

MALVACEAE MALLOW FAMILY
Part One: All genera except *Sphaeralcea St.-Hil.*

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Subshrubs or shrubs, less often trees, rarely herbs, often stellate-pubescent. LEAVES alternate, simple or palmately lobed, usually ovate or lanceolate. INFLORESCENCES panicles or racemes, rarely heads or umbels, or the flowers often solitary in the leaf axils. FLOWERS (in ours) perfect and actinomorphic; sepals and petals 5 (or calyx gamosepalous and 5-toothed or -lobed); stamens monadelphous and usually numerous; ovary superior, 3-35-carpelled, with 1-35 styles. FRUIT schizocarpic or capsular. --Over 100 genera, perhaps 2000 species, chiefly of tropical and subtropical regions, but with a few temperate-zone genera. The family is well known for the economically important cotton crop (*Gossypium* spp.) and for numerous ornamentals, especially in *Hibiscus* and *Alcea*. Fryxell, P. A. 1988. Syst. Bot. Monogr. 25:1-522.

1. Involucre absent; fruits usually schizocarpic (capsular in *Hibiscus denudatus*, sometimes pseudo-capsular in *Abutilon*).
 2. Corolla 20-27 mm long, white or pale lavender with a dark center; fruits 5-celled capsules; seeds silky-pubescent *Hibiscus denudatus*
 - 2' Corolla 4-20 mm long, yellow, white, or blue-lavender without a dark center; fruits schizocarpic; seeds minutely pubescent or glabrous.
 3. Fruits subglobose, inflated, pendent on slender pedicels; styles and mericarps 10-12 *Herissantia*
 - 3' Fruits variously shaped, not inflated, erect; styles and mericarps 5-18.
 4. Calyx markedly accrescent forming an inflated "chinese lantern" enclosing the much smaller fruit; styles and mericarps 8-10, the mericarps indehiscent; plant a procumbent herb from a perennial rootstock *Rhynchosida*
 - 4' Calyx neither accrescent nor inflated; styles and mericarps 5-18; plants erect or procumbent.
 5. Seeds usually 3 per carpel, if seeds solitary then fruits winged apically; plants usually erect and shrubby.
 6. Mericarps (in ours) 5-15, dehiscent, usually acute at apex, unwinged, not differentiated into an upper and a lower cell *Abutilon*
 - 6' Mericarps (in ours) 9-10, with a prominent wing at apex, differentiated into an indehiscent lower cell and a dehiscent upper cell *Horsfordia*
 - 5' Seeds solitary in each carpel, fruits not winged apically; plants erect or procumbent, shrubby or herbaceous.
 7. Leaves asymmetrical; plants procumbent herbs; mericarps 7-10, smooth, indehiscent, fragile-walled *Malvella*
 - 7' Leaves symmetrical; plants erect or procumbent.
 8. Mericarps indurate, the lateral walls persistent, often reticulately ribbed; calyx often prominently ribbed at the base.
 9. Leaves orbicular in outline, the petioles (at least on basal leaves) many times longer than the blade; inflorescence a terminal leafless raceme; corolla lavender or purplish *Sidalcea*
 - 9' Leaves longer than wide, the petioles shorter than the blade;

- flowers axillary; corolla yellowish *Sida*
- 8' Mericarps coriaceous, the lateral walls disintegrating at maturity; calyx not prominently ribbed *Anoda*
- 1' Involucel present (minute in one species of *Hibiscus*); fruits capsular or schizocarpic.
10. Involucel of ca. 8-10 elements fruit a 5-carpelled dehiscent capsule; seeds (in ours) silky pubescent *Hibiscus*
- 10' Involucel 3-merous; fruits various; seeds glabrous or minutely puberulent.
11. Fruits capsular, dehiscent; carpels 3; seeds several per carpel *Gossypium*
- 11' Fruit schizocarpic; carpels 7 or more; seeds often solitary in each carpel.
12. Stigmas lateral on styles; fruits flattened or disk-shaped, the mericarps indehiscent *Malva*
- 12' Stigmas capitate (obliquely so in *Iliamna*); fruits various.
13. Mericarps 2-4 seeded; fruits subglobose, the mericarps dehiscent at least apically.
14. Leaves 6-10 cm long, palmately lobed; petals ca. 3 cm long; plants robust herbs (to 2 m) of wet meadows *Iliamna*
- 14' Leaves seldom more than 5 cm long, simple or palmately lobed or parted; petals usually 1-2 cm long (sometimes larger in *S. ambigua*); plants trailing herbs or subshrubs of arid habitats.
15. Plants trailing herbs of urban habitats (*e.g.* lawns), rooting at the nodes; petioles 1-2 times as long as blades; carpels of fruit 16-22, each with 2 apical spines 1.5-3 mm long, divided into 2 cells by internal partition *Modiola*
- 15' Plants erect shrubs of desert habitats; petioles shorter than blades; carpels of fruit 10-16, without spines or internal partition *Sphaeralcea*
- 13' Mericarps 1 seeded; fruits various.
16. Plants procumbent; leaves asymmetrical; fruits flattened or disk-shaped; corolla pale yellow fading pale rose *Malvella*
- 16' Plants erect; leaves symmetrical; fruits various; corolla of various colors.
17. Leaves ovate to lanceolate in outline, simple or variously divided; petioles usually shorter than blade; corolla yellow, orange, grenadine, or lavender.
18. Corolla yellow or yellow-orange; mericarps setose, indehiscent *Malvastrum*
- 18' Corolla grenadine, orange, or lavender; mericarps stellate-pubescent, apically dehiscent *Sphaeralcea*
- 17' Leaves orbicular in outline, sometimes dissected; petioles often longer than blade; corolla lavender or purplish; mericarps indehiscent *Eremalche*

Abutilon Mill.

Shrubs or subshrubs, usually stellate-pubescent. LEAVES (in ours) more or less ovate and simple. FLOWERS solitary in the leaf axils or in panicles or racemes; involucel absent; calyx 5-lobed; petals usually yellow or yellow-orange; stamens numerous; pistil 5-25-carpelled, with as many styles, the stigmas capitate. FRUIT schizocarpic, of 5-25 mericarps, these sometimes cohering at maturity to form a pseudocapsular fruit. SEEDS usually 3 per mericarp. ca. 200 spp. from the warmer parts of the Americas, Africa, Asia and Australia. (Name of complex origin, probably from the Arabic *abu*, father of, and Persian *tula* or *tulha*, mallow). Fryxell, P. A. 1988. Syst. Bot. Monogr. 25:24-68.

1. Stems and petioles prominently pilose, the simple hairs 2-4 mm long.
 2. Flowering calyx 6-8 mm long; petals 10-12 mm long; leaves strongly discolorous; long hairs of stems more or less retrorse; flowers axillary *A. parishii*
 - 2' Flowering calyx 4-6 mm long; petals 4-8 mm long; leaves discolorous or concolorous; long hairs of stems spreading; flowers axillary or in terminal panicles.
 3. Plants erect or decumbent, less than 1 m tall; leaves up to 6 cm long, essentially concolorous; mericarps 5, with recurved spines 2-3 mm long; flowers solitary or paired in the leaf axils *A. thurberi*
 - 3' Stems erect, 1-2 m tall; leaves 10-20 cm long, markedly discolorous; mericarps ca. 10, apiculate but not spinose; flowers usually in an ample terminal panicle *A. mollicomum*
- 1' Stems and petioles variously pubescent with simple or stellate hairs or glabrate, if simple hairs present, these no more than 1(-2) mm long.
 4. Mericarps and styles 5 (or rarely 6).
 5. Flowers solitary in the axils, few and scattered; corolla orange or pink, without dark center; plants often decumbent; leaf surfaces visible through stellate pubescence *A. parvulum*
 - 5' Flowers solitary or often aggregated into terminal panicles; corolla yellow or pink, with or without a dark red center; plants erect; leaf surfaces obscured by dense puberulence of minute stellate hairs.
 6. Calyx 6-8 mm long; corolla yellow without a dark center, the petals 9-15 mm long, rotate; staminal column pallid; fruits 6-7 mm long, coarsely stellate-pubescent *A. malacum*
 - 6' Calyx 4-6 mm long; corolla yellow or pink, sometimes with a dark center, the petals 4-6 mm long, reflexed; staminal column purplish; fruits 7-9 mm long, stellate-tomentulose *A. incanum*
 - 4' Mericarps and styles 10-15.
 7. Mericarps and styles ca. 15; plant a robust annual, introduced and occurring in disturbed habitats; flowers and fruits axillary *A. theophrasti*
 - 7' Mericarps and styles ca. 10; plants indigenous perennials; flowers and fruits often in panicles.
 8. Stems roughly yellowish-pubescent; leaf blades 2-10 cm long, longer than wide; fruits stellate-pubescent and with simple hairs (0.5-1 mm long) on dorsal margin *A. abutiloides*
 - 8' Stems softly pubescent to glabrate; leaf blades 4-10(-20) cm long, often as wide; fruits hirsute or puberulent of stellate hairs.
 9. Leaf blades nearly concolorous, mostly 4-8 cm long; stems stellate-pubescent (sometimes also with simple hairs 1-2 mm long); fruits densely stellate-hirsute, the mericarps apically acute or acuminate; calyx 9-15(-20) cm long; petals 20-25 mm long, yellow-orange *A. palmeri*
 - 9' Leaf blades strongly discolorous, mostly 8-10(-20) cm long; stems minutely glandular-puberulent to glabrate, often purplish; fruits stellate-tomentulose, the mericarps apically obtuse (the fruits thus globose); calyx 3-6 mm long; petals 9-15 mm long, pale yellow *A. reventum*

Abutilon abutiloides (Jacquin) Garcke ex Britton & Wilson (*Abutilon*-like). --Subshrubs to 1.5 m tall. LEAVES ovate, 2-10 cm long, dentate, pubescent. FLOWERS orange-yellow, solitary or in racemes or panicles; calyx 9-12 mm long, the lobes cordate; petals 10-12 mm long; staminal column 3-4 mm long, pubescent; styles 8-10. FRUITS subequal to calyx, 10-16 mm diameter; mericarps 8-10, minutely stellate-pubescent and with longer simple hairs (0.5-1 mm) on dorsal margin. SEEDS 3 mm long, with scabridulous hairs arranged in a reticulate pattern. $2n = 28$. [*Abutilon jacquinii* G. Don, *A. lignosum* (Cav.) G. Don, *A.*

californicum sensu Kearney & Peebles, non Benth., *A. scabrum* S. Watson]. --In open arid habitats: Cochise, Graham, Maricopa, Pima, Pinal, Santa Cruz, Yavapai cos.; generally below 1200 m (4000 ft); flowering throughout the year; TX; n and c Mex., W. Ind.

Abutilon incanum (Link) Sweet (whitish). --Subshrubs ca. 1 m tall (rarely taller). LEAVES ovate, to 6 cm long (often smaller), irregularly serrulate, densely tomentulose. FLOWERS solitary or in open panicles; calyx 3-5 mm long; corolla yellow or pink with dark red center, the petals reflexed, 4-6 mm long; staminal column 2-3 mm long, purplish, minutely pubescent; styles 5. FRUITS exceeding the calyx, ca. 6 mm diameter, tomentulose; mericarps 5, acute or apiculate at apex, 3-seeded. SEEDS ca. 2 mm long, minutely pubescent but appearing glabrous. $2n = 14$. [*Sida incana* Link, *Abutilon pringlei* Hochreutiner, *A. mochisense* Hochr.]. --In open, arid well-drained slopes: Cochise, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, Yavapai, Yuma cos.; 300-1200 m (1000-4000 ft); flowering throughout the year but principally Oct-Nov; HI, TX; Baja C., Sin., Son., Mex.

Abutilon malacum S. Watson (soft). --Subshrubs to 1 m tall, stellate-tomentulose. LEAVES broadly ovate, mostly 3-7 cm long, sharply serrate. FLOWERS in a compact panicle; calyx 6-8 mm long; petals 9-15 mm long; staminal column 3-4 mm long, pallid; styles 5. FRUITS more or less cylindrical, 6-7 mm long, 7-9 mm diameter, coarsely stellate-pubescent; mericarps 5, apically acute, 3-seeded. SEEDS 2 mm long. $2n = 14$. --In open arid habitats: La Paz, Maricopa, Pima, Pinal, Yuma cos.; 550-900 m (1800-3100 ft); flowering throughout the year; NM, TX; n Mex.

Abutilon mollicomum (Willd.) Sweet (soft-haired). --Shrubs 1-2 m tall, the stems and petioles with spreading simple hairs 2-4 mm long. LEAVES broadly ovate or weakly lobulate, 10-20 cm long, irregularly dentate, softly pubescent, markedly discolourous. FLOWERS in an ample terminal panicle rising above the leaves; calyx 4-6 mm long; petals 5-8 mm long; staminal column glabrous; styles ca. 10. FRUITS exceeding calyx, 8-10 mm diameter, stellate-pubescent; mericarps ca. 10, short -apiculate. SEEDS ca. 2 mm long, minutely verruculate. $2n = 14$. [*Sida mollicoma* Willdenow, *S. sericea* Cavannilles, *Abutilon sonora* A. Gray]. --Grasslands and along waterways: Cochise, Gila, Graham, Greenlee, Pima, Pinal, and Santa Cruz cos.; 900-1400 m (3000-4500 ft) Sep-Dec; NM; Son., Chih., Gro., Ver., and Oax., Mex.

Abutilon palmeri A. Gray (for Edward Palmer). --Shrubs to 1.5(-2) m tall, the stems stellate pubescent and sometimes also with simple hairs 1-2 mm long. LEAVES broadly ovate (often nearly as broad as long), dentate, softly tomentose. FLOWERS solitary in the leaf axis or forming leafless terminal panicles; calyx 9-15 mm long (accrescent to 20 mm in fruit); petals 2-2.5 cm long; staminal column 4 mm long, glabrous; styles ca. 10, apically acute or apiculate. SEEDS ca. 3 mm long, minutely pubescent. [*Abutilon macdougallii* Rose & Standl.]. --Well-drained rocky slopes; Maricopa, Pima, Yuma cos. 300-900 m (1000-3000 ft), down to sea level in Mexico; Oct-Apr; CA; Baja C., Sin., Son., Tamps., Mex.

Abutilon parishii S. Watson (for William F. Parish). --Subshrubs ca. 1 m tall, the stems minutely glandular-pubescent and with more or less retrorse simple hairs. LEAVES ovate, 3-6 cm long, coarsely dentate, softly matted-pubescent beneath, appressed-strigose above, discolourous, the lower leaves with petioles 2 or more times as long as the blades. FLOWERS axillary on short (up to 2 cm) pedicels; calyx 6-8 mm long; petals 10-12 mm long. FRUITS exceeding the calyx, 8-10 mm diameter, stellate-pubescent; mericarps 6-8, apically apiculate. In mountains: Gila, Pima, Santa Cruz, Yavapai, cos.; 900-1000 m (3000-3300 ft); Apr-Aug; endemic to AZ.

Abutilon parvulum S. Watson (small). --Herbs or subshrubs with trailing branches, the stems minutely stellate-pubescent, sometimes also with simple hairs 1 mm long. LEAVES broadly ovate, up to 5 cm long (usually smaller), coarsely dentate, sparsely stellate-pubescent, concolourous. FLOWERS solitary in the leaf axils; calyx 3-5 mm long, the lobes reflexed in fruit; petals orange or pink, 4-7 mm long; staminal column 2 mm long, glabrous; styles 5. FRUITS exceeding the calyx, 7-9 mm diameter, minutely stellate-pubescent;

mericarps 5 (rarely 6), apically acute or apiculate. SEEDS 2 mm long, minutely pubescent. $2n = 14$. -- Dry plains and arid slopes: Mohave to Navajo, s to Cochise and Pima cos.; 750-1700 m (2500-5500 ft); flowering more or less throughout the year; CA, CO, NM, TX; Baja C., Chih., Coah., Son., Tamps., Mex.

Abutilon reventum S. Watson (repeat, come again). --Subshrubs or robust herbs to 2 m tall, the stems reddish, obscurely glandular-puberulent to glabrate. Leaves broadly rotund-ovate, 8-10(-20) cm long, obscurely serrulate, softly pubescent, strongly discolorous. FLOWERS in an ample terminal panicle rising above the leaves; calyx 3-6 mm long; petals 9-15 mm long; staminal column 3 mm long, glabrous; styles ca. 10. FRUITS exceeding the calyx, globose, 7-10 mm diameter; mericarps ca. 10, apically obtuse. SEEDS 2.5-3 mm long, sparsely scabridulous in a reticulate pattern. --Open habitats along waterways: Pima Co.; 900-1200 m (3000-4000 ft); Aug-Nov; n and c Mex.

Abutilon theophrasti Medik. (for Theophrastos). --Robust annual herb to 1 m tall (or more), the stems stellate-tomentose. LEAVES broadly ovate to suborbicular, 8-15 cm long, crenulate, softly pubescent. FLOWERS usually solitary in the leaf axils; calyx ca. 10 mm long; petals 8-13 mm long; staminal column shorter than petals, glabrous; styles 13-15. FRUITS 2 cm diameter, hirsute; mericarps 13-15, apically spinescent (spines 3-6 mm long). SEEDS 3-4 mm long, minutely puberulent. $2n = 42$. [*Sida abutilon* L., *Abutilon avicennae* Gaertner]. --As an agricultural and garden weed: Maricopa, Pima cos.; 300-750 m (1000-2500 ft); Jun-Sep; throughout e U.S., of obscure origin; the history of the introduction of this plant into N. Amer. is recounted by N. R. Spencer (Econ. Bot. 38:407-416. 1984).

Abutilon thurberi A. Gray (for George Thurber). --Erect or decumbent subshrub less than 1 m tall, the stems green, prominently pilose (hairs 2-4 mm long) to nearly glabrous. LEAVES broadly ovate, up to 6 cm long, coarsely dentate, sparsely pubescent with appressed simple hairs. FLOWERS solitary or paired in the leaf axils; calyx 4-5 mm long (to 7 mm in fruit); petals 4-6 mm long; styles 5. FRUITS subequal to calyx, 5-6 mm diameter, hispidulous; mericarps 5, apically spinescent (spines 2-3 mm long). SEEDS 2-3 mm long, sparsely puberulent. $2n = 16$. [*Pseudoabutilon sonorae* Wiggins]. --In mountains, often in shade: Pima Co.; ca. 1100 m (3500 ft); Aug-Oct; Son., Mex.

Anoda Cav.

Annual or perennial herbs or shrubs, variously pubescent to glabrate. LEAVES linear, lanceolate, ovate, hastately lobed, or palmately divided, usually reduced upward. FLOWERS in racemes or panicles, sometimes solitary in the leaf axils; involucre absent; calyx 5-lobed; petals yellow, lavender, or bluish-purple; stamens usually numerous; pistil 5-19-carpelled, with as many styles, the stigmas capitate. FRUIT schizocarpic, oblate or disk-shaped, puberulent to hispid; mericarps 5-19, often with a spur or spine at dorsal angle, the lateral walls disintegrating at maturity. SEEDS solitary, sometimes enclosed in a reticulate endocarp. 23 spp., principally from Mexico and the sw U.S., with one weedy species also occurring to S. Amer. and elsewhere. (Ceylonese vernacular name, *anoda*, originally given to a species of *Abutilon*). Fryxell, P. A. 1987. *Aliso* 11:485-522.

1. Corolla lavender to purple (rarely white).
2. Petals 8-26 mm long, lavender (rarely white); mericarps and styles 10-19, the former with horizontal spines 1-4 mm long; plants decumbent to ascending *A. cristata*
- 2' Petals 4-7 mm long, bluish-purple; mericarps and styles 6-11, the former with spurs to 1 mm long, or these absent; plants erect.
3. Mericarps and styles 6-8(-10), the former with spurs to 1 mm long; leaves ovate to hastate to triangular; endocarp absent *A. thurberi*
- 3' Mericarps and styles 10-11, the latter with rounded dorsum (spurs completely absent); mid-stem leaves with 3 narrow linear lobes; endocarp present *A. reticulatum*
- 1' Corolla pale yellow (sometimes fading reddish).
4. Mericarps and styles 10-13; petals 6-8 mm long (barely exceeding calyx); leaves ovate to

- hastate, obscurely pubescent *A. crenatiflora*
- 4' Mericarps and styles 5-8; petals ca. 1 cm long (manifestly longer than calyx); leaves ovate to linear, tomentose or tomentulose.
5. Calyx 3-5 mm long; mericarps and styles 5-8; fruits 4-5 mm diameter; leaves coriaceous, discoloured, variable in shape, often narrowly linear *A. pentaschista*
- 5' Calyx 5-7 mm long; mericarps and styles 5; fruits 6 mm diameter; leaves membranous, concolorous, broadly ovate-acuminate *A. abutiloides*

Anoda abutiloides A. Gray (*Abutilon*-like). --Erect subshrubs to 1 m tall, the stems with spreading simple hairs 0.5-1 mm long and smaller glandular hairs. LEAVES ovate-acuminate, dentate, softly tomentose. FLOWERS in an open panicle; calyx 5-7 mm long; petals ca. 1 cm long, pale yellow (drying reddish); staminal column ca. 6 mm long, pubescent; styles 5. FRUITS flattened, puberulent, ca. 6 mm diameter; mericarps 5, dorsally rounded. SEEDS 3 mm long, without endocarp. $2n = 30$. [*Abutilon caudatifolium* (Robinson & Greenm.) Robinson & Greenm.]. --Arid mountains and canyons: Pima, Santa Cruz cos.; 1100-1500 m (3500-5000 ft); Apr-Dec; Chih., Jal., Sin., Son., Mex.

Anoda crenatiflora Ortega (crenate-flowered). --Erect herbs to 1 m tall, the stems puberulent. LEAVES ovate to hastate, dentate to subentire, obscurely pubescent. FLOWERS in a raceme or panicle; calyx 3-7 mm long (6-8 mm in fruit); petals pale yellow, 6-8 mm long; staminal column glabrous or nearly so, ca. 2 mm long; styles 10-13. FRUITS oblate, stellate-pubescent; mericarps 10-13, with dorsal spur 1-2 mm long. SEEDS enclosed in reticulate endocarp 2.5 mm long. $2n = 60$. [*Anoda ortegae* Spreng., *A. parviflora* Cav.]. --In brushland: Santa Cruz Co.; ca. 900 m (3000 ft); Aug-Nov; TX; throughout much of Mex.

Anoda cristata (L.) Schldl. (crested). --Suberect or decumbent herbs, the stems usually hispid. LEAVES usually ovate to hastate, dentate to subentire, sparsely pubescent, often with a purple blotch along midvein. FLOWERS solitary in the leaf axils on long pedicels; calyx 5-10 mm long (12-20 mm in fruit); petals 8-16 mm long, lavender (rarely white); staminal column pubescent, shorter than the petals; styles 10-19. FRUITS disk-shaped, 8-11 mm diameter (excluding spines), hispid; mericarps 10-19, with horizontal spines 1.5-4 mm long dorsally. SEEDS 3 mm long, glabrous, the endocarp variably developed or absent. $2n = 30, 60, 90$. [*Anoda lavaterioides* Medik., *A. hastata* Cav., *A. triangularis* (Willd.) DC., *A. arizonica* A. Gray]. --Along streams, in meadows, on roadsides, in fields (sometimes weedy): Apache, Cochise, Gila, Graham, Greenlee, Navajo, Pima, Pinal, Santa Cruz, Yavapai cos. (reported as a waif from Coconino Co.); 1100-1800 m (3500-5900 ft); flowering throughout the year; CA, KS, KY, LA, MO, MS, NM, NC, TX, VA; throughout Mex., w S. Amer. to Argentina.

Anoda pentaschista A. Gray (dividing into five). --Subshrubs 1-2 m tall, the stems stellate-pubescent to glabrate. LEAVES highly variable in form, often narrowly oblong-linear, hastately toothed to entire, coriaceous, tomentulose, markedly discoloured. FLOWERS in a lax panicle; calyx 3-5 mm long; petals yellow (sometimes fading reddish), ca. 1 cm long; staminal column ca. 3 mm long, scabrid to glabrous; styles 5-8. FRUITS oblate, puberulent; mericarps 5-8, dorsally spurred; SEEDS ca. 2 mm long, endocarp not developed. $2n = 26, 28$. --In open, well-drained habitats: Cochise Co.; 1400-1700 m (4500-5500 ft); Aug-Nov; n and c Mex.

Anoda reticulata S. Watson (net-veined). Erect herb ca. 1 m tall, the stems scabridulous and with a few glandular hairs. LEAVES typically deeply 3-lobed, the lobes narrowly linear, remotely serrate to subentire, often with purplish blotch along midvein. FLOWERS axillary or forming a terminal raceme; calyx ca. 5 mm long; petals subequal to calyx, bluish purple; staminal column ca. 2 mm long, glabrous or nearly so; styles 10-11. FRUITS oblate, stellate-pubescent, 6-7 mm diameter; mericarps 10-11, dorsally rounded (spur completely absent); seeds enclosed in reticulate endocarp 2.5 mm long. --In dry mountains and canyons; Pima and Santa Cruz cos.; ca. 1100 m (3500 ft); Sep.-Feb. Son. and Sin., Mex.

Anoda thurberi A. Gray (for George Thurber). --Erect herb ca. 1 m tall, the stems minutely stellate and glandular-pubescent. LEAVES ovate to hastate, minutely pubescent, sometimes with purplish blotch along midvein. FLOWERS usually in open raceme or panicle; calyx 3.5-6 mm long (6-8 mm in fruit); petals 4-7 mm long, bluish purple; staminal column pubescent, 1.5-2(-4) mm long, the anthers few and subsessile; styles 6-8. FRUITS oblate, minutely pubescent, 6-8 mm diameter; mericarps 6-8, with dorsal spurs to 1 mm long; seeds 2-2.5 mm long, without endocarp. $2n = 26, 28$. --In open, well-drained habitats: Cochise Co.; 1400-1700 m (4500-5500 ft), Aug.-Nov. Son., Chih., Coah., Dgo., Ags., Jal., Gto., Mich., Tamps., S.L.P., Qto., Hgo., Mor., Gro., Pue., and Oax., Mex.

Eremalche Greene

Erect or ascending annual herbs, more or less pubescent, the stems often purplish, apparently hollow. LEAVES orbicular in outline, crenate-dentate to more or less deeply parted. FLOWERS solitary or grouped in the leaf axils, sometimes aggregated apically; involucler trimerous, the bractlets linear; calyx 5-lobed; petals white, pink, or rose-purple; staminal column glabrous; styles 12-35. FRUITS schizocarpic, disk-shaped, glabrous; mericarps 12-35, semi-circular, indehiscent, ridged, blackish. SEEDS solitary. --3 spp. from the sw U.S. and nw Mex. (Greek *eremiche* = of the desert). Kearney, T. H. 1956. Madroño 13:241-243.

1. Leaves 3-5-lobed; stem hairs less than 1 mm long; pedicels subequal to subtending leaves; calyx 4-6 mm long; petals ca. 6 mm long, pale lavender, without basal spots; fruits 4-5 mm diameter; mericarps and styles 12-15 *E. exilis*
- 1' Leaves unlobed; stem hairs 1.5-3 mm long; pedicels usually exceeding subtending leaves; calyx 10-12 mm long; petals 15-25 mm long, purplish with dark basal spot; fruits 9-12 mm diameter; mericarps and styles 25-35 *E. rotundifolia*

Eremalche exilis (A. Gray) Greene (small). --Stems ascending, sparsely pubescent, the mostly stellate hairs less than 1 mm long. LEAVES palmately 3-5-lobed, 1-3 cm long, sparsely pubescent. FLOWERS 1-4 in the leaf axils; involucler 3-5 mm long; calyx 4-6 mm long; petals ca. 6 mm long, pale lavender; styles 12-15. FRUITS 4-5 mm diameter; mericarps 1.5-2 mm long, prominently rugulose, blackish. $2n = 20, 40$. [*Malvastrum exile* A. Gray]. --Desert habitats, roadsides, and fields: Cochise, Graham, Maricopa, Mohave, Pima, Pinal, Yavapai, Yuma cos.; 300-1200 m (1000-4000 ft); Feb-Jun; CA; Baja C., Mex.

Eremalche rotundifolia (A. Gray) Greene (round-leaved). --Plants erect to 1 m tall, prominently pilose, the mostly simple hairs 1.5-3 mm long. LEAVES orbicular, 1-3 cm long, coarsely crenate-dentate, stellate-pubescent. FLOWERS solitary in the leaf axils, sometimes forming a terminal raceme; involucler 6-10 mm long, the bractlets filiform; calyx 10-12 mm long; petals 15-25 mm long, purplish, with dark basal spots; styles 25-35. FRUITS 9-12 mm diameter; mericarps 3-3.5 mm long, prominently rugose. $2n = 20$. [*Malvastrum rotundifolium* A. Gray]. --In deserts and washes: La Paz, w Maricopa, Mohave, Pinal, Yuma cos. 30-500 m (100-1500 ft); Mar-Apr; s CA, s NV; Baja C., Mex.

Gossypium L. Cotton

Trees or (in ours) erect shrubs (rarely procumbent), stellate-pubescent or glabrate, more or less gland-dotted throughout. LEAVES ovate and simple to (in ours) deeply palmately lobed, entire, usually with abaxial foliar nectary on main veins. FLOWERS solitary or in sympodial inflorescences; involucler trimerous, the bracts foliaceous or reduced to straps or scales, often associated with trimerous nectaries; calyx gamosepalous and subtruncate or 5-toothed; corolla yellowish or rose, sometimes with a dark center; staminal column apically 5-dentate; style single, with 3-5 decurrent stigmatic lobes. FRUIT capsular, usually glabrous, 3-5-loculate. SEEDS densely lanate to subglabrous. --Fifty spp. from relatively arid tropical and subtropical parts of Africa and the Middle East, Australia, and N. and S. Amer. Several species are widely cultivated as the world's cotton crop. (Latin *Gossypinus* = cotton tree). Fryxell, P. A. 1979. Natural History of the Cotton Tribe. College Station: Texas A&M University Press.

Gossypium thurberi Tod. (for George Thurber) Algodoncillo, Wild Cotton. --Shrubs ca. 2 m tall, the young stems pentangular, glabrate. LEAVES deeply 3-5-lobed, 5-15 cm long, the lobes narrowly lanceolate. FLOWERS in sympodial inflorescences; bracts of the involucler ligulate, entire or apically trifid, 8-12 mm long; calyx 3 mm long; petals 1.5-2.5 cm long, pale yellow, often with vestigial red spot at base. FRUIT 3-celled, subglobose to oblong, smooth, 1-1.5 cm long. SEEDS subglabrous. $2n = 26$. [*Thurberia thespesioides* A. Gray]. --On rocky hillsides and arroyo banks; Cochise, Graham, Maricopa, Pima, Pinal, Santa Cruz cos.; 800-2450 m (2500-8000 ft); Aug-Oct; Chih., Son., Mex.

Herissantia Medik.

Herbs, subshrubs, or shrubs, erect or decumbent, usually stellate-pubescent or sometimes viscid. LEAVES more or less ovate, crenate or dentate. FLOWERS usually solitary in the leaf axils; involucler absent; calyx 5-lobed, the lobes lanceolate or ovate; petals white. FRUITS schizocarpic, oblate to hemispheric, inflated, pendulous; mericarps 10-14, fragile-walled, pubescent or hispid, 1-3 seeded. SEEDS glabrous or scabridulous. --A small neotropical genus, with one widespread species (the following); the remaining species include one from the W. Ind., one from Mex., and three or more from S. Amer.; (for L. A. P. Herissant, French physician, naturalist, and poet). Brizicky, G. K. 1968. J. Arnold Arbor. 49:278-279.

Herissantia crispa (L.) Brizicky (curled). --Trailing or decumbent subshrubs (occasionally scandent), the stems flexuous, stellate-pubescent and usually also with long simple hairs. LEAVES ovate, crenate, up to 7 cm long (progressively reduced upward). FLOWERS on slender, recurved pedicels; calyx 4-7 mm long, reflexed in fruit; petals 6-11 mm long; staminal column glabrous, 2-2.5 mm long; styles 10-12. FRUITS hirsute, 1.5-2 cm diameter; mericarps 10-12, dorsally dehiscent. SEEDS 1.7 mm long, minutely scabridulous. $2n = 14$. [*Sida crispa* L., *Abutilon crispum* (L.) Medik., *Gayoides crispum* (L.) Small, *Bogenhardia crispa* (L.) Kearney]. --Dry slopes, canyons, and roadsides: Maricopa, Pima, Pinal, Yavapai, Yuma cos.; up to 900 m (3000 ft), occasionally higher; flowering throughout the year; widespread and common from s U.S. to n Argentina.

Hibiscus L.

Subshrubs, shrubs, or trees (rarely herbs), variously pubescent or hispid to glabrescent. LEAVES ovate to elliptic, sometimes lobed or parted, dentate or less often entire; abaxial foliar nectaries present or absent. FLOWERS usually solitary in the leaf axils, sometimes aggregated apically; bracts of involucler 8-10(-20); calyx 5-lobed; corolla of various colors, sometimes with a dark center; staminal column apically 5-dentate; styles 5, with capitate stigmas. FRUITS capsular, ovoid or oblong, glabrous or pubescent. SEEDS hirsute or glabrescent (in ours silky-pubescent), several per locule. --Ca. 200 spp. from all warmer parts of the world and in some temperate areas. (Greek *hibiscos*, mallow, derived from Ibis, an Egyptian deity). Fryxell, P. A. 1980. Techn. Bull. U.S.D.A. 1624. pp.1-53.

- 1. Corolla lavender (or nearly white); plant densely tomentose; involucler suppressed to absent; leaves simple (ovate to orbicular) *H. denudatus*
- 1' Corolla yellow; plant sparsely scabrid; involucler shorter than to subequal to calyx; leaves usually deeply 3-5-parted.
 - 2. Involucler shorter than calyx; calyx inflated, membranous; seeds warty; introduced herbaceous garden weed *H. trionum*
 - 2' Involucler subequal to calyx; calyx neither inflated nor membranous; seeds silky pubescent; indigenous shrubs.
 - 3. Capsules hispid; calyx less than 2 cm long; stems with appressed stellate hairs; leaves mostly trifoliolate, 1.5-3 cm long *H. coulteri*
 - 3' Capsules glabrous; calyx more than 2 cm long; stems usually setose with long simple hairs; leaves palmately 3-5-lobed, mostly 4-8 cm long *H. bisepetus*

Hibiscus biseptus S. Watson (two parted). --Shrubs to 1 m tall, the stems setose and with smaller hairs. LEAVES usually palmately 3-5-lobed, dentate, mostly 4-8 cm long. FLOWERS long-pedicellate; bracts of involucre linear, setose; calyx 23-33 mm long; petals 2.5-5 cm long, yellow with purplish basal spot. FRUIT ovoid, glabrous, 9-14 mm long. SEEDS 2.5-3 mm long, densely sericeous, the hairs 3-4 mm long. $2n = 22$. --Dry, open hillsides and in canyons: Maricopa, Pima, Pinal cos.; 900-1400 m (3000-4500 ft); Apr-Oct; nw Mex. as far south as Jal.

Hibiscus coulteri Harvey ex A. Gray (for J. M. Coulter). --Shrubs usually less than 1 m tall, the stems with appressed 4-armed hairs, the arms aligned longitudinally. LEAVES trifoliolate (except juvenile leaves simple), the leaflets 3-5 times as long as wide, hispid, 1.5-3 cm long. FLOWERS short- or long-pedicellate; bracts of involucre linear, ciliate; calyx 17-20 mm long; petals 2-3(-4) cm long, yellow with or without purplish basal spot. FRUITS ovoid, hispid, 9-10 mm long. SEEDS 2.5-3 mm long, densely sericeous, the hairs 4-5 mm long. Dry, open hillsides and canyons: w Gila, Graham, La Paz, Maricopa, Pima, Pinal, Santa Cruz, s Yavapai, Yuma cos.; 300-1200 m (1000-4000 ft; flowering throughout the year; TX; n Mex.

Hibiscus denudatus Benth. (bare). --Subshrubs 0.5-1 m tall, the stems densely stellate-tomentose. LEAVES ovate to orbicular, dentate to subentire, densely tomentose, 1.5-3 cm long. FLOWERS short-pedicellate; bracts of involucre 0.5-4 mm long (or absent); calyx 11-15 mm long; petals 2-2.7 cm long, lavender or white, usually with a purplish spot at base. FRUITS globose, glabrous or pubescent apically, 7-8 mm long. SEEDS 2.5 mm long, sericeous, the hairs 3-4 mm long. $2n = 22$. --Deserts, washes and dry slopes: Cochise, Maricopa, Pima, Pinal, Yuma cos.; below 1100 m (3500 ft), occasionally higher; flowering throughout the year; CA, NM, TX; Baja C., Chih., Coah., Dgo., Son., Mex.

Hibiscus trionum L. (three-parted) --Annual herbs 0.5 m tall, the stems sparsely stellate-pubescent to glabrate. LEAVES deeply 3-parted, each lobe pinnately divided, very sparsely pubescent, 3-5 cm long. FLOWERS axillary, the pedicels 1-3 cm long; bracts of involucre 4-7 mm long; calyx 15-20 mm long, inflated and membranous with dark-pigmented veins; petals 2-2.5 cm long, yellow with a prominent purple spot at base. FRUITS ovoid, included in calyx, hispid. SEEDS 2 mm long, warty. $2n = 28, 56$. --Cultivated plant, doubtfully established: Joseph City and near Show Low, Navajo Co.; ca. 2150 m (7000 ft); Aug; e U.S. and elsewhere; flowering throughout the year in warmer areas.

Horsfordia A. Gray

Erect herbs or subshrubs, the stems stellate-tomentose or -scabrous. LEAVES suborbicular, ovate, or lanceolate, obscurely crenate-dentate, pubescent. FLOWERS solitary in the leaf axils or in terminal panicles; involucre absent; calyx 5-lobed; petals yellow-orange or blue-lavender; styles 6-11. FRUITS schizocarpic, glabrous or slightly pubescent; mericarps 6-11, basally indehiscent and rugose, apically dehiscent and usually winged. SEEDS usually solitary in the base of the mericarp or with 1-2 seeds in the upper part. --4 spp. from the deserts of nw Mex. and sw U.S. (For F. H. Horsford, plant collector, and E. N. Horsford, chemist). Fryxell, P. A. 1988. Syst. Bot. Monogr. 25:234-240.

1. Petals yellow, 6-9 mm long, equaling styles; seeds 2.2 mm long, densely short-pubescent
..... *H. newberryi*
- 1' Petals blue-lavender, 12-21 mm long, exceeding styles; seeds 1.9 mm long, minutely scabridulous
..... *H. alata*

Horsfordia alata (S. Watson) A. Gray (winged). --Shrubs to 2.5(-4) m tall, densely and roughly pubescent. LEAVES ovate (1-2 times as long as wide), obscurely denticulate, mostly 4-8 cm long. FLOWERS solitary in the leaf axils or on axillary racemes; calyx 5-7 mm long; petals blue-lavender, 12-21 mm long. FRUITS sparsely pubescent, 7-8 mm long; mericarps ca. 10, winged and often purplish distally, usually with a solitary seed in the basal cell, 2 abortive ovules in the upper cell. SEEDS 1.9 mm long,

minutely scabridulous. $2n = 30$. [*Sida alata* S. Watson, *Horsfordia palmeri* S. Watson]. --Sandy washes: s Yuma Co.; 150-500 m (500-1500 ft); Mar-Oct; CA: Baja C. and Son., Mex.

Horsfordia newberryi (S. Watson) A. Gray (for J. S. Newberry). --Shrubs 2-3 m tall, densely and roughly pubescent. LEAVES ovate to lanceolate (1.5-4 times as long as wide), obscurely denticulate, mostly 4-10 cm long. FLOWERS solitary in the leaf axils or on axillary racemes; calyx 5-6 mm long; petals yellow, 6-9 mm long. FRUITS sparsely pubescent, 7-8 mm long; mericarps ca. 10, winged and often purplish distally, with a solitary seed in the basal cell and 2 seeds in the upper cell. SEEDS 2.2 mm long, pubescent, the hairs less than 0.5 mm long. $2n = 30$. [*Abutilon newberryi* S. Watson]. --Dry rocky hillsides: Maricopa, Pima, Pinal, Yuma cos.; 300-1100 m (1000-3500 ft); flowering throughout the year; CA; Baja C., Son., Mex.

Iliamna Greene

Robust perennial herbs to 2 m tall, densely stellate-pubescent to glabrate. LEAVES aceriform, 4-15 cm long, with 5-7 triangular lobes. INFLORESCENCE a spicate or corymbose raceme; involucre trimerous, the bracts linear to lanceolate; calyx 5-lobed; petals white, pink, or purplish; staminal column pubescent, shorter than petals; styles 8-12, usually with obliquely truncate stigmas. FRUITS schizocarpic, subglobose, hirsute; mericarps 8-12, dehiscent, thin-walled. SEEDS 2-4 per mericarp, pubescent or puberulent. --6 or 7 spp. from temperate N. Amer., principally in the Rocky Mountains, but with outlying populations in IL, IN, VA. (Perhaps from the place-name "Iliamna" for a lake, a volcano, and a town in AK, but Greene did not say). Wiggins, I. L. 1936. Contr. Dudley Herb. 1:213-229.

Iliamna grandiflora (Rydb.) Wiggins (large-flowered). --Plants sparsely stellate-pubescent to glabrate. LEAVES deeply lobed, 5-10 cm long, sparsely pubescent, coarsely dentate. INFLORESCENCE an interrupted spiciform raceme, coarsely pubescent; bracts of the involucre lanceolate, 8-12 mm long; calyx ca. 15 mm long; petals 2-3 cm long, pink drying purplish or lavender; staminal column hirsute basally, ca. 1.5 cm long. FRUITS subglobose to oblate, ca. 1 cm long; mericarps ca. 12, coarsely hirsute. SEEDS 2.5-3 mm long. [*Sphaeralcea grandiflora* Rydb., *Iliamna angulata* Greene]. --Wet mountain meadows and stream courses: Coconino, Gila, Graham cos.; 2000 m (6500 ft); Jun-Aug; CO, NM, UT.

Malva L. Mallow, Cheese-weed

Trailing, ascending, or erect herbs, glabrous or pubescent. LEAVES long-petiolate, orbicular or reniform, more or less 5-7-lobed. FLOWERS solitary or fasciculate in the leaf axils, sometimes aggregated terminally; bracts of involucre (2-)3; calyx 5-lobed, often accrescent; petals purple (or white), often apically notched; styles filiform, the stigmatic zone along one side of styles. FRUITS schizocarpic, oblate, pubescent or glabrous; mericarps indehiscent, semi-circular, often more or less reticulate dorsally. SEEDS solitary. --Ca. 40 spp. from Eur., Afr., and the Middle East. (altered from Greek *malache* = soft). Dalby, D. H. 1968. Flora Europaea 2:249-251.

1. Pedicels shorter than the calyx; petals 4-5 mm long, scarcely exceeding calyx; mericarps ca. 10, rugose or wrinkled dorsally and winged at the angle between the dorsal and lateral walls; staminal column glabrous *M. parviflora*
- 1' Pedicels longer than the calyx; petals 6-11 mm long, manifestly longer than calyx; mericarps 12-15, smooth and unwinged; staminal column pubescent..... *M. neglecta*

Malva neglecta Wallr. (neglected). --More or less procumbent herbs, with stellate and simple hairs, the simple hairs persisting on older stems. LEAVES orbicular or reniform, sometimes weakly lobed, 1-3.5 cm long, crenate. FLOWERS in axillary fascicles on slender pedicels; calyx 4-5 mm long (not accrescent); petals pale lavender to white, 6-11 mm long; staminal column pubescent. FRUITS usually pubescent; mericarps 12-15, dorsally rounded and smooth. $2n = 42$. (often misidentified as *Malva rotundifolia* L.). --Roadsides and fields: Apache, Coconino, Gila, Graham, Greenlee, Navajo, Yavapai, cos.; 1400-2600 m

(4500-8500 ft); Jul-Sep; native to temperate Eur. and Asia, extensively naturalized in N. Amer.

Malva parviflora L. (small-flowered). --Trailing or ascending herbs, slightly pubescent to glabrate. LEAVES orbicular or reniform, 2-7 cm long, crenate, undulate, or 5-7-lobed. FLOWERS 1-4 in the leaf axils, short-pedicellate; calyx 3-4 mm long, accrescent to 7-8 mm in fruit; petals lavender or white, 4-5 mm long. FRUIT nearly glabrous; mericarps ca. 10, rugose or wrinkled dorsally and winged at the angle between the dorsal and lateral walls. $2n = 42$. --Roadsides and fields, disturbed ground, and urban habitats: Cochise, Coconino, Graham, Maricopa, Mojave, Pima, Pinal, Yuma cos.; 300-2100 m (1000-7000 ft); flowers through most of the year; native from Spain and n. Afr. to India, extensively naturalized and a common weed in N. Amer., C. Amer., and S. Amer.

Malvastrum A. Gray False-mallow

Shrubs or subshrubs with stellate pubescence. LEAVES ovate or lanceolate, dentate. FLOWERS axillary or aggregated in terminal spikes or racemes; involucl trimerous; calyx 5-lobed; petals yellow or yellow-orange; styles slender, the stigmas capitellate. FRUITS schizocarpic, oblate, pubescent or setose; mericarps horseshoe-shaped, indehiscent, sometimes 2-3-cuspidate. SEEDS solitary, glabrous. --14 spp., principally from the neotropics and subtropics, a few spp. occurring in Australia and Asia. (*Malva* + Greek *asteros* = star). Hill, S. R. 1982. *Rhodora* 84:1-83, 159-264, 317-409.

Malvastrum bicuspidatum (S. Watson) Rose (two cusped). --Subshrubs to 1.5 m tall, the stems stellate-pubescent. LEAVES ovate, serrate, 2-6 cm long, stellate-pubescent. FLOWERS in an interrupted terminal raceme; bracts of involucl lanceolate, 4-6 mm long; calyx 6-8 mm long; petals 6-8 mm long; staminal column pubescent; styles 9-12. FRUITS 6-7 mm diameter, pale rose, drying brown; mericarps 9-12, apically setose, laterally ribbed, dorsally with 2 cusps 1-1.5 mm long. SEEDS ca. 2 mm long. $2n = 24$. --Rocky slopes, grasslands: Maricopa, Pima, and Pinal cos.; 900-1500 m (3000-5000 ft); Mar-Oct; Baja C., Chih., Dgo., Sin., Son., Mex. The AZ plants are subsp. *bicuspidatum*; three other subspp. occur farther south in Mex.

Malvella Jaub. & Spach Alkali-mallow

Prostrate perennial herbs with stellate and lepidote pubescence. LEAVES asymmetrical, reniform to triangular, crenate or entire. FLOWERS solitary in the leaf axils on long pedicels; involucl trimerous or absent; calyx 5-lobed; petals pale yellow fading rose; styles with capitate stigmas. FRUITS schizocarpic, oblate, minutely pubescent; mericarps 7-10, more or less smooth, indehiscent. SEEDS solitary, glabrous. --4 spp., one from the Middle East, three from the Americas. (Diminutive of *Malva* = little *Malva*). Fryxell, P. A. 1974. *Southw. Naturalist* 19:97-103.

1. Leaves broader than long, more or less reniform, apically obtuse to subacute; pubescence predominantly stellate; involucl usually present; calyx lobes ovate, the bases not overlapping *M. leprosa*
- 1' Leaves longer than broad, triangular, apically acute; pubescence more or less silvery-lepidote with stellate hairs sometimes present; involucl usually absent; calyx lobes more or less cordate, the bases plicate-overlapping.
2. Leaves triangular, dentate, 1-2(-3) times as long as wide, stellate hairs often present; involucl sometimes present..... *M. lepidota*
- 2' Leaves narrowly triangular, with a few hastate teeth at base, otherwise entire, 3-5 (rarely 2-6) times as long as wide; stellate hairs never present; involucl absent *M. sagittifolia*

Malvella lepidota (A. Gray) Fryxell (scaly). --Trailing stems with a mixture of stellate hairs and lepidote scales. LEAVES triangular, acute, irregularly dentate, 1-2 cm long. FLOWERS with the pedicel subequal to the corresponding leaf; involucl usually absent; calyx 6-8 mm long, lepidote; petals 12-15 mm long. FRUITS oblate, 5-6 mm diameter; mericarps ca. 7, dorsally rounded. [*Sida lepidota* A. Gray, S.

lepidota var. *depauperata* A. Gray]. --Usually in heavy, saline soils on roadsides or mud flats: Cochise, Graham cos.; 1350-1700 m (4500-5500 ft); flowering throughout the year; NM, TX; n and c Mex.

Malvella leprosa (Ortega) Krapovickas (scurfy). --Trailing stems with a mixture of stellate hairs and some semi-lepidote hairs. LEAVES more or less reniform, serrate, obtuse to subacute, dentate, 1-3.5 cm long. FLOWERS with the pedicel subequal to corresponding petiole; bractlets of involucler filiform (sometimes absent); calyx 8-10 mm long, stellate-pubescent; petals 12-15 mm long. FRUITS oblate, ca. 7 mm diameter; mericarps 7-10. $2n = 22, 32$. [*Malva leprosa* Ortega, *Sida leprosa* (Ortega) Schum., *S. hederacea* (Douglas ex Hooker) Torr. ex A. Gray, *S. sulphurea* (Gillies ex Hook. & Arn.) A. Gray]. --On roadsides and in fields, often in saline soils; Apache, Coconino, Graham, Pima, Pinal, Santa Cruz, Yuma cos.; 50-1500 m (100-5000 ft); flowering throughout the year, or at least in summer months more northerly; CA, CO, ID, KS, NV, NM, OK, OR, TX, UT, WA; n and c Mex. and disjunctly in Argentina, Chile, Peru, Uruguay.

Malvella sagittifolia (A. Gray) Fryxell (arrow-leaved). --Trailing stems silvery-lepidote. LEAVES narrowly triangular, acute, with 2-4 hastate teeth at base, otherwise entire, 1.5-3.5 cm long. FLOWERS with the pedicels shorter than the corresponding leaf; involucler absent; calyx 7-9 mm long, lepidote; petals ca. 15 mm long. FRUIT oblate 5-6 mm diameter; mericarps 7-8, dorsally rounded. [*Sida lepidota* var. *sagittifolia* A. Gray, *S. sagittifolia* (A. Gray) Rydb.]. --On roadsides and mud flats, usually on heavy, saline soils: Cochise, Maricopa, Mohave, Pima, Pinal, Yavapai, Yuma cos.; 300-1800 m (1000-6000 ft); flowering throughout the year; CO, NM, TX; n Mex.

Modiola Moench

Trailing herbs usually with little pubescence. LEAVES rounded in outline, usually more or less lobed or parted. FLOWERS solitary in the leaf axils, the pedicels shorter than the subtending petioles; bracts of involucler 3, lanceolate; calyx 5-7 mm long; petals 6-8 mm long, dark orange, drying brick-red. FRUITS schizocarpic, setose, green maturing black; mericarps 16-22, each with 2 apical spines 1.5-3 mm long, divided by internal partition into 2 cells, each with 1 seed. SEEDS 1.5 mm long. $2n = 18$. A monotypic genus occurring from the U.S. to Argentina as well as in the Old World, frequently as a weed, but also becoming established in relatively undisturbed habitats. (Latin *modiolus* = hub of a wheel, in reference to the form of the fruit).

Modiola caroliniana (L.) G. Don (of the Carolinas). [*M. multifida* Moench]. --In lawns and gardens in urban habitats: Pima Co.; 800 m (2500 ft); Mar-May.

Rhynchosida Fryxell Beaked Sida

Perennial herbs or shrubs, procumbent, ascending, or erect, sparsely pubescent. LEAVES suborbicular, ovate, or lanceolate, crenate or serrate. FLOWERS solitary in the leaf axils; involucler absent; calyx deeply 5-lobed, pentangular, accrescent and inflated in fruit; petals yellowish, slightly exceeding to twice as long as calyx. FRUITS schizocarpic, oblate, blackish, glabrous; mericarps 8-14, indurate, indehiscent, with long obtuse rostrum or beak, notably reticulate-veined laterally. SEEDS solitary, minutely pubescent. --2 spp., one Bolivian, the other disjunct between Argentina and adjacent areas and n Mex. and sw U.S. (Greek *rhynchos* = beak + generic name *Sida*). Fryxell, P. A. 1978. *Brittonia* 30:447-462.

Rhynchosida physocalyx (A. Gray) Fryxell (bladder calyx). --Herbs with large taproot, the stems trailing to ascending, with scattered coarse stellate hairs. LEAVES oblong-ovate, 2-5 cm long, coarsely pubescent, with ciliate margins. FLOWERS solitary in the leaf axils; calyx lobes broadly cordate, overlapping and strongly 5-angled basally; petals (in ours) 5-8 mm long, subequal to calyx. FRUITS 8-9 mm diameter, surrounded by inflated calyx; mericarps 8-10. SEEDS ca. 2 mm long. $2n = 16$. [*Sida physocalyx* A. Gray, *S. hastata* St.-Hil., non Willd.]. --In canyons and along waterways: Cochise, Gila, Graham, Pima, Pinal, Santa Cruz, Yavapai cos.; 750-1500 m (2500-5000 ft); flowering throughout the year;

NM, OK, TX; n and c Mex.; also Brazil, Bolivia, and Argentina.

Sida L.

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 racemes or panicles; involucre absent; calyx 5-lobed, often basally 10-ribbed; corolla white, yellow, orange or purplish, sometimes with a dark red center. FRUITS schizocarpic, glabrous or pubescent; mericarps 5-14, usually indurate, usually laterally reticulate, apically 2-spined or mucous. SEEDS solitary, glabrous. --Ca. 150 spp. from all the warmer parts of the world. (name taken from Theophrastos, who applied it to *Nymphaea*). Fryxell, P. A. 1985. *Sida* 11:62-91.

1. Mericarps and styles 5; fruit antrorsely pubescent.
 2. Plants procumbent, usually setose (hairs 1-2 mm long); spines on mericarps 0-0.5 mm long *S. abutifolia*
 - 2' Plants erect, stellate-puberulent; spines of mericarps ca. 1 mm long *S. spinosa*
- 1' Mericarps and styles 7-14; fruits glabrous or pubescent.
 3. Leaves more or less rhombic, entire basally, dentate distally; calyx 5-6 mm long; fruits glabrous, 4-5 mm diameter *S. rhombifolia*
 - 3' Leaves oblong-lanceolate to oblong-ovate, dentate to the base; calyx 6-9 mm long; fruits apically pubescent, 5-7 mm diameter.
 4. Flowers and fruits mostly congested at apex of branches because of shortened internodes; leaves narrowly oblong-lanceolate, 3-9 mm wide; pedicels mostly less than 1 cm long *S. neomexicana*
 - 4' Flowers and fruits scattered along stems, not congested as above; leaves oblong-ovate, 6-20 mm wide; pedicels 0.5-2 cm long *S. tragiifolia*

Sida abutifolia Mill. (*Abutilon*-leaved). --Procumbent perennial herbs, stellate-pubescent and usually with simple hairs 1-2 mm long. LEAVES ovate to oblong, crenate, up to 1.5 cm long (occasionally larger). FLOWERS solitary in the leaf axils on slender pedicels; calyx 4-5(-7) mm long; petals white, 5-6 mm long; styles 5. FRUITS oblate-conical, pubescent, 5 mm diameter; mericarps 5, with apical spines 0-0.5 mm long. $2n = 14$. [*Sida procumbens* Sw., *Sida supina* L'Her., *Sida diffusa* H.B.K., *Sida filicaulis* Torr. & A. Gray]. --Arid, sandy plains and on roadsides: Cochise, Gila, Graham, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, Yavapai cos.; 750-1800 m (2500-6000 ft); flowering throughout the year; from s U.S. through Mex., C. Amer., and W. ind. to n S. Amer.

Sida neomexicana A. Gray (of New Mexico). --Multistemmed erect perennial herbs up to 0.5 m tall, minutely stellate-puberulent. LEAVES narrowly oblong-lanceolate, dentate, 3-9 mm wide, pubescent beneath. FLOWERS axillary but apically congested through shortened internodes; calyx 6-7 mm long; petals yellow-orange (to reddish), 10-12 mm long; styles 10-12, obscurely reticulate laterally, mucous. $2n = ca. 14$. --On rocky slopes and in canyons, generally in open vegetation: Cochise, Pima, Santa Cruz cos.; 1200-1800 m (4000-6000 ft); Jun-Oct; NM, TX; Chih., Coah., Dgo., Mex.

Sida rhombifolia L. (rhombic-leaved). --Erect subshrubs (sometimes annuals) ca. 1 m tall, minutely puberulent appearing farinaceous. LEAVES more or less rhomboid, dentate distally (entire basally), 2.5-9 cm long, discolorous. FLOWERS solitary in the leaf axils on slender pedicels; calyx 5-6 mm long; petals yellow, 7-9 mm long; styles 10-14. FRUITS oblate-conical, glabrous, 4-5 mm diameter; mericarps 10-14, laterally reticulate, apically spined or mucous. $2n = 14, 28$. --Santa Cruz Co.; 1050 m (3500 ft); flowering throughout the year; nearly cosmopolitan as a weed in tropical and subtropical zones, extending into the temperate zones as an annual.

Sida spinosa L. (spiny). --Herbs or subshrubs (sometimes annuals) to 1 m tall, minutely stellate-puberulent. LEAVES broadly ovate to (in ours) narrowly oblong-lanceolate, dentate, 2-4 cm long, discolorous. FLOWERS solitary (or grouped) in the leaf axils, sometimes crowded apically; calyx 5-7 mm long; petals yellow (rarely white); styles 5. FRUITS broadly conical, 4-5 mm diameter; mericarps 5, with apical spines ca. 1 mm long, these antrorsely pubescent. $2n = 14, 28$. [*Sida alba* L., *Sida angustifolia* Miller]. --Open arid slopes and sandy plains, sometimes in fields: Cochise, Pima, Santa Cruz cos.; 1050-1200 m (3500-4000 ft); flowering throughout the year; from c U.S. to c Argentina and in the Old World, a nearly cosmopolitan weed.

Sida tragiifolia A. Gray (*Tragia*-leaved). --Several-stemmed herbs or subshrubs ca. 0.5 m tall, stellate-pubescent and sometimes also with simple hairs ca. 2 mm long. LEAVES ovate-oblong, prominently dentate, essentially concolorous. FLOWERS solitary in the leaf axils; calyx 6.5-9 mm long; petals ca. 1 cm long, yellow fading reddish; styles ca. 8. FRUITS oblate, apically pubescent, 5-6 mm diameter; mericarps usually 8 (sometimes more), laterally reticulate, the apical spines 0-1 mm long. --Graham, Pima, Santa Cruz cos.; 750-1050 m (2500-3500 ft); Aug-Oct; TX; Coah., N.L., Tamps., Mex.

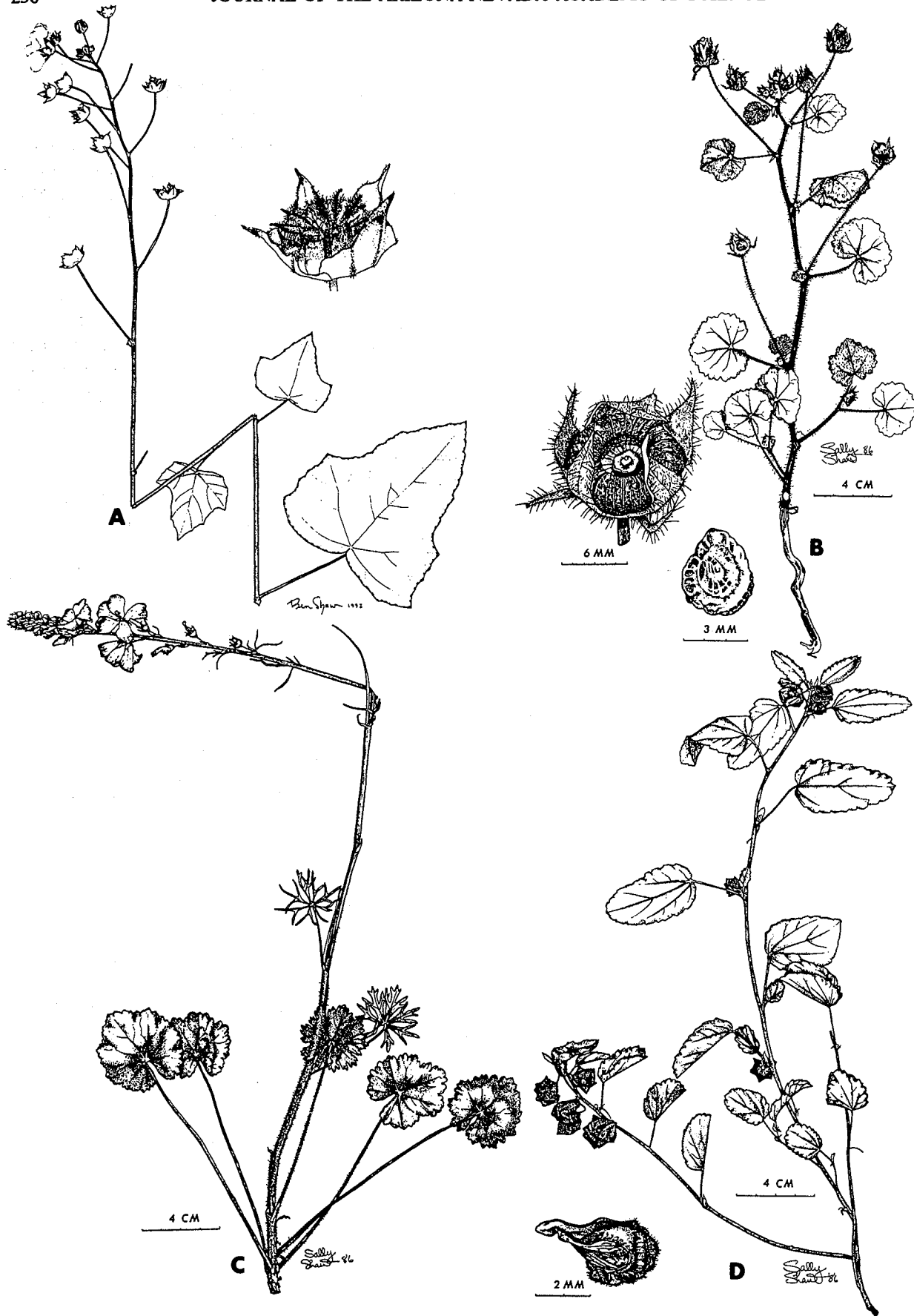
Sidalcea A. Gray Checkered Mallow

Erect (sometimes decumbent) annual or perennial herbs, glabrous or stellate-pubescent. LEAVES long-petioled (at least basally), orbicular in outline, variously lobed or parted. INFLORESCENCE usually a terminal spike or raceme; involucre absent; calyx 5-lobed; petals usually purple or lavender (sometimes yellowish or white); staminal column usually pubescent, the anthers in 2 series, the inner antisepalous, the outer antipetalous and lower; styles 5-9, the stigmatic surface introrsely decurrent. FRUITS oblate, schizocarpic; mericarps 5-9, subreniform. SEEDS solitary. Ca. 20 spp. from w U.S. and nw Mex. (Name compounded of the generic names *Sida* and *Alcea*).

Sidalcea neomexicana A. Gray (of New Mexico). Perennial herbs to 1 m tall, with scattered pubescence. LEAVES long-petiolate below to short-petiolate above, orbicular in outline, crenate below to palmately dissected above. INFLORESCENCE a leafless raceme; calyx 7-8 mm long, coarsely hirsute; petals rose-pink (rarely white), 1.5-2 cm long; staminal column ca. 5 mm long, hispid. FRUITS oblate, glabrous or nearly so; mericarps smooth to finely reticulate. $2n = 20$. --In wet mountain meadows and along waterways: Apache, Cochise, Coconino, Gila, Greenlee, Santa Cruz, Yavapai cos.; 1500-2900 m (5000-9500 ft); Jun-Sep; ID, UT, WY; Chih., Coah., Dgo., Mex.

Sphaeralcea St.-Hil. Globe Mallow [To be contributed by J. C. LaDuke]

Callirhoë involucrata (Torrey & Gray) Gray is reported, apparently as a waif, in "Arizona Flora" (ed 2, p. 549) but evidently is not established. It is not mentioned as occurring in AZ in the generic revision by L. J. Dorr (Mem. New York Bot. Gard. 56:1-76. 1990), where the westernmost extent of the genus is found in eastern NM.



Malvaceae Figure 1. A, *Anoda crenatiflora*. B, *Eremalche rotundifolia*. C, *Sidalcea neomexicana*. D, *Rhynchosida physocalyx*.