6-7, the dorsal wall flattened.

2. *Allosidastrum hilarianum*

2. Calyx 3-5 mm, stellate-pubescent; petals 4-5 mm, whitish or pale yellow (basal spot absent or diffuse); fruits beaked; mericarps 5-6(-7), the dorsal wall rounded.

1. *Allosidastrum pyramidatum*

1. *Allosidastrum pyramidatum* (Cav.) Krapov., Fryxell & D. Bates, *Syst. Bot. Monogr.* 25: 74 (1988). *Sida pyramidata* Cav., *Diss.* 1: 11, t.1. f.10 (1785). Holotype: Santo Domingo, *Desportes s.n.* (microfiche! ex P-JU no. 12272). Illustr.: Fryxell, *Fl. Bajío* 16: 24 (1993).

Shrubs to 2 m tall, the stems minutely stellate-puberulent. Leaves broadly ovate, truncate or slightly cordate, serrate or crenate, acuminate, minutely stellate-puberulent (sometimes glabrescent above), essentially concolorous. Flowers in terminal panicles with reduced leaves and linear stipuliform bracts; calyx 3-5 mm, with stellate and sometimes short glandular hairs; petals 4-5 mm, whitish or pale yellow (rarely with diffuse reddish spot at base); staminal column pubescent, pallid. Fruits oblate-beaked, stellate-pubescent; mericarps 5-6(-7), with rounded dorsal walls; seeds 1.2 mm, glabrous. $2n = 14$. *Evergreen forest, deciduous forest, savannas, disturbed sites.* Ch (Breedlove 54540, DS); B (Gentle 2217, MO); G (Contreras 3250, LL); H (Standley 55009, US); ES (Standley 19885, MO); N (Moreno 19670, MO); CR (Garwood et al. 606, BM); P (Sytsma 3500, MO). 0-650 m. (Mexico, West Indies, Colombia, Venezuela, Ecuador, Bolivia.)

2. *Allosidastrum hilarianum* (K. Presl) Krapov., Fryxell & D. Bates, *Syst. Bot. Monogr.* 25: 71 (1988). *Sida hilariana* K. Presl, *Reliq. Haenq.* 2: 107 (1835). Lectotype (designated by Krapovickas et al., 1988): Mexico, *Haenke s.n.* (PR!; isolectotypes; BM!, LE!, MO!, PR!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 72, t. 11 (1988).

Pseudabutilon langlassaei Hochr., *Sida glanduligera* Benth.

Shrubs 2-5 m tall, the stems stellate-puberulent, in the inflorescence also with simple hairs 0.5-1.5 mm and glandular hairs. Leaves ovate, truncate, serrate, acuminate, glabrescent above, stellate-puberulent beneath, essentially concolorous. Flowers in

terminal panicles with numerous linear stipuliform bracts; calyx 6-8 mm, with stellate hairs and simple hairs 1-2 mm; petals 5-8 mm, yellow with dark red spot at base; staminal column scabrid, the filaments purplish. Fruits oblate, apically stellate-pubescent; mericarps 6-7, the dorsal wall flattened; seeds 1.5 mm, glabrous. $2n = 14$. Evergreen forest, oak forest, deciduous forest. Ch (Croat 46282, MO); G (Kellerman 5862, US); ES (Tucker 843, US); N (Stevens 5296, MO); CR (Khan et al. 876, BM). 400-1300 m. (Also in W. Mexico.)

3. *Allosidastrum interruptum* (Balbis ex DC.) Krapov., Fryxell & D. Bates, Syst. Bot. Monogr. 25: 71 (1988). *Sida interrupta* Balbis ex DC., Prodr. 1: 464 (1824). Holotype: Colombia, Bertero s.n. (microfiche! and photo F-7997! ex G; isotypes: F!, US!).

Pseudabutilon smithii Hochr.

Subshrubs 1-1.5 m tall, little branched, the stems scurfy-puberulent to glabrescent. Leaves broadly ovate, truncate or slightly cordate, crenate-dentate, acuminate, minutely and obscurely pubescent. Inflorescence an interrupted raceme occasionally paniculately branched; flowers 1-4 in axillary glomerules with numerous stipuliform bracts >1 mm wide; pedicels 1-5 mm; floral bracts often more than 1 mm wide, lance-linear; calyx 4-6 mm, densely stellate-puberulent; petals 4-5 mm, yellow, occasionally with basal spot. Fruits 4-5 mm in diameter, oblate, with a ring of short spurs around a central depression; mericarps 8-9, minutely stellate-pubescent; seeds 1.8 mm, glabrous. Dry deciduous forest. N (Araquistain & Moreno 493, MO); CR (Chavarría 931, INB). 0-200 m. (W. Mexico, Colombia; collected in Oaxaca close to Chiapas border — thus also to be expected in Chiapas.)

28. *Sida* L.

By P.A. Fryxell.

Perennial herbs or subshrubs, erect or prostrate, glabrous or pubescent, sometimes viscid. Leaves ovate (sometimes lobed), elliptic, rhombic, or linear, usually dentate. Flowers solitary in the leaf axils, in axillary glomerules, or in dense or open terminal inflorescences; pedicels shorter than to much longer than the calyx; involucel absent;

calyx gamosepalous, 5-lobed, basally often 10-ribbed and plicate in bud; corolla white, yellow, orangish, rose, or purple, sometimes with a dark red center. Fruits schizocarpic, glabrous or pubescent; mericarps 5-14, 1-seeded, often laterally reticulate, indehiscent below with well-differentiated dorsal wall, dehiscent apically, usually with 2 apical spines more or less well developed; seeds glabrous. C. 100 spp., pantropical and subtropical.

Literature: Fryxell, P.A. *Sida* 11: 62-91 (1985). Seido, S. *Lundellia* 1: [in press] (1999).

1. Mericarps and styles uniformly 5.

2. Leaves ovate-cordate; calyx lobes trullate, dark-green-margined.

3. Plants prostrate, often repent.

4. Leaves markedly asymmetrical; calyx lobes cordate, accrescent becoming sagittate in fruit. **1. *Sida jussieana***

4. Leaves symmetrical or slightly asymmetrical, orbicular-ovate; calyx lobes triangular, not accrescent. **2. *Sida repens***

3. Plants ascending to erect, often scandent.

5. Flowers subsessile, in dense axillary glomerules, or in axillary pedunculate "heads"; stems often setose; mericarps glabrous, muticous. **3. *Sida urens***

5. Flowers pedicellate, solitary or in open panicles; mericarps glabrous or pubescent, beaked or muticous.

6. Mericarps glabrous, muticous; stems more or less woody, erect.

6. *Sida martiana*.

6. Mericarps beaked, pubescent; stems weak, often reclining.

7. Lobes of the calyx lanceolate, longer than wide, as long as or longer than the calyx tube; spines of the mericarps 1.5-2.5 mm; stems stellate-pubescent; flowers axillary. **4. *Sida glabra*.**

7. Lobes of the calyx triangular, wider than long, shorter than the calyx tube; spines of the mericarps 0.5-1 mm; stems viscid; flowers in panicles.

5. *Sida glutinosa*.

2. Leaves lanceolate, elliptic, or oblong, usually truncate or subcordate; calyx lobes evenly colored.

8. Plants procumbent (but not repent); leaves small (less than 3 cm), long-petiolate.

9. *Sida abutifolia*

8. Plants erect; leaves usually more than 3 cm (if sometimes smaller, then short-petiolate).

9. Leaves (and branching pattern) distichous; stipules prominent, lanceolate or falcate, with 3 or more nerves.

10. Plants densely stellate-pubescent throughout; leaves more or less obtuse; mericarps with beaks 1-1.5 mm; calyx 6-7 mm. **10. *Sida jamaicensis***

10. Plants hirsute; leaves acute; mericarps minutely apiculate; calyx 4-5 mm.

11. *Sida glomerata*

9. Leaves spirally disposed; stipules subulate or falcate, 1-3-nerved.

11. Corolla white (or pale yellow) with red center; stipules falcate, commonly 3-nerved. **8. *Sida viarum***

11. Corolla yellow without red center; stipules subulate, usually 1-nerved.

7. *Sida spinosa*

1. Mericarps and styles usually 6 or more but sometimes only 5.

12. Calyx 7-10 mm, irregularly 6-9-lobed. **17. *Sida barclayi***

12. Calyx often less than 7 mm, regularly pentamerous.

13. Plants procumbent (to ascending); flowers and fruits congested at tips of branches with leaves and stipules; mericarps 5-8 with numerous spiny murications dorsally.

14. Petals 5-11 mm; leaves seldom more than 3 times as long as wide, basally entire but manifestly dentate in distal portion. **12. *Sida ciliaris***

14. Petals 16-23 mm; leaves 4-10 times as long as wide, wholly entire or obscurely 3-dentate at apex. **13. *Sida brachystemon***

13. Plants erect; flowers and fruits not congested as above (or if so in *S. linearis*, plants suberect and fruits smooth); mericarps usually 7 or more (rarely 5-6), not muricate dorsally.

15. Leaves entire, short-petiolate or subsessile, narrowly linear-lanceolate (up to 20 times as long as wide); inflorescence terminal, corymbiform, essentially leafless; corolla white with red center. **26. *Sida linifolia***

15. Leaves serrate, long- or short-petiolate, narrowly lanceolate to elliptic, ovate, or rhomboid; inflorescences various; corolla usually yellow, sometimes rose (if white, then without red center).

16. Leaves broadly elliptic to narrowly linear.

17. Leaves elliptic, 2-6 times as long as wide; flowers and fruits congested apically; corolla rose or purple; fruits 5-6 mm in diameter. **14. *Sida linearis***

17. Leaves narrowly linear, (4-)10-20 times as long as wide; flowers and fruits little if at all congested apically; corolla yellow; fruits 6-8 mm in diameter.

15. *Sida ellottii* var. *parviflora*

16. Leaves lanceolate, ovate, or rhombic.

18. Leaves broadly ovate-cordate, sometimes weakly 3-lobed; flowers commonly subsessile in dense racemiform (or paniculate) terminal inflorescences; mericarps 5-8, submuticous, smooth. **16. *Sida aggregata***

18. Leaves narrowly ovate, lanceolate, or rhombic; flowers usually pedicellate, the inflorescences various; mericarps usually more numerous, spined, or laterally reticulate.

19. Leaf margins serrate throughout; spines of mericarps usually retrorsely barbed.

20. Flowers and fruits crowded in terminal panicle; mericarps 8-14; calyx prominently 10-ribbed. **19. *Sida cordifolia***

20. Flowers axillary; mericarps 5-8; calyx not prominently ribbed.

18. *Sida salviifolia*

19. Leaf margins entire basally, serrate distally; spines of mericarps (if present) not barbed.

21. Leaves and branching pattern distichous; stipules usually falcate, several-veined. **20. *Sida acuta***

21. Leaves spirally disposed; stipules linear, subulate, or filiform, usually 1-(3)-veined.

22. Mericarps spined, the spines subequal to body of mericarp, capillary, curled. **25. *Sida setosa***

22. Mericarps muticous to spinescent, the spines (when present) less than half length of mericarp.

23. Leaves 0.5-2.5 cm, rotund to lance-ovate; flowers subsessile in the leaf axils. **21. *Sida antillensis***
23. Leaves 2-7 cm, more or less rhombic or oblanceolate; flowers manifestly pedicellate.
24. Pedicels twice length of calyx or less; mericarps 6-9. **22. *Sida hyssopifolia***
24. Pedicels 2-8 times length of calyx; mericarps 8-14.
25. Calyx 5-6 mm; fruits 4-5 mm in diameter. **24. *Sida rhombifolia***
25. Calyx 7-9 mm; fruits 6-7 mm in diameter. **23. *Sida haenkeana***

1. *Sida jussieana* DC., *Prodr.* 1: 463 (1824). Holotype: Peru, *Jussieu s.n.* (microfiche! ex P-JU 12267 p.p.).

Sida begonioides Griseb., *S. decumbens* A. St.-Hil. & Naudin.

Repent herbs, the stems with patent simple hairs 1-2 mm. Leaves distichous, ovate, markedly asymmetrical, cordate, crenate, acuminate, appressed-hirsute, the hairs simple. Pedicels solitary in the leaf axils, 2-4 times the length of the corresponding petiole, slender; calyx 5-7 mm, markedly pentangular becoming inflated and pyramidal in fruit, the lobes trullate, dark-green margined, accrescent becoming sagittate in fruit, setose; corolla barely exceeding the calyx, pale yellow, sometimes with red center; styles 5, the stigmas purple. Fruit 3 mm in diameter, enclosed in calyx, subglobose, glabrous; mericarps 5, muticous. $2n = 16$. *Deciduous forests, roadsides, disturbed sites.* Ch (Fryxell & Lott 3312, MEXU); G (Velasco 8874, US); H (Standley 24508, F); ES (Standley 19290, NY); N (Neill 2854, MO); CR (Khan et al. 389, BM); P (Allen 1168, MO). 0-1000 m. (Also in S. Mexico, West Indies, Colombia, Venezuela, Peru, disjunctly in Bolivia, S. Brazil, Paraguay, and N. Argentina.)

2. *Sida repens* Dombey ex Cav., *Diss.* 1: 7 (1785). *Sida dombeyana* DC., nom. superfl. Holotype: Peru, *Dombey s.n.* (microfiche! ex P-JU no. 12267 pro parte; isotype: MA-29787!). Illustr.: Fryxell in Acevedo-Rodríguez, Fl. St. John, *Mem. N.Y. Bot. Gard.* 78: 304, t. 138. f. K-M (1996).

Repent herbs, the stems with scattered minute hairs and sometimes with long simple hairs, or glabrescent. Leaves symmetrical (or slightly asymmetrical), orbicular-

ovate, cordate, serrate, acute or acuminate, sparsely pubescent with simple appressed hairs above, stellate hairs beneath. Pedicels solitary in the leaf axils, sometimes exceeding the corresponding leaf, slender; calyx 5-7 mm (not accrescent), the lobes trullate, dark-green margined, ciliate; corolla yellow. Fruits subpyramidal, antrorsely pubescent; mericarps 5, with 2 erect spines apically. *Deciduous forests, roadsides, pastures, disturbed sites.* H (Williams et al. 42268, US); N (Stevens 7104, MO); CR (Jiménez 3651, NY); P (Hunter & Allen 716, MO). 0-1000 m. (Also West Indies, Ecuador, Peru, Malesia.)

The complex situation regarding the type is discussed by Krapovickas (1969: 20) and Garilletti (1993: 136).

3. *Sida urens* L., *Syst. Nat.* ed. 10. 1145 (1759). Holotype: Browne s.n. (microfiche! ex LINN-866.20). Illustr.: Schumann, *Martius Fl. Bras.* 12(3): t. 60 (1891).

Perennial herbs or subshrubs, erect or reclining, the stems 1-1.5 m, usually with simple hairs 2-3 mm and shorter stellate hairs. Leaves ovate (1.5-2 times as long as wide), cordate, crenate-serrate, acuminate, stellate-pubescent or sometimes with simple hairs above. Flowers and fruits subsessile, crowded in axillary glomerules or in pedunculate axillary "heads," the individual pedicels shorter than the calyces; calyx 5-8 mm, setose, the lobes trullate, the margins dark green; corolla orange (fading rose) often with a red center. Fruits 3.5-4 mm in diameter, glabrous; mericarps 5, muticous, essentially indehiscent. $2n = 32$. *Savannas and open areas in deciduous and evergreen forests, river banks, pastures.* T (Cowan 1963, ENCB); Ch (Breedlove 23843, CAS); B (Gentle 934, F); G (Heyde & Lux 4324, US); ES (Calderón 1459, US); H (Standley 18964, F); ES (Standley & Calderón, 1925); N (Stevens 7343, MO); CR (Khan et al. 858, BM); P (Folsom & Channell 7194, MO). 0-1600 m. (Widespread in the neotropics, except perhaps the Amazon Basin, extending also to Africa and Madagascar.)

4. *Sida glabra* Miller, *Gard. Dict.* ed. 8. no. 14 (1768). Holotype: Houstoun s.n. (photo BH-5077! ex BM).

Sida insperata Standley & L.O. Williams.

Weak-stemmed herbs or subshrubs to 2 m tall, erect or more often reclining, the stems stellate-pubescent, sometimes viscid. Leaves narrowly ovate, cordate, serrate,

acuminate, more or less stellate-pubescent. Pedicels several times as long as the calyx, solitary in the axils; calyx 5-6 mm, more than half-divided, the lobes 3-3.5 mm, lanceolate-acuminate, dark-green margined, marginally ciliate; corolla slightly exceeding calyx, yellow-orange. Fruits 4 mm in diameter, pubescent; mericarps 5, apically 2-spined, the spines 1.5-2.5 mm, antrorsely pubescent. $2n = 16, 32$. *Deciduous forests, savanna, sometimes in disturbed sites, often in shaded sites.* Ch (*Breedlove & Davidse 54480, TEX*); C (*Sanders et al. 9685, TEX*); B (*Balick et al. 2346, TEX*); G (*Lundell 18302, LL*); ES (*Tucker 706, LL*); N (*Stevens & Grijalva 16238, TEX*); P (*Wilbur et al. 12918, LL*). 0-1500 m. (Also S. Mexico, throughout the West Indies, Colombia, Venezuela.)

T (*González & Pérez 4132, MEXU*); Ch (*Breedlove 42318, CAS*); Y (*Gaumer 2156, F*); C (*Cabrera 2039, MEXU*); QR (*Cabrera & Torres 1092, MEXU*); B (*Whitefoord 2666, BM*); G (*Lundell 18301, LL*); H (*Nelson et al. 0270, MO*); ES (*Tucker 706, PH*); N (*Sandino 282, MO*); CR (*Opler 1984, MO*); P (*Lewis et al 664, MO*). 0-1800 m. (Also Mexico, West Indies, South America.)

5. *Sida glutinosa* Cav., *Monad. Cl. Diss.* 1: t. 2. f. 8 (1785). Lectotype (designated by Borssum Waalkes, 1966): Mauritius, *Commerson s.n.* (microfiche! ex P-JU no. 12278A).

Erect or reclining herbs to 2 m tall, the stems densely viscid with minute glandular hairs 0.2-0.4 mm, also with scattered simple hairs 1.5 mm. Leaves ovate, deeply cordate, crenate-serrate, acuminate, stellate-pubescent, more densely so beneath. Flowers in profuse open panicles, mostly terminal and more or less leafy; pedicels 7-17 mm, slender, viscid; calyx 4 mm, viscid, 10-angled, less than half-divided, the lobes acuminate, 1-1.5 mm, marginally hispid-ciliate; petals 5 mm, yellow-orange. Fruits 4 mm in diameter; mericarps 5, with 2 erect apical spines 0.5-1 mm that are antrorsely pubescent. B (*Proctor 29877, LL*); CR (26 Nov 1932, *Brenes s.n.*, LL). 0-1100 m. (Also throughout Mexico, West Indies, Colombia, Venezuela, and disjunctly (?) in Brazil.)

6. *Sida martiana* A. St.-Hil., *Fl. Bras. Merid.* 1: 187 (1827). Holotype: Brazil, *St.-Hilaire s.n.* (P).

Erect subshrubs, the stems with simple hairs 2-3 mm and with minute glandular hairs. Leaves ovate, cordate, serrate, acute, densely stellate-pubescent beneath, with glandular hairs on both surfaces. Pedicels up to 2 cm, solitary or paired in the leaf axils; calyx 6-7 mm, setose and glandular-pubescent, c. half-divided, the lobes trullate, dark-green margined; petals 5-6 mm, yellow; staminal column 2-5 mm, glabrous. Fruits enclosed in calyx, glabrous, blackish at maturity; mericarps 2.5 mm, 5, muticous, apically dehiscent. *Brushy hillsides, roadsides.* CR (*Chavarría 1372, TEX*); P (*Nee 10132, MO*). 400-1200 m. (Also in Colombia, Venezuela, Brazil.)

7. *Sida spinosa* L., *Sp. Pl.* 683 (1753). Lectotype (designated by Bortssum Waalkes, 1966): "1. *spinosa*" (microfiche! ex LINN-866.1; isolectotype: microfiche! ex S). N.v.: escobilla.

Sida alba L., *.S. angustifolia* Miller.

Erect shrubs or subshrubs to 1(-2) m tall, the stems with minute stellate pubescence. Leaves broadly ovate, lanceolate, or narrowly oblong, truncate, serrate, usually acute, discolored, glabrescent above, minutely stellate-tomentose beneath; stipules subulate. Pedicels to 1 cm, solitary or in small groups in the leaf axils; calyx 5-7 mm, minutely tomentose, occasionally red-margined; corolla yellow or yellow-orange (rarely white). Fruits 4-5 mm in diameter; mericarps 5, apically 2-spined, the spines c. 1 mm, antrorsely pubescent. $2n = 14, 28$. *Deciduous forest, evergreen forest, pine-oak forest, open areas, roadsides, disturbed sites.* Ch (*Breedlove 36564, CAS*); Y (*Gaumer 2236, US*); G (*von Türckheim 899, US*); H (*Trochez 239, MO*); ES (*Calderón 960, US*); N (*Moreno 2533, MO*); CR (*Opler 1989, MO*); P (*Standley 26601, US*). 0-1900 m. (Throughout the neotropics and extending to the C. United States and to C. Argentina; also in the Old World.)

8. *Sida viarum* A. St.-Hil., *Fl. Bras. Merid.* 1: 182 (1827). Holotype: Brazil, St.-Hilaire s.n. (holotype: P).

Erect subshrubs 0.5-1 m tall, the stems loosely stellate-pubescent. Leaves short-petiolate, lanceolate to subrhomboid, basally truncate-cuneate and entire, distally serrate and acute, markedly discolored, the upper surface green with appressed simple hairs c. 1 mm, the lower surface whitish, densely and minutely stellate-pubescent; stipules falcate,

commonly 3-nerved. Flowers in axillary clusters of 1-4; pedicels to 1.5 cm (the flowers often subsessile); calyx 5-7 mm, basally 10-ribbed; petals c. 8 mm, white or pale yellow with red spot at base. Fruits oblate or subconical, glabrous; mericarps 5, laterally reticulate. *Deciduous forest, oak forest, open areas.* Ch (Breedlove & Davidse 54443, CAS); ES (Montalvo & Flores 13, MO); N (Neill 2972, MO); P (Standley 26448, US). 50-1000 m. (Also Brazil.)

This sp. was treated by Robyns (1966) as *Sida linearifolia*.

9. *Sida abutifolia* Miller, *Gard. Dict.* ed. 8. no. 12 (1768). Holotype: in cult. *Miller s.n.* (BM!). Illustr.: Fryxell in Howard, *Fl. Lesser Ant.* 5: 238, t. 95 (1989). N.v.: hierba del buen día; azocatzín.

Sida procumbens Swartz.

Procumbent perennial herbs, the stems usually with simple hairs 1-2 mm. Leaves usually less than 2 cm, ovate-oblong to oblong, subcordate, crenate, obtuse to acute, pubescent, long-petiolate. Pedicels 1-2.5 cm, slender, solitary in the leaf axils; calyx 4-5(-7) mm, hirsute, the lobes acuminate; corolla 5-6 mm, white. Fruits conical, pubescent; mericarps 5, apically 2-spined, the spines c. 1 mm, antrorsely pubescent. $2n = 14$. *Roadsides, pastures, disturbed areas, exposed sites in deciduous forest, often in dry habitats.* T (Cowan 2613, MEXU); Ch (Breedlove 26894, CAS); Y (Krapovickas & Cristóbal 23548, CTES); G (Contreras 3784, LL). 0-2500 m. (S. United States, Mexico, West Indies, Colombia, Venezuela, Guyanas, Ecuador, Peru, Brazil.)

10. *Sida jamaicensis* L., *Syst. Nat.* ed. 10. 1145 (1759). Holotype: "jamaicensis" (microfiche! ex LINN-866.10).

Sida panamensis Monteiro.

Erect subshrubs 0.5-1 m tall, with distichous branching pattern and leaf arrangement, softly stellate-pubescent; stipules lanceolate or falcate with 3 or more nerves. Leaves short-petiolate, broadly ovate-elliptic, serrate-crenate, subacute or obtuse, soft-pubescent above and beneath, somewhat discoloredous. Pedicels shorter than the petioles, one or more in the axils of the leaves; calyx 6-7 mm, the lobes acuminate, ciliate; corolla white. Fruits apically pubescent, blackish at maturity; mericarps 5, 2-spined, the spines 1-1.5 mm. $2n = 14$. *Deciduous forest, pastures, roadsides, secondary*

vegetation. Ch (*Breedlove 54232, CAS*); H (*Molina, 1975*); N (*Moreno 4235, MO*); CR (*Opler 1992, MO*); P (*Lewis et al. 3023, MEXU*). 0-800 m. (Mexico, West Indies, Colombia, Venezuela, Guyanas.)

11. *Sida glomerata* Cav., *Diss. 1: 18, t.2. f.6* (1785). Holotype: *Jussieu s.n.* (microfiche! ex P-JU no. 12249). Illustr.: Fryxell, in Acevedo-Rodríguez, Fl. St. John, *Mem. N.Y. Bot. Gard. 78: 304, t. 138 . f. F-J* (1996). N.v.: escobilla.

Erect subshrubs 0.5-1 m tall, with distichous branching and leaf arrangement, the stems arched, stellate-pubescent and sometimes with simple hairs c. 1 mm. Leaves short-petiolate or subsessile, lanceolate or elliptic, serrate, acute, sparsely ciliate, the leaves sometimes appearing imbricate because of short internodes and distichous arrangement; stipules broadly falcate, several-nerved, ciliate. Flowers subsessile or with short pedicels, solitary or glomerulate in the leaf axils; calyx 4-5 mm, ciliate; corolla 6-8 mm, white or yellowish. Fruits subglabrous; mericarps 5, blackish, with 2 minute apical spines.

Deciduous forest, roadsides, disturbed sites. N (*Stevens 7301, MO*); CR (*Brenes 17385, F*); P (*Knapp 1905, MO*). 0-500 m. (Also Hispaniola, Puerto Rico, Lesser Antilles, Colombia, Venezuela, Guyanas, Ecuador, Peru, Bolivia, Brazil, Paraguay.)

12. *Sida ciliaris* L., *Syst. Nat. ed. 10. 1145* (1759). Lectotype: (designated by Clement, 1957): Jamaica, *Browne s.n.* (microfiche! ex LINN-866.8). Illustr.: Schumann, *Martius Fl. Bras. 12(3): t. 55* (1891). N.v.: huinar, mozote.

Sida anomala A. St.-Hil.

Procumbent perennial herbs, freely branching, the stems with appressed stellate hairs, the hairs usually 4-armed. Leaves 1-2 cm, usually crowded at the apices of the branches because of shortened internodes, narrowly elliptic, apically few-toothed, acute or obtuse, glabrous above, stellate-pubescent beneath; stipules 4-12 mm, linear to oblanceolate, partially adnate to petioles, ciliate. Flowers and fruits subsessile, crowded among the leaves and stipules at branch tips; calyx 4-6 mm, half-divided, hirsute; corolla 5-11 mm, often rose (sometimes yellowish). Fruits conical, more or less muricate; mericarps 5-8, essentially indehiscent. *Roadsides, pastures, disturbed sites, thorn forest, savanna.* Ch (*Miranda 5505, MEXU*); Y (*Krapovickas & Cristóbal 23547, CTES*); C (*Steere 1812, NY*); B (*Standley & Record, 1936*); G (*Breckon & Breckon 2125, WIS*); H

(Williams & Molina 10211, PH); ES (Standley 19835, US); N (Moreno 2188, MO); CR (Almeda et al. 3127, CAS); P (Hammel 3607, MO). 0-800 m. (S. United States and throughout the neotropics.)

13. *Sida brachystemon* DC., *Prodr.* 1: 459 (1824). Type: *Icones Florae Mexicanae* s.n.! (Torner Collection acc. no. 6331.1803, Hunt Institute). Illustr.: Fryxell, *Phytologia* 46: 398, t. 4 (1980c).

Sida wendtii Fryxell.

Perennial herbs, the stems to 1 m, procumbent, with minute appressed stellate hairs. Leaves crowded at the apices of the branches because of shortened internodes, linear-lanceolate to oblong, 4-10 times as long as wide, subcordate, entire (or obscurely tridentate at apex), acute, uniformly stellate-pubescent beneath, marginally pubescent to glabrescent above; stipules 9-14 mm, narrowly lanceolate to oblanceolate, sparsely hirsute. Pedicels 1-4 mm, axillary, crowded apically with leaves and stipules so as to appear fasciculate; calyx 5-6 mm, minutely stellate-pubescent, the lobes ciliate (hairs 1-2 mm); petals 16-23 mm asymmetrical, rose with darker spot at base. Fruits 6 mm in diameter, oblate-conical, prominently muricate, each projection apically glochidiate; mericarps 5-6, indehiscent. *Pastures and roadsides*. B (Whitefoord 2362, MO); CR (Davidse & Pohl 819, MO). 0-500 m. (Also S. Mexico and Colombia.)

14. *Sida linearis* Cav., *Icon.* 4: 6, t.312. f.1 (1797). Holotype: Cult. Madrid Bot. Gard. 1795 (MA-29789!) [cf. Fuertes & Fryxell, 1993a, Garilleti 1993]

Sida rzedowskii Fryxell.

Herbaceous perennials to 0.5 m tall, the stems branched and erect or suberect, minutely stellate-pubescent, the apical internodes abruptly shortened. Leaves 1-3 cm, elliptic, dentate, subacute or obtuse, more or less stellate-pubescent. Pedicels 1-10 mm, solitary in the leaf axils but apically crowded because of shortened internodes; calyx 4-6 mm, 10-ribbed, stellate-pubescent, occasionally ciliate on ribs; corolla 6-8 mm, rose to red-purple but yellowish in center (sometimes yellowish throughout). Fruits 5-6 mm in diameter, oblate, minutely stellate-pubescent apically; mericarps 8-11, apically acute or rounded, laterally smooth or slightly reticulate; seeds 2 mm, glabrous. *Dry shrubby hillsides, roadsides*. Ch (Goldman 913, US). Above 2000 m. (C. Mexico.)

15. *Sida ellottii* Torrey & A. Gray, *Fl. N. Amer.* 1: 231 (1838). *Sida gracilis* Elliott, *Sketch Bot. S. Carol.* 2: 159 (1822), non *S. gracilis* A. Rich. (1792). Holotype: U.S.A., S. Carolina, *Elliott s.n.* (CHARL).

15a. *Sida ellottii* var. *parviflora* Chapman, *Fl. S.E. U.S.* ed. 3, 48 (1897). Neotype (designated by Seido, 1999): S. Florida, *Anon. s.n.* (NY; isoneotype: NY). Illustr.: Fryxell, *Fl. Veracruz* 68: 213, t. 21 (1992b).

Sida lindheimeri auct. non Engelm. & Gray

Erect herbs or subshrubs 0.5-1 m tall, the stems green and minutely puberulent to glabrescent. Leaves narrowly linear, 4-20 times as long as wide, truncate, serrate, acute, glabrous above, minutely pubescent beneath, often red-margined. Pedicels 0.5-2.5 cm, solitary in the leaf axils, slender, scattered along the stem; calyx 5-7 mm, 10-ribbed, minutely pubescent, the lobes ovate-acuminate, sometimes red-margined; petals 12-15 mm, yellow-orange. Fruits 6-8 mm in diameter, oblate; mericarps 3 mm, 8-11, minutely bi-apiculate at apex, laterally reticulate, indehiscent except gaping between spines.

Grasslands, open habitats. Ch (*Nelson 2969, US*); G (*Lundell 2750, MICH*). 0-1500 m. (S. Florida, S. Texas, E. Mexico, Guatemala.)

16. *Sida aggregata* K. Presl, *Reliq Haenk.* 2: 106 (1835). Holotype: Mexico, *Haenke s.n.* (PR?). Illustr.: Fryxell, *Fl. Venez. Guyana* 6: t. __ (2000).

Sida setifera K. Presl, *S. savannarum* Schumann.

Erect shrubs to 1.5 m tall, the stems, petioles, and calyces prominently setiferous (hairs 1.5-2 mm) in addition to other pubescence, or setae absent. Leaves broadly ovate to slightly 3-lobed, cordate, serrate, acuminate, softly tomentose. Flowers subsessile, in dense terminal spiciform aggregations that are often branched to form paniculate inflorescences; calyx 6-7 mm, prominently 10-angled, usually setose; corolla yellow or yellow-orange, sometimes with red center. Mericarps 2 mm, 5-8, submuticous, essentially unornamented. $2n = 14$. *Deciduous forest, pine-oak forest, roadsides, and disturbed sites.* Ch (*Matuda 17228, MEXU*); H (*Saunders 105, NY*); ES (*Standley 19551, US*); N (*Moreno 281, MO*); CR (*Dodge 6379, MO*); P (*Standley 29764, US*). 0-1700 m. (W. Mexico, West Indies, Colombia, Venezuela.)

7. *Sida barclayi* E.G. Baker, *J. Bot.* 30: 236 (1892). Holotype: El Salvador, *Barclay s.n.* (BM!; isotype; NY!). Illustr.: Fryxell, *Syst. Bot.* 4: 255, t. 2 (1979).

Sida anomalocalyx Fryxell.

Erect subshrubs 1-1.5 m tall, the stems softly tomentose. Leaves up to 6 cm, ovate to narrowly lanceolate, cordate or truncate, denticulate to serrate, softly tomentose. Pedicels 4-12 mm, usually solitary in the leaf axils; calyx 7-10 mm, densely tomentose, prominently but irregularly ribbed, with 6-9 unequal lobes; corolla slightly exceeding the calyx, orange. Fruits 6-7 mm in diameter, apically puberulent; mericarps 3-4 mm, c. 8, laterally reticulate, with 2 apical spines less than 1 mm long, the spines retrorsely barbed. *Deciduous forest, evergreen forest, thorn forest, pine-oak forest, savannas.* Ch (Breedlove 42230, DS); ES (Standley 20871, US); H (Molina & Molina 22750, NY); N (Stevens 11225, MO); CR (Janzen 10609, MO). 100-1000 m. (Also in Oaxaca, Mexico.)

Sida barclayi is unique in the genus *Sida* and probably in the family Malvaceae in having an irregularly lobed (rather than pentamerous) calyx.

18. *Sida salviifolia* K. Presl, *Reliq. Haenk.* 2: 110 (1835). Holotype: Mexico, *Haenke s.n.* (PR!; isotype: BM!).

Erect subshrubs 0.5-1 m tall, the stems stellate-tomentose. Leaves lanceolate, serrate, acute, softly stellate-tomentose. Pedicels 2-7 mm, solitary in the leaf axils, the flowers and fruits often congested apically; calyx 5-7 mm, stellate-tomentose; corolla white or yellow-orange, sometimes with a reddish center. Fruits 4-5 mm in diameter; mericarps 5-8, prominently reticulate dorsally and laterally, apically 2-spined, the spines 1.7-3 mm, retrorsely barbed. *Deciduous forest, roadsides, disturbed sites.* Ch (Breedlove 40533, CAS); G (Martínez et al. 23189, MEXU); N (Moreno 1225, MO). 0-1300 m. (W. Mexico and the West Indies to Colombia, Venezuela, Ecuador (incl. Galápagos), Peru, and Bolivia.)

19. *Sida cordifolia* L., *Sp. Pl.* 684 (1753). Lectotype (here designated): "cordifolia 4" (microfiche! ex LINN 866.12) [cited as "holotype" by Borssum Waalkes, 1966]. Illustr.: Sivarajan & Pradeep, *Malvac. So. Peninsular India* 258, t. 93 (1996). N.v.: escobilla.

Erect shrubs or subshrubs to 1.5 m tall, stellate-tomentose throughout. Leaves cordate-ovate to lance-ovate, reduced upward, serrate, acute, soft-tomentose. Flowers and fruits usually aggregated terminally into a congested paniculate or corymbiform inflorescence; calyx 6-7 mm, prominently 10-ribbed, tomentose; corolla yellow-orange, sometimes with a weakly developed reddish center. Fruits 6-7 mm in diameter, apically pubescent; mericarps 8-14, each with 2 apical spines (variably developed, rarely suppressed) that are retrorsely barbed. $2n = 28$. *Evergreen forest, savanna, roadsides, disturbed sites.* T (*Rovirosa* 743, PH); Ch (*Breedlove* 26690, CAS); Y (*Gaumer* 24295, US); B (Standley & Record, 1936); G (*Molina & Molina* 24932, US); ES (*Calderón* 54, NY); H (*Díaz* 238, MO); N (*Moreno* 14432, MO). 0-1000 m. (Throughout the Neotropics, Africa, Asia, Australia.)

20. *Sida acuta* Burman f., *Fl. Indica* 147 (1768). Lectotype (designated by Borssum Waalkes, 1966): Java, *Anon. s.n.* (G). Illustr.: Paul & Nayar, *Fasc. Fl. India* 19: 203, t. 49 (1988). N.v.: escobilla.

Sida carpinifolia L.f. non Miller, *S. garckeana* Polak.
 Erect shrubs or subshrubs 1 m tall, more or less hirsute to glabrescent, with distichous branching and leaf arrangement. Leaves 3-9 cm, lanceolate to ovate, truncate, serrate distally, acute, concolorous, hirsute to glabrescent; stipules broadly falcate, several-veined. Flowers solitary or paired in the leaf axils, the pedicels subequal to the petiole; calyx 6-8 mm, basally 10-costate, the lobes often ciliate; petals 7-10 mm, white, yellow, or yellow-orange (sometimes polymorphic for color in a single population). Fruits subglabrous, rugulose; mericarps 8-10, the apical spines variably developed. $2n = 14$. *Deciduous forest, evergreen forest, roadsides, disturbed sites, urban habitats.* T (*Cowan* 2346, CAS); Ch (*Breedlove* 44443, CAS); Y (*Darwin* 2398, NO); C (*Lundell* 881, LL); QR (*Téllez et al.* 3367, MEXU); B (*Liesner & Dwyer* 1530, MO); G (*Lundell* 16189, LL); H (*Blackmore & Heath* 1883, BM); ES (*Rohweder* 3088, MO); N (*Neill* 2399, MO); CR (*Polakowsky* 433, BM); P (*Knapp & Mallet* 5727, MO). 0-1400 m. (Pantropical.)

21. *Sida antillensis* Urban, *Symb. Antill.* 5: 418 (1908). Syntype: Puerto Rico, *Sintenis* 348 (K!); nine other syntypes cited by Urban — lectotypification needed.

Erect subshrubs 0.5(-1) m tall, with glabrescent stems. Leaves 0.5-2.5 cm, usually lance-ovate (or rotund), truncate, dentate (except at base), acute or obtuse, with minute pubescence; stipules linear. Flowers subsessile (pedicels shorter than calyx) in the leaf axils; calyx 5-8 mm, 10-ribbed, ciliate to glabrescent, 5-lobed; petals 6-8 mm, yellow. Fruits 5-6 mm in diameter, glabrous; mericarps c. 10, laterally reticulate, with 2 short spines apically. *Roadsides, disturbed sites, often in sandy areas.* B (*Dieckman 183, MO*); H (*Nelson & Vargas 5123, MO*); N (*Stevens 17937, MO*); P (*Carrasco 26, F*). 0-500 m. (West Indies and S. Florida to Panama.)

22. *Sida hyssopifolia* K. Presl, *Reliq. Haenk.* 2: 109 (1835). Holotype: Mexico, *Haenke s.n.* (PR).

Sida collina Schltdl.

Erect shrubs 0.5-1.5 m tall, the stems stellate-pubescent, sometimes with reddish pigmentation. Leaves elliptic to subrhombic to oblanceolate, occasionally narrowly so, entire basally, serrate distally, more or less discolored, with appressed simple hairs above, whitish or ferruginous with stellate hairs beneath; stipules subulate. Pedicels twice length of calyx or less, solitary or paired in the leaf axils, usually aggregated apically; calyx 5-10 mm, basally 10-ribbed and yellowish, the lobes ciliate; petals 8-10 mm, orange-yellow, sometimes with a red center. Fruits oblate, subglabrous; mericarps 6-9, muticous, laterally (and to some extent dorsally) reticulate. *Pine-oak forest, open shrubland, pastures, roadsides.* Ch (*Breedlove & Strother 46577, CAS*); H (*Bendeck 15, MO*); N (*Guzmán & Castro 1417, MO*); CR (*Opler 1980, MO*). 0-1100 m. (Cuba, Jamaica, Hispaniola, S. Mexico, Colombia.)

23. *Sida haenkeana* K. Presl, *Reliq. Haenk.* 2: 104 (1835). Holotype: Mexico, *Haenke s.n.* (PR!); isotypes: MO!, PR!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 394, t. 99 (1988). N.v.: azocatzín; huinar.

Erect subshrubs or shrubs 0.5-1 m tall, the stems stellate-puberulent and also with a few to many simple hairs 0.5-1 mm. Leaves lance-ovate to rhombic, crenate or serrate distally, acute, sparsely to densely hirsute beneath (especially on veins, the hairs simple, 0.5-1 mm), antrosely appressed-hirsute to glabrescent above. Pedicels 2-8 times as long as calyx, usually solitary in the leaf axils, scattered along the stem or crowded apically;

calyx 7-9 mm, 10-ribbed, the ribs sometimes sparsely hirsute; corolla 8-10 mm, yellow-orange. Fruits 6-7 mm in diameter, oblate; mericarps c. 2.5 mm, 8-10, muticous. *Grassy slopes and stream banks in pine-oak forest.* Ch (*Ton 4550*, MEXU); G (*Williams et al. 25104*, F); H (*Croat & Dylan 63781*, MO); N (*Moreno 14303B*, MO); CR (*Stevens 14052*, MO); P (*Hammel et al. 6586*, MO). 1000-2800 m. (Mexico to Panama.)

24. *Sida rhombifolia* L., *Sp. Pl.* 684 (1753). Lectotype (designated by Rodrigo, 1944): "2 *rhombifolia*" (microfiche! ex LINN-866.3; isolectotype: microfiche! ex S). Illustr.: Exell, *Fl. Zambesiaca* 1(2): 478, t. 92. f. A (1961). N.v.: azocatzín; escobilla; huinar.

Erect subshrubs c. 1 m tall, the stems stellate-puberulent appearing farinaceous (all hairs less than 0.1 mm). Leaves more or less rhomboid, serrate distally, acute to subobtuse (rarely retuse), stellate puberulent, often glabrescent above, appearing farinaceous beneath, discolored; stipules subulate. Pedicels 1-3 cm, solitary in the leaf axils, mostly scattered along the stems, slender; calyx 5-6 mm, 10-ribbed, puberulent; corolla 7-9 mm, yellow or yellow-orange. Fruits 4-5 mm in diameter, glabrous, oblate to conical; mericarps 10-14, muticous to apically 2-spined, the spine sometimes single through failure of dehiscence. $2n = 14, 28$. *Roadsides, disturbed sites, pastures, deciduous forest, evergreen forest, oak-pine forest.* T (*Fryxell 732*, MEXU); Ch (*Breedlove 14600*, CAS); B (*Gentle 9523*, LL); G (*Croat 24721*, MO); H (*Nichols 2093*, MO); ES (*Calderón 1458*, US); N (*Neill 2727*, MO); CR (*Khan et al. 103*, BM); P (*Antonio 4455*, MO). 0-1800 m, occasionally higher. (Almost cosmopolitan.)

25. *Sida setosa* Martius ex Colla, *Herb. Pedem.* 1: 416 (1833). Holotype: Brazil, *Martius s.n.* (TO!). Illustr.: Fryxell, *Fl. Ecuador* 44: 111, t. 12 (1992a).

Sida surinamensis Miq.

Erect subshrubs or shrubs to 2(-3) m tall, the stems minutely puberulent to glabrescent. Leaves to 10 cm, lance-elliptic to subrhombic, truncate to cuneate, entire basally, serrate distally, narrowly acute, more or less discolored, minutely puberulent to glabrescent; stipules filiform. Pedicels 0.5-1(-2) cm, slender, solitary or several in the leaf axils, sometimes subumbellate on stout axillary peduncles 1-6 cm; calyx 6-8 mm, puberulent, basally 10-ribbed; petals slightly exceeding the calyx, yellow. Fruits 6-7 mm

in diameter, blackish at maturity, sparsely puberulent; mericarps 10-12, apically 2-spined, the spines to 6 mm (subequal to body of mericarp), capillary, usually somewhat curled.

Rain forest, river banks, disturbed sites, sometimes on periodically inundated sites. N (Moreno & Sandino 14894, MO); P (de Gracia, MO). 0-1500 m. (Also in Colombia, Venezuela, Ecuador, and Brazil.)

26. *Sida linifolia* Cav., *Diss. 1: 14, t.2. f.1* (1785). Holotype: Peru, Jussieu s.n. (microfiche! ex P-JU no. 12243A). Illustr.: Schumann, *Martius Fl. Bras. 12(3): t. 57* (1891). N.v.: hoja de lanceta; lengua de pájaro.

Erect or ascending subshrubs to 1 m tall, the stems more or less hirsute. Leaves short-petiolate, narrowly lanceolate to linear (up to 20 times as long as wide), entire, acute, hirsute with simple hairs 1-2.5 mm. Flowers and fruits in terminal corymbiform inflorescences above the foliage; pedicels 0.5-1 cm; calyx 5-6 mm, hirsute; corolla 7-9 mm, white with dark red center. Fruits 4.5 mm in diameter, oblate, glabrous; mericarps 7-8, muticous, indehiscent. $2n = 14$. *Savannas, forest margins, pastures, roadsides.* T (Cowan 1766, CHAPA); Ch (Breedlove 38657, CAS); C (Krapovickas & Cristóbal 23528, CTES); B (Gentle 999, NY); G (Fryxell 1189, F); H (Nelson & Romero 4176, MO); ES (Calderón 978, US); N (Stevens 12758, MO); CR (Burger & Burger 7869, NY); P (D'Arcy 9667, MO). 100-1200 m. (Throughout the Neotropics, Africa, India, Fiji.)

29. ***Dendrosida*** Fryxell

By P.A. Fryxell.

Shrubs or small trees 3-10 m tall, stellate-pubescent or -puberulent to glabrescent. Leaves ovate to trilobulate, cordate or truncate, serrate to subentire, acute, stellate-puberulent to glabrescent. Flowers solitary in the leaf axils or in few-flowered axillary umbels, often congested apically; involucel absent; calyx prominently or obscurely 10-ribbed and -angled, c. half-divided; petals 1.5-4 cm, yellow (in ours). Fruits schizocarpic, glabrous or nearly so; mericarps 8-11, indurate, apically dehiscent; seeds solitary, glabrous. Seven spp., four of which are from Mexico, three from Venezuela and Colombia.

Literature: Fryxell, P.A. *Syst. Bot. Monogr.* 25: 146-148 (1988).

1. Calyx 10-13 mm; leaf blades usually less than 8 cm, yellowish puberulent.

1. *Dendrosida breedlovei*

1. Calyx 14-22 mm; leaf blades often more than 10 cm, glabrescent.

2. Leaves deeply cordate, c. as wide as long; petioles almost equaling the leaf blade; stipules c. 4 mm.

3. *Dendrosida batesii*

2. Leaves cordate to truncate, longer than wide; petioles less than 2/3 length of leaf blade; stipules 6-13 mm.

2. *Dendrosida sharpiana*

1. *Dendrosida breedlovei* Fryxell, *Phytologia* 37: 289 (1977). Holotype: Mexico, Chiapas, *Breedlove* 24629 (DS!; isotypes: ENCB!, F!, MICH!, NY!, RSA!). Illustr.: Fryxell, *Phytologia* 37: 305, t. 2 (1977).

Shrubs or small trees to 7 m tall, the twigs densely and minutely stellate-tomentose (hairs stellate, 0.2 mm). Leaves to 9 cm (often smaller), ovate, deeply cordate to subtruncate, serrate or undulate to subentire, acute to obtuse, slightly discolored, roughly yellowish stellate-puberulent beneath, sparsely so above. Pedicels 4-30 mm, axillary but often crowded apically; calyx 10-13 mm, 10-ribbed basally, yellowish puberulent; petals 1.5-2.5 cm, yellow; staminal column 4 mm, the anthers yellow. Fruit a schizocarp; mericarps 5.5 mm, 8-10, dorsally furrowed. *Dry deciduous forest*. Ch (*Breedlove* 24644, DS). C. 800 m. (Also adjacent Oaxaca, Mexico.)

2. *Dendrosida sharpiana* (Miranda) Fryxell, *Brittonia* 23: 233 (1971). *Sida sharpiana* Miranda, *Anal. Inst. Biol. México* 24: 85, t. 8 (1953). Holotype: Mexico, Chiapas, *Miranda* 5714 (MEXU!; isotype: F!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 149, t. 36 (1988).

Shrubs or small trees to 10 m tall, the twigs minutely pubescent to glabrescent. Leaves up to 15 cm, ovate (1.5-2 times as long as wide), usually truncate (rarely subcordate), crenate-serrate, acute or acuminate, glabrescent; stipules 6-13 mm. Pedicels up to 8 cm (but flowers mostly subsessile and crowded apically), solitary in the leaf axils; calyx 15-22 mm, puberulent, obscurely 10-ribbed; petals 2.5-4.5 cm, yellow or orange-yellow; staminal column 5-8 mm, the anthers yellow. Fruits c. 1 cm, ovoid, glabrous; mericarps c. 10. *Deciduous forest, evergreen forest, pine-oak forest, secondary*

vegetation. Ch (Fryxell & Lott 3267, MEXU). 400-1500 m. (Also Oaxaca and Guerrero, Mexico.)

3. Dendrosida batesii Fryxell, *Brittonia* 23: 231 (1971). Holotype: Mexico, Chiapas, *Fryxell & Bates* 896 (BH!; isotypes: CTES!, DS!, NY!). Illustr.: Fryxell, *Brittonia* 23: 232, t. 2 (1971).

Shrubs or small trees 3-5 m tall. Leaves up to 18 cm, c. as wide, deeply cordate, shallowly 3-lobed, weakly crenate to subentire, acute or acuminate, glabrescent; stipules c. 4 mm. Peduncles 6-15 cm, in the leaf axils; pedicels 2-4 mm in a congested umbel; calyx 14-16 mm, glabrous, 10-angled; flowers unknown. Fruits 8 mm in diameter, schizocarpic, glabrous; mericarps 5-8 mm, 10, the dorsal wall furrowed; seeds 3.5 mm. $2n = 42$. *Deciduous forest.* Ch (*Fryxell & Bates* 896, CAS). C. 750 m. (Endemic.)

30. **Gaya** Kunth

By P.A. Fryxell.

Herbs or subshrubs, puberulent and sometimes also pilose. Leaves and branching pattern sometimes distichous, the blades ovate to oblong, cordate, crenate-serrulate or subentire, acute, puberulent. Pedicels solitary in the leaf axils, the flowers sometimes nodding; involucel absent; calyx small, basally rounded, more than half-divided, not prominently nerved; petals 0.5-1.5 cm, yellow. Fruits subglobose to broadly subconical, sparsely pubescent to glabrescent; mericarps 8-30, dehiscent, 1-seeded, usually with pectinate endoglossum arising ventrally and encircling seed; seeds more or less puberulent. 33 spp. from the Neotropics.

Literature: Krapovickas, A. *Bonplandia* 9: 57-87 (1996).

1. Mericarps 25-30, compressed, reniform, the fruits therefore subglobose (15-25 mm in diameter); petals 12-15 mm. **1. Gaya occidentalis**
1. Mericarps 10-14, the lateral walls dehiscent and flaring at maturity to form wings, broad and cordiform at base, tapering toward apex, the fruits therefore broadly subconical; petals 5-12 mm.

2. Calyx 5-7 mm; petals 8-12 mm; flowering pedicels 2-4 cm, exceeding the leaves; stigmas and mericarps 12-14.
2. **Gaya hermannioides**
2. Calyx 3-4 mm; petals 5-8 mm; flowering pedicels 1.5 cm or less, usually not exceeding the leaves (but elongating in fruit); stigmas and mericarps c. 10.

3. Gaya minutiflora

1. Gaya occidentalis (L.) Sweet, *Hort. Brit.* ed. 2, 64 (1830). *Sida occidentalis* L., *Cent. Pl. II.* 26 (1756). Type: Dillenius, *Hort. Eltham. t. 6* (1732). Illustr.: Fryxell, *Fl. Veracruz* 68: 89, t. 8 (caption on p. 76 as printing error) (1992b).

Shrubs 1-1.5 m tall, frequently with distichous branching pattern and leaf disposition, the stems minutely stellate-tomentose. Leaves ovate to oblong, cordate, serrulate, acute, minutely stellate-pubescent. Pedicels exceeding the corresponding petioles; calyx 8-10 mm, tomentose, the lobes somewhat apiculate; petals 12-15 mm, pale yellow. Fruits 1.5-2.5 cm in diameter, subglobose, minutely pubescent; mericarps 25-30, reniform, thin and papery; seeds 2.5 mm, densely puberulent. $2n = 12$. *Roadsides, pastures, deciduous shrubland*. G (*Harmon & Dwyer 2750, US*); H (*Harmon & Dwyer 3859, MO*); N (*Moreno 4486, MO*). 0-500 m. (Also E. Mexico, Cuba, Hispaniola.)

2. Gaya hermannioides Kunth in Humb., Bonpl. et Kunth, *Nov. Gen. Sp.* 5: 268 [folio ed. 209] (1822). *Sida gaya* DC. Holotype: Mexico, Guerrero, *Humboldt & Bonpland s.n.* (photo F-35492! ex P-HBK; isotype: photo! ex P). Illustr.: Kunth in Humb., Bonpl. et Kunth, *Nov. Gen Sp.* 5: t. 475 (1822).

Subshrubs c. 1 m tall, sparingly branched, the stems sparsely stellate-puberulent. Leaves oblong-ovate, cordate, serrate to subentire, acute, stellate-puberulent (or glabrescent above), slightly discolored. Pedicels at anthesis 2-4 cm, slender; calyx 5-7 mm, stellate-puberulent; petals 8-12 mm, yellow; staminal column 4-5 mm, the filaments 2-4 mm. Fruits c. 1 cm in diameter, broadly subconical, sparsely puberulent; mericarps 12-14; seeds 2 mm, sparsely pubescent. *Deciduous forest, oak forest, disturbed sites*. Ch (*Matuda 5691, MEXU*); Y (*Steere 1387, WIS*); H (*D'Arcy & D'Arcy 6874, MO*); ES (*Standley & Padilla 2937, US*); N (*Stevens & Grijalva 15580, MO*). 100-1000 m. (E. Mexico and West Indies to Ecuador.)

3. Gaya minutiflora Rose, *Contr. U.S. Natl. Herb.* 1: 305 (1895). Holotype: Mexico, Colima, *Palmer 1167* (US!); isotypes: BM!, GH!, MEXU!, NY!, US!). Illustr.: Fryxell, *Fl. Chiapas* 3: 65, t. 9 (1990).

Gaya pringlei Hochr.

Subshrubs c. 1 m tall, sparingly branched, the stems soft-puberulent. Leaves ovate to oblong-ovate, cordate, crenate to subentire, acute, minutely stellate-pubescent, sometimes also with simple hairs, slightly discolored. Pedicels at anthesis less than 1.5 cm (elongating to 1.5-4.5 cm in fruit); calyx 3-4 mm, puberulent; petals 5-8 mm, yellowish; staminal column 1-2 mm, the filaments 1-2 mm. Fruits c. 1 cm in diameter, broadly subconical, sparsely puberulent; mericarps c. 10; seeds 2 mm, densely short-pubescent. $2n = 12$. Roadsides, shrubland, disturbed sites. Ch (Ton 3145, CAS); G (Smith 1939, US); H (Castro 201, MO); N (Stevens 17904, MO). 500-1500 m. (C. Mexico to Nicaragua.)

31. **Robinsonella** Rose & E.G. Baker

By P.A. Fryxell.

Trees or shrubs with stellate or lepidote pubescence, sometimes also with long simple hairs, sometimes glabrescent. Leaves elliptic or ovate to palmately lobed, cordate, dentate to subentire, acute or acuminate. Flowers in open axillary panicles or in condensed axillary racemes (sometimes appearing fasciculate), fragrant; involucel absent; calyx unribbed, usually deeply 5-lobed almost to the base; petals 0.5-1.6 cm, lavender, white, or yellowish, sometimes with purple veins or dark spot on claw; androecium included in corolla; styles 8-30, with capitate stigmas. Fruits schizocarpic; mericarps 8-30, elongated, more or less inflated, thin-walled, unornamented, indehiscent; seeds solitary, sparsely and minutely pubescent. 15 spp. from Mexico and Mesoamerica.

Literature: Fryxell, P.A. *Gentes Herb.* 11: 1-26 (1973).

1. Leaves moderately 3-lobed (the uppermost sometimes unlobed); petals glabrous throughout, including the claw; carpels 8-12.

1. *Robinsonella lindeniana* subsp. *divergens*

1. Leaves usually simple (rarely obscurely 3-lobulate); petals pubescent, at least on margins of claw; carpels often more numerous.
2. Leaves markedly discolored, with fine white hairs densely matted beneath.
3. Petals 10-12 mm, whitish, rotate; staminal column glabrous; carpels (and styles) 15-20. **7. *Robinsonella densiflora***
3. Petals 6-8 mm, white with purple spot at base, reflexed; staminal column basally pubescent; carpels (and styles) 10-13. **6. *Robinsonella mirandae***
2. Leaves more or less concolorous, or sometimes discolored but hairs not matted beneath.
4. Leaves elliptic or narrowly ovate (c. twice as long as wide), truncate at base, glabrous; carpels (and styles) 7-9. **5. *Robinsonella glabrifolia***
4. Leaves broadly ovate, more or less cordate at base, variously pubescent or puberulent; carpels (and styles) usually 10 or more.
5. Mericarps (and styles) c. 30, the lateral walls collapsed and connate about the seed; lower leaf surface with minute lepidote hairs. **2. *Robinsonella samaricarpa***
5. Mericarps and styles fewer than 25, the mericarps usually inflated; lower leaf surface usually stellate-pubescent, or with simple hairs or glabrescent.
6. Inflorescence an axillary panicle, exceeding the corresponding petiole.
 7. Styles glabrous; lower leaf surface with stellate hairs 0.2-0.3 mm in diameter. **3. *Robinsonella pleiopoda***
 7. Styles pubescent; lower leaf surface with stellate hairs 0.5 mm or more in diameter. **4. *Robinsonella brevituba***
 6. Inflorescence an axillary raceme (appearing fasciculate), shorter than the corresponding petiole.
 8. Mericarps and styles 15-20; pedicels and calyces densely pilose.
 9. Petals 12-16 mm, blue or purple; pedicels 2-4 cm; calyx more than half length of mature mericarps. **11. *Robinsonella pilosissima***
 9. Petals 8-10 mm, yellow-green; pedicels 0.5-1.5 cm; calyx less than half length of mature mericarps. **10. *Robinsonella pilosa***
 8. Mericarps and styles 10-15; pedicels and calyces stellate-puberulent.
 10. Petals 13-15 mm; calyx 6-7 mm. **8. *Robinsonella erasmi-sosae***
 10. Petals 18-23 mm; calyx 7-14 mm. **9. *Robinsonella speciosa***

1. Robinsonella lindeniana (Turcz.) Rose & E.G. Baker, *Gard. & Forest* 10(487): 245. 1897. *Sida lindeniana* Turcz., *Bull. Soc. Imp. Naturalistes Moscou* 31(1): 200. 1838. Holotype: Mexico, Veracruz, *Linden* 841 (KW; IT: BR, K).

1a. Robinsonella lindeniana (Turcz.) Rose & E.G. Baker subsp. **divergens** (Rose & E.G. Baker) Fryxell, *Gentes Herb.* 11: 12 (1973). *Robinsonella divergens* Rose & E.G. Baker, *Gard. & Forest* 10: 245 (1897). Lectotype (designated by Standley, 1937): Costa Rica, *J.D. Smith* 4751 (US!; isolectotypes: GH!, K!). Illustr.: Rose & Baker, *Garden & Forest* 10: 247, t. 32 (1897).

Robinsonella edentula Rose & J.D. Smith.

Trees to 10 m tall, the stems and peduncles densely stellate-tomentose. Leaves 3-lobed (or upper leaves unlobed and angulate), cordate, subentire, acute, somewhat discolored. Flowers in axillary panicles; calyx 5-7 mm, the lobes somewhat reflexed in fruit; petals 6-12 mm, white with or without purplish veins, glabrous throughout (including the claw); staminal column 2-5 mm, glabrous; styles 8-12, glabrous. Mericarps 9-11 mm, 8-12, inflated, pubescent; seeds 2 mm, scabridulous. *Evergreen forest, pine-oak-Liquidambar forest, sometimes planted for ornament.* Ch (*Miranda* 5840, MEXU); G (*Heyde & Lux* 4326, TEX); H (*Harmon & Fuentes* 5246, US); N (*Moreno* 23510, MO); CR (*Tonduz* 7311, US). 600-1700m. (Endemic.)

2. Robinsonella samaricarpa Fryxell, *Gentes Herb.* 11: 13 (1973). Holotype: Mexico, Chiapas, *Fryxell & Bates* 879 (BH!; isotypes: CTES!, DS!, MEXU!, NA!, NY!). Illustr.: Fryxell, *Gentes Herb.* 11: 14, t. 8 (1973).

Trees to 25 m tall, the stem hairs mostly sublepidote, extremely small. Leaves ovate or slightly lobulate, subtruncate to cordate, remotely dentate or undulate to subentire, acute or acuminate, glabrescent, concolorous. Flowers in axillary panicles; calyx 7-8 mm, minutely lepidote-pubescent; petals 8-10 mm, white with purplish veins, ciliate on claw and on margin; staminal column 2 mm, glabrous, the filaments 2-3.5 mm; styles c. 30, glabrous. Mericarps 7-8 mm, c. 30, minutely stellate-pubescent, the walls connate about the seed; seeds 1.8 mm, in center of mericarp, minutely pubescent. *Evergreen forest.* Ch (*González-Quintero* 3463, ENCB). 100-1000 m. (Also in adjacent Veracruz, Mexico.)

3. Robinsonella pleipoda (J.D. Smith) Fryxell, *Gentes Herb.* 11: 15 (1973).

Abutilon pleiopodum J.D. Smith, *Bot. Gaz.* 56: 51 (1913). Holotype: Guatemala, *Cook & Griggs* 206 (US!).

Trees to 40 m tall, the young stems densely and minutely farinose pubescent. Leaves broadly ovate (sometimes slightly lobulate), cordate, almost as broad as long, subentire, acute, discolored, minutely stellate-puberulent, densely so beneath. Flowers in axillary panicles; pedicels 0.5-1 cm, densely farinose-pubescent; calyx 4-5 mm; petals 7-9 mm, purplish, prominently ciliate on margins of claw; staminal column 2-3 mm, pubescent, the filaments 2-4 mm; styles c. 20, glabrous. Fruits sparsely stellate-pubescent; mericarps 10-12 mm, c. 20, inflated. *Cloud forest, oak-pine forest.* G (*Cook & Griggs* 206, US); ES (*Reyna* 1340, MO). 900-2200 m. (Endemic.)

4. Robinsonella brevituba Fryxell, *Gentes Herb.* 11: 16 (1973). Holotype: Mexico, Oaxaca, *Martínez-Calderón* 565 (A!; isotypes: LL!, MEXU!, UC!, US!).

Trees to 10 m tall, the young branches densely yellowish tomentose. Leaves asymmetrically lanceolate to ovate, cordate, remotely denticulate to subentire, acuminate, stellate-pubescent, densely so beneath, somewhat discolored. Flowers in axillary panicles; pedicels 1-2 cm, densely stellate-tomentose; calyx 5-8 mm, reflexed in fruit; petals 8-16 mm, white or lavender, prominently ciliate on margins of claw; staminal column 2-3 mm, scabrous, the filaments 3-6 mm; styles 20-23, pubescent. Fruits subglobose, coarsely stellate-pubescent; mericarps 10-12 mm, 20-23. *Rain forest.* Ch (*Neill* 5623, MO). 100-1000 m. (Also Veracruz and Oaxaca, Mexico.)

5. Robinsonella glabrifolia Fryxell, *Syst. Bot.* 10: 269 (1985). Holotype: Mexico, Chiapas, *Breedlove* 58430 (CAS!; isotypes: NY!, US!). Illustr.: Fryxell, *Syst. Bot.* 10: 270, t. 2 (1985).

Trees to 24 m tall, the young stems densely puberulent becoming sparsely so. Leaves narrowly ovate to elliptic, more or less truncate, entire, acuminate, glabrous, concolorous. Flowers in axillary racemes; pedicels up to 15(-20) mm, slender, fasciculate; calyx 5 mm, puberulent; petals 4.5-5 mm, conspicuously ciliate on claw; staminal column 3-4 mm, glabrous, with filaments c. 2 mm; styles 7-9, glabrous. Fruits

densely tomentulose; mericarps 8-12 mm, 7-9. *Rain forest.* Ch (*Ton 7472*, MEXU); G (*Lundell & Contreras 19108*, LL). C. 1100 m. (Endemic.)

6. *Robinsonella mirandae* Gómez-Pompa, *Bol. Soc. Bot. México* 27: 37 (1962).

Holotype: Mexico, Veracruz, Vázquez-Soto 21 (MEXU!; isotypes: MEXU!, NY!). N.v.: algodoncillo; majagua

Trees 20-35 m tall, the young stems densely stellate-tomentose becoming glabrescent. Leaves ovate, truncate to markedly cordate, subentire, acute, discolored, densely matted-puberulent beneath, glabrescent above. Inflorescences racemose, axillary; pedicels c. 1 cm; calyx 5-6 mm, stellate-tomentose, the lobes lanceolate, reflexed in fruit; petals 6-8 mm, white with dark purple spot at base, reflexed, ciliate on margins of claw; staminal column 4-5 mm, basally pubescent, the filaments 3-5 mm; styles 10-13, minutely pubescent. Mericarps 6-7 mm, 10-13, divergent, samaroid; seeds 2 mm.

Evergreen rain forest. T (*Cowan 3406*, MEXU); Ch (*Neill 5622*, MO). 100-1000 m. (Also in Veracruz and Oaxaca, Mexico.)

7. *Robinsonella densiflora* Fryxell, *Gentes Herb.* 11: 22 (1973). Holotype: El Salvador, *Allen 7218* (NY!; isotypes: F!, GH!, LL!, MICH!, US!).

Trees 6-20 m tall, the branches densely pallid-puberulent, becoming glabrescent. Leaves ovate, often weakly 3-lobulate, sometimes asymmetrical, cordate to nearly truncate, crenate-dentate to subentire, acute or acuminate, discolored, stellate-puberulent beneath (the hairs matted), sparsely so to glabrescent above. Flowers fasciculate (on short racemes) in the leaf axils; pedicels 1-2 cm, puberulent; calyx 5-7 mm, densely puberulent, the lobes lanceolate; petals 10-12 mm, white (drying yellowish), rotate, ciliate on claw; staminal column 4-5 mm, glabrous, the filaments 1-2 mm; styles 15-20, glabrous. Mericarps 5-8 mm, 15-20, lanceolate or oblong, densely puberulent, inflated; seeds 2.5 mm, sparsely pubescent. *Mixed forest.* ES (*Reyna 1337*, MO); N (*Moreno 8025*, MO). 700-1600 m. (Veracruz, Mexico to Nicaragua.)

This sp. was treated by Standley & Calderón (1925) as *R. divergens*.

8. *Robinsonella erasmi-sosae* C. Nelson, *Phytologia* 51: 381 (1982). Holotype: Honduras, *Erasmo Sosa López 155* (TEFH).

Trees c. 5 m tall. Leaves broadly ovate, cordate, denticulate or dentate, acuminate, stellate-puberulent to glabrescent, concolorous. Inflorescences racemose (appearing fasciculate), axillary; pedicels 12-15 mm, densely stellate-puberulent; calyx 6-7 mm, densely stellate-puberulent; petals 13-15 mm, white or bluish, ciliate on claw; staminal column 5-7 mm, stellate-puberulent, the filaments 1-2 mm; styles c. 10, glabrous. Fruits and seeds unknown. *Pine-oak forest.* H (*Sosa* 155, MO). 1550 m. (Endemic.)

9. *Robinsonella speciosa* Fryxell, *Gentes Herb.* 11: 18 (1973). Holotype: Guatemala, Standley 59992 (A!; isotypes: F!, US!).

Trees to 15 m tall, the twigs minutely puberulent but soon glabrescent. Leaves ovate, truncate to somewhat cordate, remotely dentate to subentire, acuminate, glabrescent except pilose on main veins beneath, concolorous. Flowers in reduced axillary racemes, more or less fasciculate; pedicels 1-2.5 cm, puberulent; calyx 7-14 mm, puberulent; petals 18-23 mm, blue or purple (rarely white), ciliate on claw; staminal column 5-10 mm, glabrous or pubescent, the filaments 1-3 mm; styles 10-15, sometimes pubescent. Mericarps 12-14 mm, 10-15, pubescent, inflated; seeds 3 mm, pubescent. *Rain forest, deciduous forest, pine-oak forest, occasionally cultivated as an ornamental.* Ch (Breedlove 50344, CAS); G (White & Gilly 5270, F); ES (Molina & Montalvo 21497, NY). 1200-2100 m. (Also in Oaxaca, Mexico.)

This sp. was treated by Standley & Steyermark (1949) as *R. discolor*, a northeastern Mexico sp., and *R. cordata*, a central Mexican sp.

10. *Robinsonella pilosa* Rose, *Contr. U.S. Natl. Herb.* 8: 320 (1905). Holotype: Honduras, 22 Feb 1898, Niederlein s.n. (US!).

Trees to 12 m tall, young stems densely stellate-puberulent. Leaves ovate or slightly trilobulate, truncate to cordate, subentire, acute, sparsely pubescent, slightly discolored. Inflorescence a short axillary raceme, appearing fasciculate; pedicels 0.5-1.5 cm, densely pilose (hairs to 1 mm); calyx 5-7 mm, c. half-divided, densely pilose; petals 8-10 mm, pale yellow-green, ciliate on margins of claw; staminal column 3-4 mm; styles 15-20, sometimes pubescent. Mericarps 12-15 mm, 15-20, minutely stellate-pubescent.

Deciduous forest. H (*Hernández & Hernández* 5347, MO); N (*Moreno* 23484, MO). 600-1100 m. (Also [as var. *septentrionalis*] in San Luis Potosí, Mexico.)

11. Robinsonella pilosissima Fryxell, *Gentes Herb.* 11: 19 (1973). Holotype: Mexico, Chiapas, *Breedlove* 8459 (BH!; isotypes: DS!, F!, MICH!).

Trees to 12 m tall, the stems pilose becoming glabrescent. Leaves broadly ovate to somewhat 3-lobed, deeply cordate, pedately 7-9-nerved, dentate to subentire, acute or acuminate, sparsely pubescent to glabrescent, concolorous. Flowers in axillary fascicles, the pedicels 2-4 cm, densely pilose (hairs 1-1.5 mm); calyx 7-11 mm, c. half-divided, densely pilose; petals 12-16 mm, blue or purple, pubescent externally and on claw; staminal column 4-5 mm, pubescent, the filaments 3 mm; styles 15-20, glabrous. Mericarps 10-14 mm, 15-20, inflated, pubescent; seeds 3 mm, pubescent. *Deciduous forest*. Ch (*Breedlove* 9111, MEXU). 600-1000 m. (Endemic.)

32. Kearnemalvastrum D. Bates

By P.A. Fryxell.

Erect subshrubs, stellate-pubescent. Leaves usually palmately 3-7-lobed (aceriform), truncate to cordate, crenate, acute. Flowers in condensed or lax cymes, aggregated into paniculate or spiciform inflorescences; involucel of 3 inconspicuous linear bractlets; calyx gamosepalous, 5-lobed; petals equaling or slightly exceeding the calyx, white; androecium included in the corolla; styles 7-13, the stigmas capitate. Fruits schizocarpic, oblate, more or less glabrous; mericarps 7-13, blackish at maturity, indehiscent, smooth; seeds solitary, glabrous. 2 spp., Mexico to Colombia.

Literature: Bates, D.M. *Brittonia* 19: 227-236 (1967).

1. Flowers manifestly pedicellate, in lax panicles; calyx broadly campanulate, deeply 5-lobed; involucel shorter than calyx. **1. Kearnemalvastrum lacteum**
1. Flowers subsessile, in congested glomerules; calyx more or less tubular, the lobes approximately equaling the tube; involucel equaling or slightly longer than calyx. **2. Kearnemalvastrum subtriflorum**

1. Kearnemalvastrum lacteum (Aiton) D. Bates, *Brittonia* 19: 231 (1967). *Malva lactea* Aiton, *Hort. Kew.* 2: 448 (1789). Holotype: in cult. Kew, 1781, *Anon. s.n.* (photo US! ex BM). Illustr.: Fryxell, *Fl. Bajío* 16: 72 (1993).

Malvastrum lacteum (Aiton) Garcke in Braun & Bouché, *M. vitifolium* (Cav.) Hemsley.

Subshrubs 1-3 m tall, widely branched, pubescent or glabrescent. Leaves 3-7-lobed, truncate or cordate, crenate, acute, stellate-pubescent to glabrescent. Flowers in lax terminal panicles with or without leaves, the individual pedicel longer than the calyx, involucellar bracts 2-3.5 mm; calyx 5-7 mm, deeply lobed, stellate-pubescent; petals 4-7.5 mm; staminal column conical, the filaments longer than the column. Fruit 5 mm in diameter; mericarps 10-13, glabrous; seeds glabrous. $2n = 32$. *Cloud forest, oak forest, disturbed sites.* Ch (Breedlove 29243, CAS); G (Molina et al. 16078, US). 1450-2800 m. (Also Mexico, Cuba, Colombia.)

2. Kearnemalvastrum subtriflorum (Lagasca) D. Bates, *Brittonia* 19: 232 (1967). *Malva subtriflora* Lagasca, *Gen. Sp. Pl.* 21 (1816). Neotype (designated by Fuertes & Fryxell, 1993b): Mexico, Sessé & Mociño 3266 (MA! photo F-46855). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 244, t. 61 (1988).

Malvastrum greenmanianum Rose, *M. mexicanum* (Schauer) Hemsley, *M. ribifolium* (Schltdl.) Hemsley, *M. subtriflorum* (Lagasca) Hemsley.

Subshrubs 0.5-2.5 m tall, strictly erect and little-branched, stellate-pubescent. Leaves 3-5-lobed, cordate to truncate, crenate, acute, stellate-pubescent, somewhat discolorous. Flowers in dense axillary glomerules, terminally forming a congested more or less interrupted spiciform inflorescence; flowers subsessile, the pedicel shorter than the calyx; involucellar bracts 3.5-6 mm; calyx 4-6 mm, less than half-divided, stellate-pubescent; petals 3.5-6 mm; staminal column more or less cylindrical, the filaments shorter than the column. Fruits 5 mm in diameter; mericarps 7-10, glabrous. $2n = 32$. *Oak forest, disturbed sites.* Ch (Fryxell & Lott 3331, MEXU); G (Heyde & Lux 3946, NY); H (Williams & Molina 14806, F); CR (Garwood et al. 1340, BM). 1500-3100 m. (C. Mexico to Costa Rica.)

33. Fuertesimalva Fryxell

By P.A. Fryxell.

Annual or perennial herbs, ascending or erect, with stellate pubescence. Leaves petiolate, ovate or orbicular, usually palmately lobed or parted, crenate or dentate. Flowers sometimes solitary, usually in axillary scorpioid cymes; involucel of 3 filiform bracts; calyx stellate-pubescent, 5-lobed; corolla purplish (sometimes white), shorter to slightly longer than calyx; androecium included, the column glabrous or pubescent, antheriferous at apex, the anthers sometimes purple, few (sometimes only 5); styles 7-15, the stigmas capitate. Fruits schizocarpic, oblate, glabrous; mericarps 7-15, indehiscent, horseshoe-shaped, with irregular transverse ridges, sometimes with a small endoglossum; seeds solitary, glabrous. Fourteen spp. from western South America, two spp. also occurring disjunctly in Mexico.

Literature: Fryxell, P. A. *Sida* 17: 69-76 (1996). Krapovickas, A. *Bonplandia* 3: 63-72 (1970).

1. *Fuertesimalva jacens* (S. Watson) Fryxell, *Sida* 17: 73 (1996). *Malvastrum jacens* S. Watson, *Proc. Amer. Acad. Arts* 21: 417 (1886). Holotype: Mexico, Chihuahua, Palmer 430 (GH!); isotypes: K!, US!). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 448, t. 113 (1988).

Urocarpidium jacens (S. Watson) Krapov.

Ascending to erect perennial herbs to 1 m tall (usually shorter). Leaves petiolate, broadly ovate to subrotund, simple or lobulate, dentate, more or less acute, mostly 2-5 cm. Inflorescences axillary, generally shorter than to equaling the corresponding petiole, mostly with 2-6 flowers in a scorpioid cyme; flowers subsessile; bracts of the involucel filiform, shorter than calyx; calyx 5-6 mm, hispid, the hairs 1-2 mm; corolla purple, subequal to calyx; styles 7-10. Fruits 4 mm in diameter; mericarps less than 2 mm, 7-10, rugulate, lacking an endoglossum. *Hillsides and canyons, often as a weed in cultivated fields and waste ground.* Ch (*Breedlove & Davidse* 54714, CAS). 2300-3000 m. (Mexico.)

34. **Malvastrum** A. Gray

By P.A. Fryxell.

Perennial shrubs or subshrubs (sometimes annual), erect with patent or appressed stellate pubescence. Leaves ovate or lanceolate, usually unlobed, crenate or dentate. Flowers axillary and solitary or aggregated in apical spikes or interrupted racemes; involucel of 3 filiform or spatulate bractlets; calyx gamosepalous, 5-lobed; corolla yellow or orangish, rarely with a red center; androecium included in corolla; styles (in ours) 9-14, the stigmas capitate. Fruits oblate, setose or pubescent, schizocarpic; mericarps (in ours) 9-14, horseshoe-shaped with a prominent ventral notch, indehiscent, sometimes 2-3-cuspidate, 1-seeded; seeds glabrous. 15 spp., principally neotropical, also in Australia and as adventives elsewhere.

Literature: Hill, S.R. *Rhodora* 84: 1-83, 159-264, 317-409 (1982).

1. Pedicels solitary in the leaf axils, scattered along the stems, manifestly pedicellate; mericarps with 3 prominent cusps; stem hairs appressed, 4-rayed, aligned longitudinally; upper leaf surface usually with simple hairs; staminal column glabrous. **3. Malvastrum coromandelianum**
1. Pedicels in terminal spicate or racemose inflorescences; mericarps with 2 dorsal cusps or with none; stem hairs not appressed and usually with more than 4 rays; upper leaf surface with simple or stellate hairs; staminal column pubescent.
2. Inflorescence an elongated interrupted raceme; mericarps with 2 dorsal cusps; upper leaf surface with simple hairs; pedicels up to 5 mm. **1. Malvastrum guatemalense**
2. Inflorescence densely spiciform; mericarps with cusps suppressed (less than 0.2 mm) or absent; upper leaf surface with stellate hairs; pedicels 0-2 mm.
3. Hairs of vegetative parts 5-12-rayed, often tufted; terminal raceme or spike more than 3 cm; mericarps glabrous laterally. **2. Malvastrum americanum**
3. Hairs of vegetative parts 3-5-rayed, appressed; terminal raceme or spike usually less than 3 cm; mericarps pubescent laterally. **4. M. corchorifolium**

1. Malvastrum guatemalense Standley & Steyermark, *Publ Field Mus. Nat. Hist.*, *Bot. Ser.* 23: 174 (1944). Holotype: Guatemala, Standley 78534 (F!). Illustr.: Hill, *Rhodora* 84: 227, t. 42 (1982).

Subshrubs to 2 m tall, the stems stellate-pubescent. Leaves ovate or broadly elliptic, dentate, acute, the upper surface with simple appressed hairs. Flowers solitary in the leaf axils below (pedicels to 5 mm), with reduced leaves upward forming an elongated, interrupted raceme; involucellar bracts narrowly lanceolate; calyx 6-7 mm in flower to 10-11 mm in fruit; petals 7-8 mm, yellow-orange; staminal column stellate-pubescent. Fruits 5-6 mm in diameter, setose; mericarps 9-10, with 2 dorsal cusps. *Deciduous forest*. G (Standley 77661, F); H (Williams & Molina 10865, F); N (Moreno 5028, MO). 100-1200 m. (Endemic.)

2. *Malvastrum americanum* (L.) Torrey in Emory, *Rep. U.S. Mex. Bound.* 38 (1859). *Malva americana* L., *Sp. Pl.* 687 (1753). Lectotype (designated by Borssum Waalkes, 1966): *Hortus Leydenensis, von Royen s.n.* (L.). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 282, t. 71 (1988).

Herbs, subshrubs, or shrubs 0.5-1.5 m tall, stellate-pubescent, the hairs 5-12-rayed. Leaves ovate (or weakly lobulate), truncate, serrate, acute, minutely stellate-pubescent. Flowers sessile and crowded in dense spicate terminal inflorescences more than 3 cm; calyx 5-6 mm in flower to 6-10 mm in fruit, hirsute; petals 8-9 mm, yellow-orange; staminal column stellate-pubescent. Fruits 5-6 mm in diameter; mericarps 11-14, apically setose, otherwise glabrous, dorsally smooth, laterally ribbed, lacking cusps; seeds 1.5 mm. $2n = 24$. *Thorn forest, roadsides, secondary vegetation, urban habitats*. T (González 169, CSAT); Ch (Breedlove 19992, CAS); G (Molina & Molina 25145, US); H (Molina 11644, F); ES (Standley 20027, US); N (Stevens 11223, MO); CR (Garwood et al. 547, BM); P (Burch et al. 1189, US). 0-500 (-1600) m. (Tropics of both hemispheres.)

3. *Malvastrum coromandelianum* (L.) Garcke, *Bonplandia* 5: 295 (1857). *Malva coromandeliana* L., *Sp. Pl.* 687 (1753). Lectotype (designated by Borssum Waalkes, 1966): "2 coromandeliana HU" (microfiche! ex LINN-870.3; isolectotype: microfiche! ex S). Illustr.: Fryxell, *Fl. Bajío* 16: 89 (1993). N.v.: escobilla; huinar; popotalagua.

Malvastrum tricuspidatum (R. Br. ex Aiton) A. Gray.

Subshrubs (occasionally annual herbs), the stems with appressed 4-armed stellate hairs, the arms oriented longitudinally with the stem axis. Leaves ovate or lanceolate, dentate, acute, the upper surface usually with simple hairs. Pedicels 2-10 mm (subequal

to calyx), solitary in the leaf axils; involucellar bracts 3, shorter than the calyx, linear or narrowly spatulate; calyx 5-7 mm in flower to 8-11 mm in fruit, hirsute; corolla exceeding the calyx, yellow; staminal column glabrous. Fruits 6-7 mm in diameter; mericarps 10-12, setose, 3-cusped (one apical, two dorsal). $2n = 24$. *Deciduous forest, along streams, disturbed vegetation, roadsides, urban habitats.* T (Cowan 3296, CAS); Ch (Calzada et al. 3438, XAL); C (Lundell 1255, NY); B (Gentle 4825, TEX); G (Contreras 5631, NY); H (Zelaya 78, MO); ES (Calderón 154, US); N (Stevens 19874, MO); CR (Pittier 2744, US); P (Standley 27691, US). 0-2000 m. (Pantropical, sometimes extending into the temperate zones.)

4. Malvastrum corchorifolium (Desr.) Britton ex Small, *Fl. Miami* 119 (1913). *Malva corchorifolia* Desr. in Lam., *Encycl. 3: 755* (1792) Lectotype (designated by Hill, 1982); Jacquin, *Icon Pl. Rar. 1: t. 139* (1787). Illustr.: Hill, *Rhodora 84: 350, t. 70* (1982).

Low subshrubs, the stems with appressed 3-5-rayed stellate hairs. Leaves ovate, dentate, acute, the upper surface stellate-pubescent. Flowers solitary in the axils of the upper leaves, subsessile, the inflorescences congested and spicate on branch tips, shorter than 3 cm; calyx 5-6 mm in flower to 7-11 mm in fruit, moderately pubescent; corolla exceeding the calyx, yellow; staminal column stellate-pubescent. Fruits 5-6.5 mm in diameter; mericarps 11-13, apically setose, laterally pubescent, with 2 cusps greatly suppressed (0.2 mm or less). $2n = 48$. *Deciduous forest, evergreen forest, roadsides, secondary vegetation, generally on calcareous soils.* T (Fryxell 733, MO); Ch (Breedlove 14065, CAS); Y (Gaumer 1020, GH); QR (Cabrera 11016, MEXU); G (Bartlett 12348, US); H (Castro 156, MO); ES (Calderón 2129, US); N (Stevens 13183, MO). 0-2200 m. (Also West Indies and Florida.)

Hill (1982) interprets this as an amphidiploid sp. arising from the hybridization of *M. americanum* and *M. coromandelianum*.

35. Phymosia Ham.

Meliphlea Zucc.

By P.A. Fryxell.

Shrubs or small trees, densely tomentose, the stellate hairs often stipitate. Leaves 3-7-lobed (aceriform) or merely 3-7-angled, cordate, crenate to subentire, obtuse, acute, or acuminate. Peduncles usually exceeding the corresponding leaf, solitary in the leaf axils, 1- to many-flowered, the flowers often in umbels; involucel trimerous, sometimes forming a gamophyllous tube, sometimes deciduous; calyx gamosepalous, 5-lobed, tomentose; corolla red, rose, or purplish, sometimes white; androecium included in corolla; styles 10-40, sometimes strigose; stigmas obliquely capitate or unilaterally decurrent. Fruits globose to oblate, tomentose; mericarps reniform, papery, dehiscent; seeds glabrous. Eight spp. from Mexico and the West Indies.

Literature: Fryxell, P.A. *Madroño* 21: 153-174 (1971).

1. Calyx 2.5-4 cm; petals 3.5-7 cm; bracts of involucel sessile and distinct or forming a gamophyllous tube, deciduous or persistent; claw of petal glabrous.

1. *Phymosia rosea*

1. Calyx 1.5-2 cm; petals 2-3.5 cm; bracts of involucel distinct, stipitate-spatulate, usually persistent; claw of petal ciliate on margins. **2. *Phymosia umbellata***

1. *Phymosia rosea* (DC.) Kearney, Leafl. W. Bot. 5: 190 (1949). *Malva rosea* DC., Prodr. 1: 435 (1824). Type: Icones Florae Mexicanae s.n.! (Torner Collection acc. no. 6331.745, Hunt Institute). Illustr.: Fryxell, Syst. Bot. Monogr. 25: 357, t. 91 (1988). N.v.: flor de San José; malvón.

Malvastrum roseum (DC.) Hemsl., *Meliphlea vitifolia* Zucc., *Sphaeralcea rosea* (DC.) G. Don, *S. vitifolia* (Zucc.) Benth. & J.D. Hook. ex Hemsl.

Shrubs or small trees 1.5-10 m tall, tomentose, the stellate hairs often stipitate, whitish to yellowish. Leaves usually palmately 5(-7)-lobed, cordate, the lobes dentate, acuminate. Peduncles 4-17 cm, supporting a 1-4-flowered umbel (usually 3-flowered); involucel 1.5-2.5 cm, sometimes enclosing the bud as a gamophyllous tube, sometimes of 3 distinct broadly lanceolate bracts, often deciduous; calyx 2.5-4 cm, c. half-divided, densely yellow-puberulent; petals 3.5-7 cm, red or white, glabrous (including on claw); staminal column usually shorter than petals, glabrous; styles 30-40, the stigmas introrsely decurrent. Fruits 2-3.5 cm in diameter, oblate; mericarps 15-32 mm, 30-40; seeds 3 mm. $2n = 34$. Rain forest, pine-oak forest, sometimes cultivated as ornamental. Ch (Matuda

2835, F); G (*Steyermark 52008*, US); ES (*Montalvo 4755*, MO). 1600-3000 m. (Also W. Mexico.)

2. Phymosia umbellata (Cav.) Kearney, *Leafl. W. Bot.* 5: 190 (1949). *Malva umbellata* Cav., *Icones* 1: 64, t. 95 (1791) Lectotype (designated by Fuertes & Fryxell, 1993a): Madrid Bot. Gard., *Anon. s.n.* (MA-475960!); isolectotypes: BM! F! MA-475959!, MA-475961!, MA-475962!, MO!, microfiche! ex P-JU no. 12201). Illustr.: Fryxell, *Fl. Bajío* 16: 130 (1993).

Sphaeralcea galeottii Turcz., *S. umbellata* (Cav.) G. Don.

Shrubs or trees 2-6 m tall, the stems sparsely or densely tomentose, the stellate hairs yellowish, often stalked. Leaves palmately 5-lobed or merely 5-angled, crenate to subentire, acute, densely tomentose to glabrescent; stipules 4-7 mm. Peduncles 4-13 cm, axillary, tomentose, supporting a usually 3(1-5)-flowered umbel; involucellar bracts 1-2 cm, spatulate, basally constricted, usually persistent; calyx 1.5-2 cm, tomentose, the lobes 3-ribbed; petals 2-3.5 cm, ciliate on margins of claw, otherwise glabrous, rose or burgundy; staminal column shorter than the petals, the filaments c. 3 mm; styles 30-35, the stigmas obliquely capitate or introrsely decurrent. Fruits oblate, 2-2.5 cm in diameter; mericarps 30-35, 8-17 mm long, reniform; seeds 3 mm. $2n = 34$. *Rain forest and deciduous forest*. Ch (*Palacios & Breedlove 322*, CHIP). 400-2100 m. (Eastern Mexico from Tamaulipas to Chiapas.)

36. Neobrittonia Hochr.

By P.A. Fryxell.

Shrubs with stellate-pubescent stems. Leaves 3-5-lobed (aceriform), cordate, crenate, acuminate. Pedicels exceeding the corresponding petioles, solitary in the leaf axils, with more or less retrorse pubescence; involucel absent; calyx gamosepalous, 5-lobed, reflexed in fruit; corolla 1.5-3 cm, purple; staminal column shorter than corolla, pubescent. Fruits schizocarpic, pubescent, subglobose; mericarps 8-12, inflated, dehiscent, with fragile walls and 2 long divergent spines at base; seeds 3 per carpel, warty. Monotypic, from C. Mexico to Panama.

Literature: Hochreutiner, B.P.G. *Annuaire Conserv. Jard. Bot. Genève* 9: 184-188 (1905).

1. Neobrittonia acerifolia (G. Don) Hochr., *Annuaire Conserv. Jard. Bot. Genève* 9: 184 (1905). *Abutilon acerifolium* G. Don, *Gen. Hist.* 1: 504 (1831). Lectotype (designated by Fuentes & Fryxell, 1993b): ex Bot. Gard. Madrid, 1805, *Lagasca s.n.* (SEV). Illustr.: Fryxell, *Fl. Bajío* 16: 106 (1993).

Abutilon discissum (Bertol.) Schlechl., *Sida acerifolia* Lagasca non *Sida acerifolia* Medikus 1787 nec Zuccagni 1809).

Shrubs 2-3 m tall, the stems with stellate hairs 2-3 mm. Leaves palmately 3-5-lobed, cordate, crenate. Pedicels 3-10 cm; calyx 10-12 mm, stellate-pubescent; petals 1.5-3 cm, purple; androecium less than 1 cm, the filaments 2 mm. Fruits 3-4 cm in diameter, inflated, densely pubescent (especially when young); mericarps 2-2.5 cm × 1.5-1.8 cm, each with 2 basal spines 10-14 mm with stellate pubescence; seeds 3 mm. $2n = 32$. Rain forest, cloud forest, oak-pine forest. Ch (Breedlove 29220, CAS); G (Molina et al. 16339, US); H (Molina, 1975); ES (Standley 21602, US); N (Moreno 20066, MO); CR (Khan et al. 1325, BM); P (Allen 1493, MO). 1800-2700 m. (W. Mexico to Panama.)

37. Malva L

By P.A. Fryxell.

Plants, trailing, ascending or erect, glabrous or pubescent. Leaves long-petiolate, orbicular or reniform in outline, more or less palmately 5-7-lobed, rarely deeply dissected. Flowers solitary or fasciculate in the leaf axils, sometimes grouped in terminal inflorescences; involucellar bracts 2-3, distinct, subulate or foliar; calyx gamosepalous, 5-lobed, often accrescent and spreading in fruit; petals usually purple, sometimes white, emarginate or with a prominent apical notch; androecium included in corolla; styles 8-15, filiform, the stigmatic surface unilaterally and introrsely decurrent. Fruits schizocarpic, oblate, glabrous or pubescent; mericarps 8-15, indehiscent, more or less reticulate, 1-seeded. C. 40 spp. from Europe, Africa, and Asia; a few of which are introduced in the Americas and naturalized; also four indigenous spp. from the offshore islands of northwestern Mexico and California.

Literature: Dalby, D.H. *Flora Europaea* 2: 249-251 (1968). Morton, C.V. *Rhodora* 39: 98-99 (1937). Ray, M. F. *Pl. Syst. Evol.* 198: 29-53 (1995); *Novon* 8: 289-295 (1998).

1. Erect shrubs 1-3 m tall; corolla 3-4 cm; fruits 12-16 mm in diameter; mericarps c. 8.

5. Malva assurgentiflora

1. Procumbent or ascending to erect herbs; corolla 0.4-2.5 cm long; fruits 4-6 mm in diameter; mericarps 10-15.

2. Bractlets of involucel linear or filiform.

3. Petals 4-5 mm, scarcely exceeding the calyx; mericarps c. 10, rugose dorsally and winged at angle of dorsal and lateral walls. **1. Malva parviflora**

3. Petals 6-11 mm; mericarps 12-15, smooth, unwinged. **2. Malva neglecta**

2. Bractlets of involucel broadly lanceolate to elliptic.

4. Petals 5-15 mm, pink to lavender; involucellar bracts 1-2.5 mm wide; plants trailing, often weedy. **3. Malva nicaeensis**

4. Petals 16-25 mm, purplish, showy; involucellar bracts 2-4 mm wide; plants erect, grown for ornament, sometimes escaped. **4. Malva sylvestris**

1. Malva parviflora L., *Demonstr. Pl.* 18 (1753). Holotype: Barbary, "parviflora 16" (microfiche! ex LINN-870.17). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 279, t. 70 (1988). N.v.: malva de Castilla; quesillo.

Herbs, trailing or ascending, slightly pubescent or glabrescent. Leaves crenate, undulate, or 5-7-lobed. Flowers in fascicles of 1-4 in the leaf axils; pedicels shorter than the calyces; involucellar bracts filiform; calyx 3-4 mm in flower to 7-8 mm in fruit; petals 4-5 mm, lavender or white. Mericarps c. 10, rugose or wrinkled dorsally, winged at angle between dorsal and lateral walls, giving the fruit a ribbed appearance. $2n = 42$.

Roadsides, disturbed sites, urban habitats. Ch (*Breedlove* 33833, CAS); G (*Contreras* 5249, LL); H (*Martínez* 241, MO); ES (*Calderón* 139, US); CR (*Pittier & Tonduz* 1790, US). 0-2600 m. (Native from Mediterranean region to India; widely naturalized in the Neotropics.)

2. *Malva neglecta* Wallr., *Syll. Ratisb.* 1: 140 (1824). Holotype: Germany, *Wallroth s.n.* (E). Illustr.: Robyns, Fl. Panama, *Ann. Missouri Bot. Gard.* 52: 545, t. 8 (1966).

Perennial herbs, the stems more or less procumbent, pubescent, the hairs stellate and simple, the simple hairs persisting on older stems. Leaves serrate or crenate, sometimes weakly 5-lobed. Flowers 2-6 in the leaf axils, the pedicels slender, often several times as long as the calyx; involucellar bracts linear, c. 1 mm wide; calyx 4-5 mm, not accrescent, pubescent; petals 6-11 mm, pale lavender to white; staminal column pubescent. Mericarps 12-15, dorsally rounded, smooth, unwinged, usually pubescent. $2n = 42$. *Roadsides, disturbed sites.* P (White 200, F). (Native to Europe and Asia, primarily in temperate latitudes; extensively naturalized in North America and elsewhere, rare in Mesoamerica.)

3. *Malva nicaeensis* All., *Fl. Pedem.* 2: 40 (1785). Holotype: France, *Bellardi s.n.* (TO).

Herbs, trailing to ascending, sparsely to densely pubescent. Leaves long-petiolate, crenate, undulate, or palmately 5-7-lobulate. Flowers 1-4 in the leaf axils, the pedicels subequal to the calyces, slender; involucellar bracts broadly lanceolate (1-2.5 mm wide); calyx 4-6 mm in flower to 6-12 mm in fruit; petals 5-15 mm, pink or lavender. Mericarps c. 10, more or less smooth, often densely hirsute. $2n = 42$. *Roadsides, disturbed vegetation, urban habitats.* Ch (Cabrera 2859, MEXU). 1800-2300 m. (Native to Asia Minor and the Mediterranean region; widely naturalized elsewhere, including Mexico.)

4. *Malva sylvestris* L., *Sp. Pl.* 689 (1753). Syntype: Europe, "9 sylvestris" (microfiche! ex LINN-870.22). Illustr.: Paul & Nayar, *Fasc. Fl. India* 19: 175, t. 37 (1988). N.v.: malva real.

Erect herbs 1-2 m tall, sparsely pubescent to glabrescent. Leaves long-petiolate, crenate, undulate, or palmately 5-7-lobulate. Flowers 1-4 in the leaf axils, the pedicels several times longer than the calyces, slender; involucellar bracts oblong or elliptic (2-4 mm wide); calyx 6-10 mm, not accrescent; petals 16-25 mm, purplish, showy. Mericarps c. 12, minutely pubescent, obscurely reticulate, costate on the angle between the dorsal and lateral walls. $2n = 42$. *In cultivation, sometimes naturalized in disturbed habitats.* Ch

(Breedlove 16089, CAS); G (Dwyer 15275, MO); H (Bustillo 211, MO). C. 2000 m.
(Native to Europe, N. Africa, and Asia Minor; introduced and naturalized elsewhere.)

5. *Malva assurgentiflora* (Kellogg) M. Ray, *Novon* 8: 290 (1998). *Lavatera assurgentiflora* Kellogg, *Proc. Calif. Acad. Sci.* 1: 14 (1854). Neotype (designated by Ray 1998): from the island of Anacapa, off the coast of Santa Barbara, California (specimen unknown); West Anacapa Island, *Timbrook & Philbrick* 652 (SBBG). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 259, t. 65 (1988). N.v.: malva real; malvón.

Shrubs 1-3 m tall, stellate-puberulent to glabrescent. Leaves long-petiolate, palmately 5-7-lobed, coarsely crenate, the lobes acute to obtuse, slightly discolored, stellate-puberulent to glabrescent. Pedicels 2-4 cm, solitary or paired in the leaf axils, slender; involucellar bracts 3, shorter than the calyx, persistent, more or less connate basally, the lobes triangular; calyx tubular in flower and c. 1/3-lobed, accrescent in fruit and enclosing fruit, densely stellate-puberulent; petals 3-4 cm, rose or purplish with purple veins (pallid basally); staminal column 1.5-2 cm, the filaments 1-2 mm; styles c. 8, sometimes purplish. Fruits 12-16 mm in diameter, disciform; mericarps c. 8, dorsally smooth, laterally reticulate, apically pubescent; seeds 4 mm, glabrous. *In cultivation as ornamental shrub.* G (cultivated, Standley & Steyermark, 1949). (Mexico and California, distributed elsewhere in cultivation.)

38. *Alcea* L.

By P.A. Fryxell.

Annual, biennial, or perennial herbs, with stellate pubescence sometimes mixed with long simple hairs, sometimes glabrescent. Leaves ovate to suborbicular, angled, weakly lobed, or deeply palmately parted, crenate or dentate, acute or obtuse. Inflorescence racemiform or spiciform, usually leafless; involucel shorter than to equaling calyx, 5-11-parted, connate below; calyx gamosepalous, 5-lobed, more or less pubescent; petals usually more than 3 cm, apically notched, of various colors; androecium included in corolla, compact. Fruit disciform, schizocarpic; mericarps more than 15, circular with a prominent ventral notch, indehiscent, glabrous or pubescent, variously smooth, wrinkled, winged, furrowed,

etc.; seeds solitary, glabrous or pustulate. C. 60 spp. from the Middle East and S.W. Asia, one of which (the following) is almost cosmopolitan in cultivation.

Literature: Iljin, M. M. *Flora U.S.S.R.* 15: 23-184 (1949). Riedl, I. *Flora Iranica* 120: 1-86 (1976). Zohary, M. *Bull. Res. Coun. Israel* 11D: 210-229 (1963); *Israel J. Bot.* 12: 1-26 (1963).

1. Alcea rosea L., *Sp. Pl.* 687 (1753). *Althaea rosea* (L.) Cav. Lectotype (designated here): "rosea 1" ex Hort. Upsal. (microfiche! ex LINN-869.1). Illustr.: Fryxell, *Syst. Bot. Monogr.* 25: 69, t. 10 (1988). N.v.: altea; amapola grande; mírame lindo (CR); vara de San José.

Strict perennial 1-2.5 m tall, roughly pubescent. Leaves long-petiolate, orbicular to 5-7-angled, cordate, crenate, roughly pubescent. Flowers showy, subsessile, in a terminal leafless spiciform inflorescence; involucel of 6-7 broadly triangular bracts that are connate basally; calyx exceeding the involucel, tomentose, 5-lobed; corolla 8-10 cm in diameter, sometimes double, in various colors; styles 20-40. Fruit disciform, pubescent, enclosed by calyx; mericarps 20-40, horseshoe-shaped, dorsally channelled and winged. $2n = 42$. *In cultivation as an ornamental.* Y (*Gutiérrez-Rivas 11*, MEXU); G (cultivated, Standley & Steyermark, 1949); ES (*Padilla 123*, US); H (Molina, 1975); N (*Bermúdez 26*, MO); CR (cultivated, Standley, 1937). (Native to the Aegean Islands and Balkan Peninsula, now nearly cosmopolitan in cultivation.)

Several authors have indicated the Hortus Upsaliensis specimen (LINN-869.1) to be the "type" or the "holotype," but I am unable to find that anyone has explicitly designated this specimen as lectotype, which is necessary since several elements were cited in the protologue.

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ellipticum Schltdl. (Pseudabutilon — 4)
gaumeri Standley (Bakeridesia — 3)
giganteum (Jacq.) Sweet — 5 (cf. also 4a)
haenkeanum K. Presl — 2
hemsleyanum Rose — (Pseudabutilon — 4)
hirtum (Lam.) Sweet — 17
hulseanum (Torrey & A. Gray) Torrey ex A. Gray — 9
integerrimum (J.D. Hook.) Triana & Planchon (Bakeridesia — 6)
megapotamicum auct. non (Sprengel) A. St.-Hil. & Naudin — 15
nelsonii Rose (Bakeridesia — 9)
orientale Standley — (Pseudabutilon — 2)
pachecoanum Standley & Steyerm. — 13
percaudatum Hochr. — 7
permolle (Willd.) Sweet — 8
pictum auct. non (J.D. Hook.) Walp. — 14

- pittieri* J.D. Smith (Bakeridesia — 4)
pleiopodium J.D. Smith (Robinsonella — 3)
purpusii Standley — 10
sidoides Hemsley (Pseudabutilon — 4)
spicatum Kunth (Briquetia — 1)
striatum Dickson ex Lindley — 14
theophrasti Medikus — 16
tridens Standley & Steyermark. — 12
trisulcatum (Jacq.) Urban — 6
umbellatum (L.) Sweet (Pseudabutilon — 5)
venosum Lemaire — 14
vexillarium E. Morren — 15
vulcanicola Standley (Bakeridesia — 8)
yucatanum Standley (Bakeridesia — 2)

Achania

- poeppigii* Sprengel (Hibiscus — 16)

Alcea L. — 38

- rosea* L. — 1

Allosidastrum (Hochr.) Krapov. Fryxell & D. Bates — 27

- hilarianum* (K. Presl) Krapov. Fryxell & D. Bates — 2
interruptum (Balbis ex DC.) Krapov. Fryxell & D. Bates — 3
pyramidalatum (Desp. ex Cav.) Krapov. Fryxell & D. Bates — 1

Althaea

- corymbosa* Swartz (Pavonia — 19)
rosea (L.) Cav. (Alcea — 1)

Anoda Cav. — 24

- acerifolia* Cav. — 2
crenatiflora Ortega — 5
cristata (L.) Schlechtendal. — 3
guatemalensis Fryxell — 4
hastata Cav. — 3
incarnata Kunth (Periptera — 1)

- lavateroides* Medikus — 3
parviflora Cav. — 5
periptera (Sims) Hochr. (Periptera — 1)
pristina Fryxell — 1
punicea Lagasca (Periptera — 1)
zuccagnii (Sprengel) Fryxell — 2
- Bakeridesia** Hochr. — 19
- exalata D. Bates — 1
 - gaumeri (Standley) D. Bates — 3
 - gloriosa D. Bates — 7
 - integerrima (J.D. Hook.) D. Bates — 6
 - molinae D. Bates — 5
 - nelsonii (Rose) D. Bates — 9
 - pittieri (J.D. Smith) D. Bates — 4
 - vulcanicola (Standley) D. Bates — 8
 - yucatana (Standley) D. Bates — 2
- Bastardia** Kunth — 21
- viscosa (L.) Kunth — 1
- Bastardiastrum** (Rose) D. Bates — 14
- gracile (Hochr.) D. Bates — 1
- Bogenhardia** Reichb. — 22
- crispa* (L.) Kearney (Herissantia — 1)
- Briquetia** Hochr. — 16
- spicata (Kunth) Fryxell — 1
- Cienfuegosia** Cav. — 8
- yucatanensis Millsp. — 1
- Dendrosida** Fryxell — 29
- batesii Fryxell — 3
 - breedlovei Fryxell — 1
 - sharpiana (Miranda) Fryxell — 2
- Fuertesimalva** Fryxell — 33
- jacens (S. Watson) Fryxell. — 1

Gaya Kunth — 30

- hermannioides Kunth — 2
- minutiflora Rose — 3
- occidentalis (L.) Kunth — 1
- pringlei* Hochr. — 3

Gayoides (Endl.) Small — 22

- crispum* (L.) Small (Herissantia — 1)

Gossypium L. — 7

- acuminatum* Roxb. ex G. Don — 1
- barbadense L. — 1
- hirsutum L. — 2
- mexicanum* Tod. — 2
- nicaraguense* Ramírez-Goyena — 2
- peruvianum* Cav. — 1
- schottii* G. Watt — 2
- tridens* Cook & Hubbard — 1
- vitifolium* Lam. — 1
- volumbe* Ramírez-Goyena — 2

Hampea Schltdl. — 6

- appendiculata (J.D. Smith) Standley
 - var. *appendiculata* — 17a
 - var. *longicalyx* Fryxell — 17b
- bracteolata Lundell — 7
- breedlovei Fryxell — 3
- dukei* A. Robyns — 16
- euryphylla* Standley — 9
- integerrima Schltdl.
 - var. *appendiculata* J.D. Smith — 17a
- latifolia Standley — 13
- longipes Miranda — 2
- macrocarpa* Lundell — 14
- mexicana* Fryxell — 11

micrantha A. Robyns — 4
 montebellensis Fryxell — 8
 nutricia Fryxell — 1
 ovatifolia Lundell — 5
panamensis Standley — 17a
 platanifolia Standley — 15
 punctulata Cuatrec. — 16
 reynae Fryxell — 12
 rovirosae Standley — 14
 sphaerocarpa Fryxell — 10
 stipitata S. Watson- 9
 trilobata Standley — 6

Herissantia Medikus — 22

crispa (L.) Briz. — 1

Hibiscus L. — 2

abelmoschus L. (*Abelmoschus* — 2)
 acetosella Welw. ex Hiern — 4
 bifurcatus Cav. — 6 (cf. also 2)
brasiliensis auct. non L. — 17
cancellatus L. (*Pavonia* — 10)
cannabinus auct. non L. — 5
 clypeatus L. — 12
cocleanus A. Robyns (*Wercklea* — 6)
 costatus A. Rich. — 1
 diversifolius Jacq. — 8
esculentus L. (*Abelmoschus* — 1)
ferox J.D. Hook. (*Wercklea* — 1)
 furcellatus Desr. in Lam. — 7
lambertianus Kunth -11
 lavaterioides Moric. ex Ser. — 15
longipes Standley — 15
malvaviscus L. (*Malvaviscus* — 5)

- manihot* L. (*Abelmoschus* — 3)
mutabilis L. — 19
pernambucensis Arruda — 9
phoeniceus Jacq. — 17
pilosus (Swartz) Fawcett & Rendle — 16
poeppigii (Sprengel) Garcke — 16
populneus L. (*Thespesia* — 1)
purpusii Brandegee — 18
radiatus Cav. — 5
rolfeanus A. Robyns (*Wercklea* — 3)
rosa-sinensis L.
 var. *rosa-sinensis* — 21a
 var. *schizopetalus* Dyer — 21b
sabdariffa L. — 3
schizopetalus (Dyer) J.D. Hook. — 21b
sororius L. — 13
spathulatus Garcke (non Gaud.) — 14
striatus Cav. — 11
striatus subsp. *lambertianus* (Kunth) O. Blanchard ex Proctor — 11a
syriacus L. — 20
tiliaceus auct. non L. — 9
 subsp. *pernambucensis* (*Arruda*) Castell. — 9
trilobus Aublet — 10
trilobus subsp. *hirsutus* O. Blanchard [inedit.] — 10a
tubiflorus DC. — 16
uncinellus DC. — 2
verbasciformis Klotzsch ex Hochr. — 14
wercklei A. Robyns (*Wercklea* — 5)
woodsonii A. Robyns (*Wercklea* — 4)
- Hochreutinera** Krapov. — 20
amplexifolia (DC.) Fryxell — 1
- Kearnemalvastrum** D. Bates — 32

lacteum (Aiton) D. Bates — 1

subtriflorum (Lagasca) D. Bates — 2

Kosteletzkyia K. Presl — 1

depressa (L.) O. Blanchard, Fryxell & D. Bates — 1

hastata K. Presl — 1

hispida K. Presl — 1

pentasperma (Bertero ex DC.) Griseb. — 1

sagittata K. Presl — 1

Lavatera L.

assurgentiflora Kellogg (Malva — 1)

Lopimia Martius

dasypetala (Turcz.) Standley (Pavonia — 14)

malacophylla (Link & Otto) Martius (Pavonia — 15)

Malache Vogel — 10

chiapensis Standley (Pavonia — 10)

fonsecana Standley (Pavonia — 12)

fulva Standley (Pavonia — 7)

malacophylla (Link & Otto) Standley (Pavonia — 14)

maxonii Standley (Pavonia — 4)

panamensis Standley (Pavonia — 12)

penduliflora Standley (Pavonia — 6)

purpusii (Brandegee) Standley (Pavonia — 11)

rosea (Schltdl.) Kuntze (Pavonia — 1)

scabra Vogel (Pavonia — 20)

Malachra L. — 13

alceifolia Jacq. — 3

var. *fasciata* (Jacq.) A. Robyns — 2

capitata (L.) L. — 4

fasciata Jacq. — 2

ovata K. Presl (Peltaea — 1)

radiata (L.) L. — 1

trinervis K. Presl (Peltaea — 2)

Malva L. — 37

- americana* L. (*Malvastrum* — 2)
- assurgentiflora* (Kellogg) M. Ray — 5
- caroliniana* L. (*Modiola* — 1)
- corchorifolia* Desr. (*Malvastrum* — 4)
- coromandeliana* L. (*Malvastrum* — 3)
- lactea* Aiton (*Kernemalvastrum* — 1)
- neglecta* Wallr. — 2
- nicaeensis* All. — 3
- parviflora* L. — 1
- rosea* DC. (*Phymosia* — 1)
- subtriflora* Lagasca (*Kernemalvastrum* — 2)
- sylvestris* L. — 4
- umbellata* Cav. (*Phymosia* — 2)

Malvastrum A. Gray — 34

- americanum* (L.) Torrey — 2
- corchorifolium* (Desr.) Britton ex Small — 4
- coromandelianum* (L.) Garcke — 3
- greenmanianum* Rose (*Kernemalvastrum* — 2)
- guatemalense* Standley & Steyermark. — 1
- jacens* S. Watson (*Fuertesimalva* — 1)
- lacteum* (Aiton) Garcke (*Kernemalvastrum* — 1)
- mexicanum* (Schauer) Hemsley (*Kernemalvastrum* — 2)
- ribifolium* (Schldl.) Hemsley (*Kernemalvastrum* — 2)
- roseum* (DC.) Hemsley (*Phymosia* — 1)
- subtriflorum* (Lagasca) Hemsley (*Kernemalvastrum* — 2)
- tricuspidatum* (R. Br. ex Aiton) A. Gray — 3
- vitifolium* (Cav.) Hemsley (*Kernemalvastrum* — 1)

Malvaviscus Fabr. — 9

- achanioides* (Turcz.) Fryxell — 2
- arboreus* Cav. — 5
- var. *longifolius* (Garcke) Schery — 1

- var. *palmanus* (Pittier & J.D. Smith) Schery — 3
- var. *penduliflorus* (DC.) Schery — 1
- concinnus* Kunth — 4
- cutteri* Standley — 2
- lanceolatus* Rose — 5
- longifolius* Garcke — 1
- palmanus* Pittier & J.D. Smith — 3
- penduliflorus* DC. — 1
- spathulatus* Garcke — 4
- speciosus* Linden & Planchon ex Martius — 4
- velutinus* Triana & Planchon — 4

Meliphlea Zucc. — 35

- vitifolia* Zucc. (Phymosia — 1)

Melochia

- depressa* L. (Kosteletzkya — 1)

Modiola Moench — 23

- caroliniana* (L.) G. Don — 1
- multifida* Moench — 1

Neobrittonia Hochr. — 36

- acerifolia* (G. Don) Hochr. — 1

Pavonia Cav. — 10

- alba* Seemann — 14
- cancellata* (L.) Cav. — 9
- castaneifolia* St.-Hil. & Naudin — 3
- chiapensis* (Standley) Standley — 10
- corymbosa* (Swartz) Willd. — 19
- costaricensis* Hochr. — 7
- dasypetala* Turcz. — 15
- fonsecana* (Standley) Fryxell — 12
- fruticosa* (Miller) Fawcett & Rendle — 2
- fulva* (Standley) Standley — 7
- guanacastensis* Standley — 9

- integrifolia* Standley — 5
 - liebmannii* Ulbr. — 11
 - longipes* Standley — 3
 - var. *hirsuta* A. Robyns — 4
 - malacophylla* (Link & Otto) Garcke — 16
 - maxonii* (Standley) Standley — 4
 - monticola* Fryxell — 17
 - oxyphyllaria* J.D. Smith — 7
 - paludicola* Nicolson — 20
 - panamensis* (Standley) Standley — 14
 - paniculata* Cav. — 18
 - var. *corymbosa* (Swartz) Gürke — 19
 - penduliflora* (Standley) Standley — 6
 - peruviana* Gürke — 4
 - purpusii* Brandegee — 11
 - racemosa* (Swartz) Vogel — 20
 - rhizophorae* Killip ex Kearney — 21
 - riedelii*
 - var. *ovata* (K. Presl) A. Robyns (*Peltaea* — 1)
 - rosea* Schltdl. — 1
 - var. *maxonii* (Standley) A. Robyns — 4
 - scabra* (Vogel) Cif. — 20
 - schiedeana* Steudel — 1
 - sessiliflora* Kunth (*Peltaea* — 2)
 - sidifolia* Kunth — 10
 - spicata* Cav. — 20
 - spuria* Fryxell — 13
 - submutica* Fryxell — 8
- Peltaea*** (K. Presl) Standley — 12
- ovata* (K. Presl) Standley — 1
 - trinervis* (K. Presl) Krapov. & Cristobal — 2
- Periptera*** DC. — 25

punicea (Lagasca) DC. — 1

Phymosia Ham. — 35

rosea (DC.) Kearney — 1

umbellata (Cav.) Kearney — 2

Pseudabutilon R.E. Fries — 17

sect. *Allosidastrum* Hochr. — (27. *Allosidastrum*)

cymosum Triana & Planch.) Fryxell — 3

ellipticum (Schltdl.) Fryxell — 4

inornatum Standley & Steyerl. — 1

langlassei Hochr. (*Allosidastrum* — 2)

orientale (Standl. & Steyerl.) Fryxell — 2

paniculatum (Rose) R.E. Fries — 1

scabrum (K. Presl) R.E. Fries — 1

smithii Hochr. (*Allosidastrum* — 3)

spicatum (Kunth) R.E. Fries (*Briquetia* — 1)

umbellatum (L.) Fryxell — 5

Robinsonella Rose & E.G. Baker — 31

brevituba Fryxell — 4

cordata Rose & E.G. Baker — 9

densiflora Fryxell — 7

discolor Rose & E.G. Baker — 9

divergens Rose & E.G. Baker — 1 (cf. also 7)

edentula Rose & J.D. Smith — 1

erasmi-sosae C. Nelson — 8

glabrifolia Fryxell — 5

lindeniana (Turcz.) Rose & E.G. Baker

subsp. *divergens* (Rose & E.G. Baker) Fryxell — 1

mirandae Gómez-Pompa — 6

pilosa Rose — 10

pilosissima Fryxell — 11

pleiopoda (J.D. Smith) Fryxell — 3

samaricarpa Fryxell — 2

speciosa Fryxell — 9

Sida L. — 28

abutifolia Miller — 9

abutilon L. (Abutilon — 21)

acerifolia Lagasca (Neobrittonia — 1)

acerifolia Zuccagni (Anoda — 2)

acuta Burman f. — 20

aggregata K. Presl — 16

alba L. — 7

amplexifolia DC. (Hochreutinera — 1)

amplissima L. (Wissadula — 4)

angustifolia Miller — 7

anomala A. St.-Hil. — 12

anomalocalyx Fryxell — 17

antillensis Urban — 21

atrosanguinea Jacq. (Sidastrum — 1)

barclayi E.G. Baker — 17

begonioides Griseb. — 1

brachystemon DC. — 13

capitata L. (Malachra — 4)

carpinifolia L.f. — 20

ciliaris L. — 12

collina Schltdl. — 22

contracta Link (Wissadula — 6)

cordifolia L. — 19

crispa L. (Herissantia — 1)

cristata L. (Anoda — 3)

decumbens A. St.-Hil. & Naudin — 1

dombeyana DC. — 2

elliottii Torrey & A. Gray — 15

var. *parviflora* Chapman — 15a

excelsior Cav. (Wissadula — 2)

- floribunda* Kunth (Sidastrum — 1)
fruticosa Miller (Pavonia — 2)
garckeana Polak. — 19
gaya DC. (Gaya — 2)
gigantea Jacq. (Abutilon — 5)
glabra Miller — 4
glanduligera Benth. (Allosidastrum — 2)
glomerata Cav. — 11
glutinosa Cav. — 5
gracilis Elliott — 14
guianensis Schumann (Sidastrum — 3)
haenkeana K. Presl — 23
hilariana K. Presl (Allosidastrum — 2)
hirta Lam. (Abutilon — 22)
hulseana Torrey & A. Gray (Abutilon — 9)
hyssopifolia K. Presl — 22
insperata Standley & L.O. Williams — 4
integerrima J.D. Hook. (Bakeridesia — 6)
interrupta Balbis ex DC. (Allosidastrum — 3)
jamaicensis L. — 10
jussieana DC. — 1
lindheimeri auct. non Engelm. & A. Gray — 15a
linearis Cav. — 14
linifolia Cav. — 26
malacophylla Link & Otto (Pavonia — 15)
martiana A. St.-Hil. — 6
micrantha A. St.-Hil. (Sidastrum — 2)
occidentalis L. (Gaya — 1)
panamensis Monteiro — 10
paniculata L. (Sidastrum — 1)
periplocifolia L. (Wissadula — 1)
permollis Willd. (Abutilon — 8)

- procumbens* Swartz — 9
pyramidata Desp. ex Cav. (*Allosidastrum* — 1)
quinquenervia Duchass. ex Triana & Planchon (*Sidastrum* — 3)
radiata L. (*Malachra* — 1)
repens Dombey ex Cav. — 2
rhombifolia L. — 24
rzedowskii Fryxell — 14
salviifolia K. Presl — 18
savannarum Schumann — 16
setifera K. Presl — 16
setosa Martius ex Colla — 25
sharpiana Miranda (*Dendrosida* — 2)
spinosa L. — 7
surinamensis Miq. — 25
triquetra L. (*Abutilon* — 6)
trisulcata Jacq. (*Abutilon* — 6)
umbellata L. (*Pseudabutilon* — 5)
urens L. — 3
viarum A. St.-Hil. — 8
viscosa L. (*Bastardia* — 1)
wendtii Fryxell — 13
zuccagnii Sprengel (*Anoda* — 2)

Sidastrum E.G. Baker — 26

- micranthum* (A. St.-Hil.) Fryxell — 2
paniculatum (L.) Fryxell — 1
quinquenervium (Duchass. ex Triana & Planchon) E.G. Baker — 3

Sphaeralcea

- galeottii* Turcz. (*Phymosia* — 2)
rosea (DC.) G. Don (*Phymosia* — 1)
umbellata (Cav.) G. Don (*Phymosia* — 2)
vitifolia (Zucc.) Benth. ex J.D. Hook. & Hemsley (*Phymosia* — 1)

Thespesia Sol. ex Corr. Serr. — 5

populnea (L.) Sol. ex Corr. Serr. — 1

Urena L. — 11

lobata L. — 2

var. *sinuata* (L.) Hochr. — 1

sinuata L. — 1

Urocarpidium Ulbrich — 32

jacens (S. Wats.) Krapov. (Fuertesimalva — 1

Wercklea Pittier & Standley in Standley — 3

cocleana (A. Robyns) Fryxell — 6

ferox (J.D. Hook.) Fryxell — 1

grandiflora Fryxell — 2

insignis Pittier & Standley ex Standley — 5

lutea Rolfe — 3

woodsonii (A. Robyns) Fryxell — 4

Wissadula Medikus — 15

sect. *Bastardiastrum* Rose — (14. *Bastardiastrum*)

amplissima (L.) R.E. Fries — 3

contracta (Link) R.E. Fries — 6

costaricensis Standley — 5

excelsior (Cav.) K. Presl — 2

gracilis Hochr. (*Bastardiastrum* — 1)

hernandiooides (L'Hér.) Garcke — 4

hirsuta K. Presl — 3

mucronulata A. Gray ex Torrey — 4

patens (A. St.-Hil.) Garcke — 2

periplocifolia (L.) K. Presl ex Thwaites — 1

scabra K. Presl (*Pseudabutilon* — 1)

spicata (Kunth) K. Presl (*Briquetia* — 1)

zeylanica Medikus — 1

var. *guatemalense* E.G. Baker — 2

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Glossary for special terms (Malvaceae):

endoglossum (Spanish: endoglosa). The endoglossum is an inner protrusion in the carpel that divides it into two chambers. It may be a simple tongue that completely divides the carpel, or it may be a vestigial structure. In *Gaya* it is usually pinnately divided and curved around the solitary seed.

involucel (Spanish: calículo). Also called "epicalyx." The usually whorled group of bracts that immediately subtends the individual flower at the base of the calyx. Rarely these bracts may be inserted directly on the calyx. The bracts may be (2-) 3 to as many as 24; they may be distinct or more or less gamophyllous; they may be persistent or deciduous; they are usually whorled but rarely are irregularly (spirally?) inserted below the flower on the pedicel; or they may be absent. Most genera of Malvaceae are characterized by either the presence or absence of an involucel. In a few genera, however, the presence or absence of an involucel varies with the species (*Callirhoe*, *Malvella*, *Malachra*, and *Cienfuegoscia*).

mericarp (Spanish: carpidio). In those Malvaceae with schizocarpic fruits (i.e. tribes Malveae and Malvavisciae), the mature fruit breaks (through septicidal dehiscence) into as many parts as there are carpels in the gynoecium. These parts are called mericarps.