

ILLUSTRATIONS OF *ABUTILON* AND SIMILAR MALLOWS IN ARIZONA

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ABSTRACT

We illustrate *Abutilon* (Malvaceae) and similar genera occurring in Arizona. The illustrated species are *Abutilon abutiloides*, *Abutilon incanum*, *Abutilon malacum*, *Abutilon mollicomum*, *Abutilon palmeri*, *Abutilon parishii*, *Abutilon parvulum*, *Abutilon reventum*, *Abutilon theophrasti*, *Abutilon wrightii*, *Anoda abutiloides*, *Herissantia crispa*, *Malvastrum bicuspidatum*, *Pseudabutilon thurberi*, *Rhynchosida physocalyx*, *Sida abutilifolia*, and *Sida glabra*.

RESUMEN

Ilustramos *Abutilon* (Malvaceae) y géneros similares que ocurren en Arizona. Las especies ilustradas son *Abutilon abutiloides*, *Abutilon incanum*, *Abutilon malacum*, *Abutilon mollicomum*, *Abutilon palmeri*, *Abutilon parishii*, *Abutilon parvulum*, *Abutilon reventum*, *Abutilon theophrasti*, *Abutilon wrightii*, *Anoda abutiloides*, *Herissantia crispa*, *Malvastrum bicuspidatum*, *Pseudabutilon thurberi*, *Rhynchosida physocalyx*, *Sida abutilifolia*, y *Sida glabra*.

Fryxell and Hill estimated that the genus *Abutilon* (Malvaceae) contains approximately 160 species worldwide with 16 species native to North America (Fryxell & Hill 2015a). We illustrate 10 *Abutilon* species, nine of which are considered native to Arizona (Hamilton 1932; Kearney et al. 1960; Shreve & Wiggins 1964; Fryxell 1993, Fryxell & Hill 2015a; Felger et al. 2015; McNair et al. 2018). In total, we include descriptions, distribution maps, and illustrations for 17 species, representing seven genera from tribe Malveae (Malvaceae) that occur in Arizona. Four of the species illustrated are of conservation concern in Arizona based on their relatively limited occurrences and ranges in the state: *Abutilon parishii*, *Abutilon reventum*, *Anoda abutiloides*, and *Pseudabutilon thurberi*. Additional

information on these species is available at the SEINet Portal Network (swbiodiversity.org), iNaturalist (inaturalist.org), and the Global Biodiversity Information Facility (GBIF.org). Furthermore, a partial review of type specimen images is facilitated by the search functions available on the GBIF platform.

Abutilon in North and Central America are woody to herbaceous, perennial (infrequently annual) shrubs and subshrubs with leaves that are simple, alternate, long-petiolate, palmately veined, marginally toothed, and stellate-haired. Blade bases are usually cordate and blade tips are usually acute to acuminate. Petioles, especially of the larger-leaved taxa, often have well-developed pulvini allowing the leaves to change shape and position in response to environmental variables (e.g. time of day, temperature, etc.). A pair of stipules, roughly linear, are usually conspicuous at the base of each petiole. Leaves senesce and fall after frost, drought, herbivory, or old age. The lifespan of an individual leaf is usually about one or two years in ideal conditions.

Flowers are axillary or in panicles. Corollas are yellow, orange, white, or pale pink. Some species have a dark spot at base of each petal (e.g. *Abutilon incanum* and *A. trisulcatum*). Flowers seem to easily self-pollinate and exhibit cleistogamy in some instances. Pedicels are jointed.

The fruit of *Abutilon* can be described as schizocarpic in appearance especially during early development (i.e. when green and unopened), containing 5–25 mericarps each with 2–6 seeds per chamber. At maturity, however, when fruits are brown, lignified, and opened, the mericarps remain attached to each other and to their proximal axes (Fryxell and Hill 2015). In this way, mature *Abutilon* fruits begin to resemble capsules with multiple chambers rather than true schizocarps, since the term schizocarp is often used to describe the behavior of complete separation at maturity (*cf. Sida* and *Anoda*).

Most *Abutilon* seeds are about 2 mm long with an indentation near the center and minute hairs on the seed coat (those of some taxa can appear glabrous without magnification). Some *Abutilon* seeds are suspected to remain viable for decades if not longer in the soil seed bank (Spencer 1984).

Although species within the genus *Abutilon* are the primary focus of the current paper, we also illustrate representative species from *Anoda*, *Herissantia*, *Malvastrum*, *Pseudabutilon*, *Rhychosida*, and *Sida*. These seven genera belong to the family Malvaceae, subfamily Malvoideae, and tribe Malveae, the taxonomic and phylogenetic context of which are discussed in Tate et al. (2005), Donnell et al. (2012), Areces-Berazain and Ackerman (2017), and Cvetković et al. (2021).

METHODS

The authors of this paper collaborated with the goal of compiling and presenting illustrations and information helpful for identifying *Abutilon* and similar species in Arizona. Thus, the current paper represents an expansion of the guide presented in McNair et al. (2018).

Photographic illustrations emphasizing habits, habitats, leaves, flowers, and fruits were created with a number of different camera systems and photography methods by various authors and contributors. Both natural and artificial lighting methods were used. Images of the seeds were created with an Epson V850 photography scanner (that is, using artificial lighting). Pencil drawings of the fruits used as thumbnail graphics in the summary table were made with H and HB leads on 8.5 x 11 inch paper, then scanned and reduced in size by approximately 75%. Global color corrections as well as pixel-based adjustments to images such as removal of dust, granular noise, or other distracting image elements were performed primarily in Adobe Lightroom and Adobe Photoshop.

Species distributions and elevations are based on data acquired through the SEINet Portal Network (swbiodiversity.org). Many of the measurements provided in the species descriptions (e.g. petal length) follow Fryxell & Hill (2015a) while others are estimated based on available materials.

Vernacular and common names (i.e. names other than scientific binomials) are collected from a variety of different sources. Names of Spanish and Indigenous origin follow what is reported in the *Malvaceae of Mexico* (Fryxell 1988), which was itself based on a review of herbarium specimens and literature, especially Martínez (1979). To quote Fryxell's caveat on names, "Equating a vernacular name with a particular species and its correct botanical name is sometimes a difficult task" (Fryxell 1988, p. 11).

For generic and specific identifications and descriptions we relied on the following: (1) photographic observations of wild and cultivated plants, (2) type and other important annotated specimen images hosted online (GBIF, SEINet, iNaturalist), (3) in-person study of specimens at the University of Arizona Herbarium (ARIZ), the Arizona State University Vascular Plant Herbarium (ASU), and the Desert Botanical Garden Herbarium (DES), and (4) a review of relevant literature (Watson 1885, 1886; Hamilton 1932; Kearney et al. 1951, 1960; Shreve & Wiggins 1964; P. Fryxell 1976, 1988, 1993, 1997a, 1997b, 2002; J. Fryxell 1983; Austin 2004; Tate et al. 2005; Donnell et al. 2012; Felger et al. 2015; Fryxell & Hill 2015; Saini et al. 2015; McNair et al. 2018; Verrier 2018).








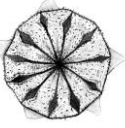
The dichotomous key presented in McNair et al. (2018) emphasized vegetative characteristics for distinguishing certain *Abutilon* species in Arizona, while the current key (below) places more emphasis on reproductive characteristics. While mature *Abutilon* leaf and stem morphologies are distinct enough to be identified on their own, historically, keys have placed more emphasis on fruit-based characteristics. Since dichotomous keys can be subjective in their emphases and abbreviated in terms of the information included, workers in the genus may also want to consult previously published keys and descriptions, especially P. Fryxell (1976), J. Fryxell (1983), P. Fryxell (1988), and P. Fryxell & Hill (2015a).


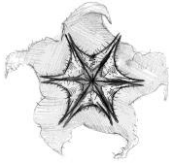


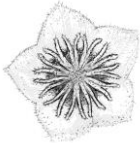




A primarily fruit-based key for *Abutilon* in Arizona (working draft)

1. Fruit a true schizocarp, usually separating easily into distinct sections at maturity, each mericarp encasing a single seed (except *Herissantia*); mericarps lignified or, more often, papery
..... see *Anoda*, *Herissantia*, *Malvastrum*, *Rhychosida*, *Sida*, and others
1. Fruit schizocarp-like, especially during development (i.e. when green), but mericarps remaining proximally attached to each other at maturity (i.e. when brown) and not easily breaking apart; fruit, thus, resembling a capsule with multiple chambers; mericarps lignified
 2. Schizocarps with 4–6 mericarps
 3. Blades, petioles, and sepals with hairs of various lengths but at least some > 0.25 mm and fruits with long, distinctly visible hairs > 2 mm; mericarp apices > 1.5 mm and slightly recurved when mature *Pseudabutilon thurberi*
 3. Blades, petioles, sepals, and fruits with hairs < 0.25 mm; mericarp apices minute usually much shorter than 1.5 mm
 4. Upright to trailing herbaceous subshrubs < 0.5 m; mericarp apices pronounced, often ≥ 1 mm; blades with three distinct lobes *Abutilon parvulum*
 4. Upright woody shrubs > 0.5 m; mericarp apices subtle, usually ≤ 1 mm; blades unlobed or subtlety lobed

5. Mericarps with dense hairs to 0.25 mm and mericarp surfaces completely obscured by the hairs; leaf teeth dramatically apiculate; petals approximately 9–15 mm long and lacking a dark basal spot*Abutilon malacum*
5. Mericarps with sparse or dense hairs to 0.25 mm such that the surfaces are not completely obscured; leaf teeth acute or rounded, sometimes undulating; petals approximately 4–6 mm long and with a dark basal spot*Abutilon incanum*
2. Schizocarps with 8–25 mericarps
6. Schizocarp with 15–25 mericarps, weakly lignified or papery; plants annual or short-lived perennial, introduced in Arizona and a widespread Old World native; leaf blades hairy but usually with a more glabrous appearance overall*Abutilon theophrasti*
6. Schizocarp with 8–12 mericarps, strongly lignified at maturity, not papery; plants perennial, New World natives; leaf blades conspicuously hairy overall and usually velvety to the touch
7. Plants decumbent; calyx lobes about twice as long as the schizocarp *Abutilon wrightii*
7. Plants upright; calyx lobes not longer than the schizocarp (except in *A. abutiloides*)
8. Petiole hairs 2–4 mm; blades often with three prominent lobes*Abutilon mollicomum*
8. Petiole hairs usually under 2.5 mm; blades lobes subtle if present
9. Petiole hairs to 2.5 mm; blade margin hairs often ≥ 1 mm*Abutilon parishii*
9. Petiole hairs under 0.5 mm; blade margin hairs < 0.5 mm
10. Mericarp apices subtle; stems appearing relatively green and glabrous without magnification*Abutilon reventum*
10. Mericarp apices conspicuous to ≥ 1 mm long; stems and petioles densely hairy
11. Calyx and schizocarps with dense hairs ≥ 1 mm; blades about as wide as they are long*Abutilon palmeri*
11. Calyx and schizocarps not densely hairy; blades about twice as long as wide *Abutilon abutiloides*

SPECIES ILLUSTRATED

Species	Vernacular names	Status	Fruit	Pages
<i>Abutilon abutiloides</i>	Colotagiie, colotahue, malva rasposa, misbil, pelletazo, sak-xiu, yax-holché, shrubby Indian mallow	NatureServe G5		7–11
<i>Abutilon incanum</i>	Pelotazo, pelletazo chico, tronadora, ma'ó	NatureServe G5		12–16
<i>Abutilon malacum</i>	Yellow Indian mallow	NatureServe G4		17–21
<i>Abutilon mollicomum</i>	Sonoran Indian mallow, pintapán cimarrón	NatureServe G5		22–27
<i>Abutilon palmeri</i>	Superstition Indian mallow, Palmer's Indian mallow	NatureServe G4; widely cultivated as ornamental		28–32
<i>Abutilon parishii</i>	Parish's abutilon, Pima mallow	NatureServe G3, vulnerable; U.S. Forest Service and BLM sensitive; AZNPS rare plant		33–38
<i>Abutilon parvulum</i>	Dwarf abutilon	NatureServe G5		39–42
<i>Abutilon reventum</i>	Yellow-flower Indian mallow	NatureServe G4, N2 imperiled in the U.S.		43–48

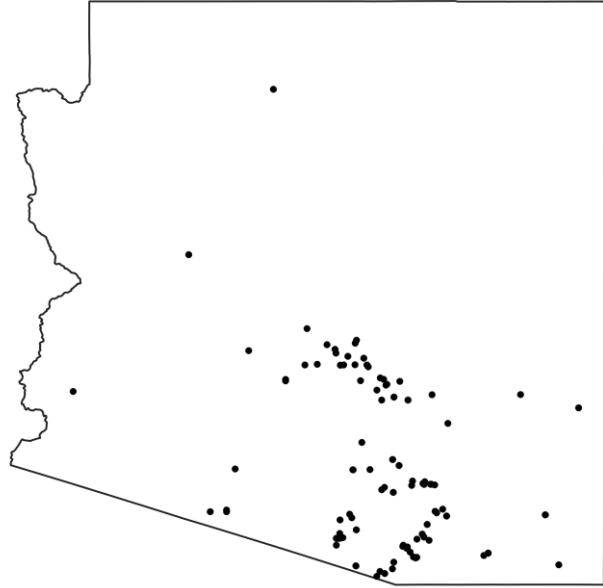
Species	Vernacular names	Status	Fruit	Pages
<i>Abutilon theophrasti</i>	Velvetleaf, crown weed, butterprint, chingma	N/a, non-native, uncommon agricultural weed in AZ		49–51
<i>Abutilon wrightii</i>	Wright's velvetleaf	NatureServe G4 (but only one population known in AZ)		52–58
<i>Anoda abutiloides</i>	Indian anoda	NatureServe G3, vulnerable		59–65
<i>Herissantia crispa</i>	Babosilla, monacillo blanco, pelotazo, bladdermallow, curly abutilon	NatureServe G5		66–71
<i>Malvastrum bicuspidatum</i>	Malva; tuchi, shrubby false mallow, Sonoran Desert false mallow	NatureServe G4		72–74
<i>Pseudabutilon thurberi</i>	Thurber's false velvetleaf	NatureServe G2, imperiled; AZNPS rare plant		75–80
<i>Rhynchosida physocalyx</i>	Buffpetal, tuberous sida	NatureServe G4		81–83
<i>Sida abutilifolia</i>	Axocatzín, buen día, hierba del buen día, malva, yerba de la viejita	NatureServe G4		84–87
<i>Sida glabra</i>	Malva, malva blanco, ortiga, ostotlachpanoni	NatureServe unranked		88–90

***Abutilon abutiloides* (Jacq.) Garcke ex Britt. & Wilson**

Sida abutiloides (Jacq.) Garcke ex Hochr.

Colotagüe, colotahue, malva rasposa, misbil, pelotazo, sak-xiu, yax-holché, shrubby Indian mallow

Abutilon abutiloides (Figs. 1–4) is an occasionally occurring, woody, perennial shrub growing in rocky areas and a variety of habitats primarily in southern Arizona from approximately 300 to 1,700 m elevation. The northernmost occurrence for the entire species has been verified from Grand Canyon National Park. The species is endemic to the southwestern United States and Mexico.



Plants may reach 1.5 m in height and older individuals develop thick, woody stems with light gray bark.

Leaf blades are usually less than 15 cm long. Blades are about twice as long as they are wide. Venation is palmate. Leaf teeth are acute to apiculate. A pulvinus is apparent where the petiole and blade meet. The leaf blade margin hairs and petiole hairs are dense and generally do not exceed 0.75 mm in length. Hairs on the leaf veins and petioles are often clustered, that is, unevenly dense.

Corollas are yellow with petals approximately 10–12 mm long, and calyces are approximately 9–12 mm long. Flowers are open in the afternoon to evening. Sepals are relatively broad and prominent (though not as prominent as *A. wrightii*) and envelope the fruits.

The fruit is schizocarpic in appearance, usually with 9–10 mericarps (i.e. carpels). At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with pronounced apices to 1 mm. Seeds are approximately 2 mm long with a pronounced sinus. Seed coats have sparsely distributed, minute, whitish hairs.

Abutilon abutiloides, *A. berlandieri* and *A. californicum* can be difficult to distinguish and are presumed to be closely related species. Their ranges and characteristics are discussed by Fryxell (1988), Fryxell and Hill (2015a), and Felger et al. (2015). *Abutilon abutiloides* is the most widespread of the three taxa and treated here as the only one of the three known to occur in Arizona, following Fryxell and Hill (2015a) and Felger et al. (2015). *Abutilon berlandieri* is restricted to eastern Mexico and Texas and is distinguished by the presence of glandular, viscid hairs more or less uniformly covering the fruits. *Abutilon californicum* is distributed mainly in the Baja California peninsula, the state of Sonora, and Pacific islands, though possibly intergrading with *A. abutiloides* (Felger et al. 2015).

The genus name *Abutilon* may have originated as a combination of *abu*, the Arabic word for father and *tula*, a Persian word for mallow. The epithet *abutiloides* means “looks like *Abutilon*.”



Figure 1. *Abutilon abutiloides*. Photo by D.M. McNair.



Figure 2. *Abutilon abutiloides*. Photo by S.D. Carnahan.



Figure 3. *Abutilon abutiloides*. Photo by D.M. McNair.



Figure 4. *Abutilon abutiloides*. White scale bar = 1 cm. Photo by D.M. McNair

Abutilon incanum* (Link) SweetAbutilon pringlei* Hochr.*Abutilon mochisense* Hochr.*Sida incana* Link

Pelotazo, pelotazo chico, tronadora, ma'ō

Abutilon incanum (Figs. 5–8) is a commonly occurring, woody, perennial shrub in Arizona found in a variety of habitats from approximately 100 to 1,700 m. The species is native to the Southwestern United States, the U.S. state of Hawaii, and Mexico.

Plants may reach 1 m or more in height, and older individuals develop thick, woody stems with light gray bark (similar to *A. abutiloides*).

Leaf blades are usually less than 10 cm long. Blades are about twice as long as they are wide. Leaf teeth are acute to rounded. Leaf venation is palmate. A weakly developed pulvinus is sometimes apparent where the petiole and blade meet. Young plants have dramatically larger leaves than older plants. Leaf blade margin and petiole hairs are under 0.25 mm and difficult to see without magnification.

Corollas are white, pale pink, or yellow. Each petal has a dark basal spot, often dark red. Petals are approximately 4–6 mm long, and calyces are approximately 3–5 mm long. Flowers are open throughout much of the day.

The fruit is schizocarpic in appearance, usually with 5–6 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with apices either absent or very subtle and less than 1 mm long. Seeds are approximately 1.5 to 2 mm long with a subtle indentation. Seed coats have densely distributed, minute, whitish hairs.

Abutilon incanum shares a number of characteristics with others in *Abutilon* section *Oligocarpae* which includes the species *A. fruticosum*, *A. malacum*, *A. mucronatum*, *A. parvulum*, and *A. trisulcatum*. See J. Fryxell (1983), P. Fryxell (1988), and Felger et al. (2015). The holotype of *Abutilon pringlei*, originally described as the white-flowered form, was collected from the Tucson Mountains, Pima County, AZ (*Pringle* 21 Apr 1884 NYBG). The Latin epithet *incanum* means gray and refers to the overall coloration of the plants, which is an optical effect of the dense, minute hairs covering the leaves.

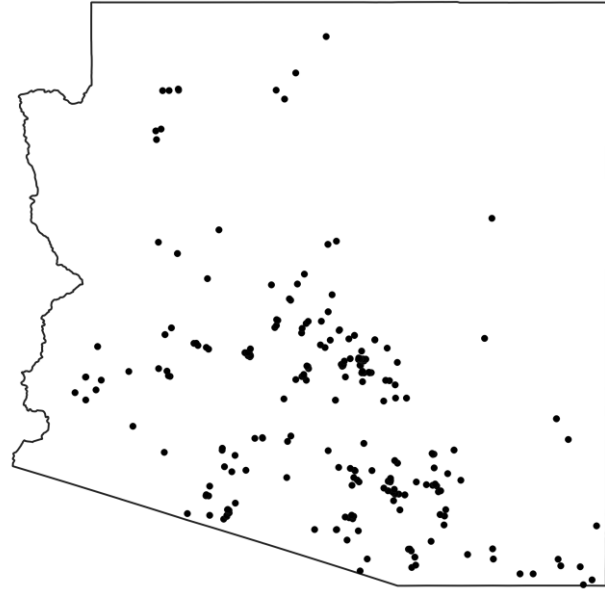




Figure 5. *Abutilon incanum*. Photo by D.M. McNair.



Figure 6. *Abutilon incanum*. Photo by D.M. McNair.



Figure 7. *Abutilon incanum*. Photo by D.M. McNair.



Figure 8. *Abutilon incanum*. White scale bar = 1 cm. Photo by D.M. McNair.

***Abutilon malacum* S. Wats.**

Yellow Indian mallow

Abutilon malacum (Figs. 9–12) is an occasionally occurring, upright, woody, perennial shrub in Arizona, especially of arid and open habitats, found approximately from 500 to 1,700 m. The species is endemic to the southwestern United States (Arizona, New Mexico, and Texas) and northeastern Mexico.

Plants may reach 1 m in height or less and have bluish gray stems with a chalky appearance.

Leaf blades are usually less than 10 cm long. Blades are roughly as wide as long, though sometimes up to twice as long as they are wide. Leaf teeth are acute to apiculate. Leaf venation is palmate. A weakly developed pulvinus is sometimes apparent where the petiole and blade meet. Leaf blade margin and petiole hairs, though dense, are under 0.25 mm and difficult to see without magnification.

Corollas are yellow. Petals do not have a darkened basal spot. Petals are approximately 9–15 mm long, and calyces are 6–8 mm long.

The fruit is schizocarpic in appearance with 5 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with apices that are either absent or very subtle and less than 1 mm long. The schizocarp is covered with dense, short hairs up to approximately 0.25 mm long that obscure the surface. Seeds are approximately 1.5 to 2 mm long with a subtle indentation. Seed coats have densely distributed, whitish hairs to 0.25 mm.

Abutilon malacum shares a number of characteristics with others in *Abutilon* section *Oligocarpae*, which includes the species *A. fruticosum*, *A. incanum*, *A. mucronatum*, *A. parvulum*, and *A. trisulcatum*. See J. Fryxell (1983), P. Fryxell (1988), and Felger et al. (2015). The Latin epithet *malacum* means soft or soft-haired.

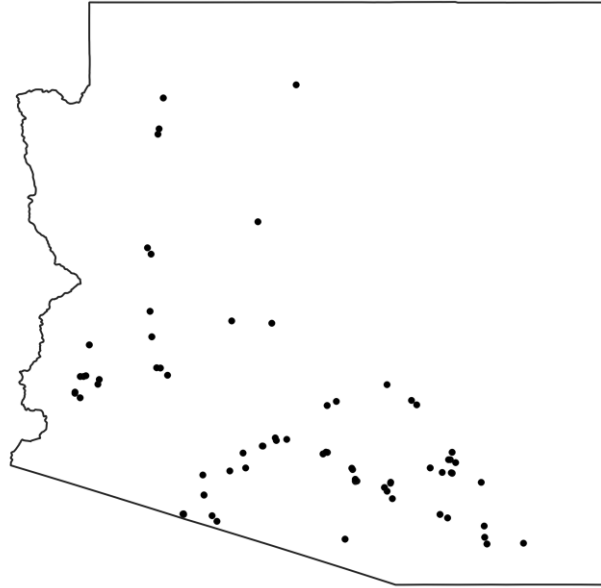




Figure 9. *Abutilon malacum*. Photo by D.M. McNair.



Figure 10. *Abutilon malacum*. Photo by Elizabeth Makings.



Figure 11. *Abutilon malacum*. Photo by D.M. McNair.



Figure 12. *Abutilon malacum*. White scale bar = 1 cm. Photo by D.M. McNair.

Abutilon mollicomum* (Willd.) SweetAbutilon sonorae* A. Gray*Sida mollicoma* Willd.

Sonoran Indian Mallow, pintapán cimarrón

Abutilon mollicomum (Figs. 13–17) is an occasionally occurring, upright, herbaceous, perennial shrub growing in rocky habitats and washes in southern Arizona from approximately 1,000 to 1,700 m elevation. The species is endemic to the southwestern United States (Arizona, New Mexico, and Texas) and northwestern Mexico.

Plants may reach 3 m in height with mostly herbaceous tissues, though they can become slightly woody at the base.

Mature leaf blades may reach up to 25 cm long. Blades are often slightly longer than they are wide and with three distinct lobes. Venation is palmate. Leaf teeth vary in size and shape. A pulvinus is apparent where the petiole and blade meet. Leaf blade margin hairs are dense but usually measure less than 0.5 mm in length. The petiole hairs, an important diagnostic feature of this taxon, are dense and 2–4 mm in length. Sometimes these petiole hairs become thin on older leaves but should still be discernible without magnification.

Corollas are yellow. Petals are approximately 5–8 long, and calyces are 5–6 mm long. Flowers open for a few hours in the afternoon to evening.

The fruit is schizocarpic in appearance with 8–9 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with pronounced apices to 1–2 mm. Seeds are approximately 2 mm long with a conspicuous indentation. Seed coats are glabrous or have sparsely distributed minute hairs.

The synonym *Abutilon sonorae*, used by Asa Gray in 1853, is still used in many contexts though Fryxell (1988) found that Willdenow had first described the species as *Sida mollicoma* (1809). This and closely related taxa in *Abutilon* sect. *Armata* (e.g. *A. reventum*, *A. xanti*, etc.) are treated at length by Fryxell (1976). The Latin epithet *mollicomum* means soft-haired, a fitting description of this and similar species with leaves that feel soft and velvety to the touch.

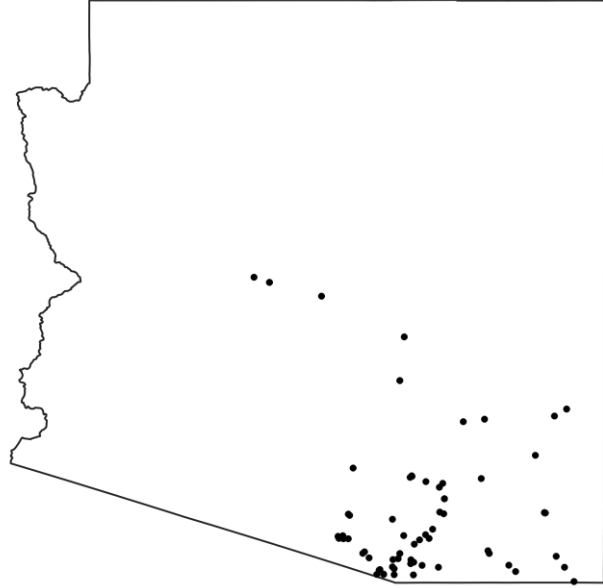




Figure 13. *Abutilon mollicomum*. Photo by D.M. McNair.



Figure 14. *Abutilon mollicomum*. Petiole hairs to 4 mm. Photo by D.M. McNair.



Figure 15. *Abutilon mollicomum*. Photo by S.D. Carnahan.



Figure 16. *Abutilon mollicomum*. Photo by D.M. McNair.

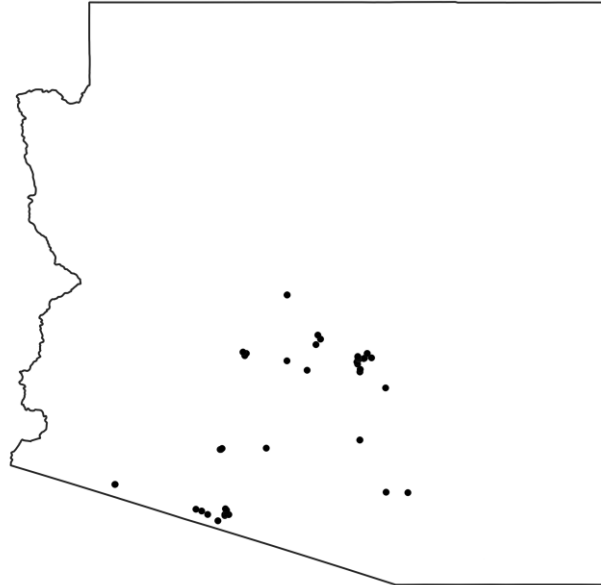


Figure 17. *Abutilon mollicomum*. White scale bar = 1 cm. Photo by D.M. McNair.

Abutilon palmeri* A. GrayAbutilon macdougalii* Rose & Standl.

Superstition Indian mallow, Palmer's Indian mallow

Abutilon palmeri (Figs. 18–21) is an occasionally occurring, upright, herbaceous or woody, perennial shrub in Arizona found from 300 to 1,300 m. The species occurs naturally in Maricopa, Pima, and Pinal counties but is also widely cultivated as an ornamental shrub in the region. These shrubs have an overall light bluish gray color as a result of the densely distributed hairs on almost every part of the plant. The species is endemic to the southwestern United States and Mexico.



Plants may reach 2 m in height with mostly herbaceous stems, though older plants become woody with gray-hairy bark at the base of the plant.

Most leaf blades are under 18 cm in length. Blades are about as long as they are wide. Venation is palmate. Leaf teeth are usually apiculate. A pulvinus is apparent where the petiole and blade meet. The leaf blade margin hairs and petiole hairs are generally under 0.75 mm in length. Petioles of this and several of the other larger leaved taxa are sometimes reddish (cf. *A. mollicomum*, *A. reventum*).

Corollas are orange-yellow. Petals are approximately 20–25 mm long, and calyces are 9–15 mm long. The flowers typically open in the afternoon to evening. Stigmas are usually red. Flowers sometimes provide overnight shelter for native bees (e.g. genus *Diadasia*).

The fruit is schizocarpic in appearance usually with 10 mericarps. At maturity, the dehiscing fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with apices to 1 mm. The sepals and schizocarp surfaces are more conspicuously and densely hairy than any similar species in the region (bearing some similarities in hairiness with the more eastern taxon *Abutilon hulseanum*). The dense hairs covering the fruits reach approximately 1 mm or longer. Seeds are approximately 2 mm long with a conspicuous indentation. Seed coats are glabrous or have sparsely distributed, minute hairs.

The native distribution of *Abutilon palmeri* is difficult to accurately map in Arizona, both because of its widespread cultivation as an ornamental and also because of the confusion still persisting in some databases between this and similar species.



Figure 18. *Abutilon palmeri*. Photo by D.M. McNair.



Figure 19. *Abutilon palmeri*. Photo by S.D. Carnahan.



Figure 20. *Abutilon palmeri*. Photo by D.M. McNair.



Figure 21. *Abutilon palmeri*. White scale bar = 1 cm. Photo by D.M. McNair.

***Abutilon parishii* S. Wats.**

Parish's abutilon, Pima mallow

Abutilon parishii (Figs. 22–26) is an uncommonly occurring, upright, herbaceous, perennial shrub growing in rocky habitats in southern to central Arizona from approximately 500 to 1,500 m. It is known to occur Graham, Maricopa, Pima, Pinal, Santa Cruz, and Yavapai counties. This species is endemic to the U.S. state of Arizona and the Mexican state of Sonora.

Plants may reach 2 m in height with primarily herbaceous stems that can become woody at the base with densely hairy bark. Stems are always more or less upright.

Mature leaf blades are generally shorter than 18 cm and have long, acuminate tips. Blades are about twice as long as wide. Leaf teeth are generally acute. A pulvinus is apparent where the petiole and blade meet. Leaf blade margins have dense stellate hairs up to 1 mm or longer; petioles are densely or sparsely hairy with hairs to approximately 2.5 mm. The abaxial blades of this species are more conspicuously hairy than any similar species examined. When stressed by drought and/or heat, the blades curl dramatically inward, exposing the relatively hairier, whitish, adaxial surfaces. This phenomenon is very noticeable with *A. parishii*, but seemingly lacking or less pronounced in similar taxa.

Corollas are yellow-orange. Petals are approximately 8–15 mm long, and calyces are 6–8 mm long. Flowers are open, if at all, for about 1–3 hours in the late afternoon to evening.

The fruit is schizocarpic with 7 or 8 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with pronounced apices to 2–3 mm. Seeds are approximately 2 mm long with a noticeable indentation. Seed coats have sparsely distributed, minute hairs.

This species is also discussed and illustrated in the Arizona Rare Plant Field Guide (ARPC 2001) and in McNair et al. (2018). The species is considered to be of conservation concern by multiple agencies (see McNair et al. 2018). *Abutilon parishii* was mistakenly synonymized under *A. palmeri* in the first edition of the Arizona Flora, a decision that was reversed in the Supplement (Kearney et al. 1960). The two taxa are similar inasmuch as both are relatively hairy but otherwise have consistently distinct morphologies. The lectotype was collected from the Santa Catalina Mountains, Pima County, AZ (*Pringle* Apr-May 1884 VT). The species epithet commemorates the American botanist William F. Parish.

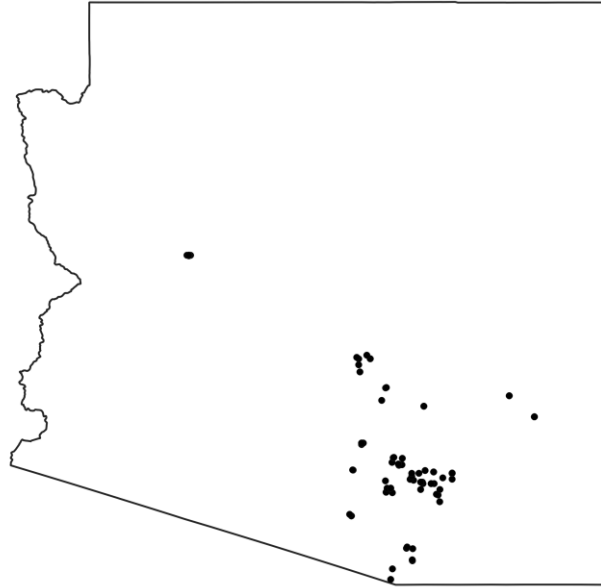




Figure 22. *Abutilon parishii*. Photo by D.M. McNair.



Figure 23. *Abutilon parishii*. Photo by D.M. McNair.



Figure 24. *Abutilon parishii*. Leaves curling dramatically during drought stress with the relatively hairier, more reflective abaxial surfaces facing outward. Photo by D.M. McNair.



Figure 25. *Abutilon parishii*. Photo by D.M. McNair.



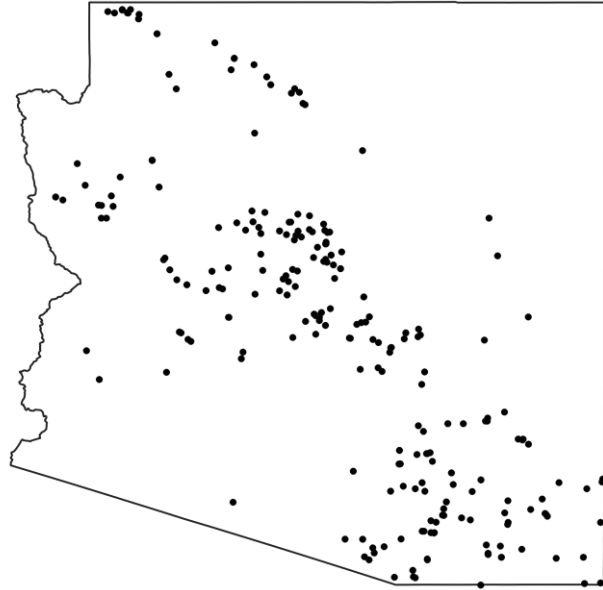
Figure 26. *Abutilon parishii*. White scale bar = 1 cm. Photo by D.M. McNair.

***Abutilon parvulum* A. Gray.**

Dwarf abutilon

Abutilon parvulum (Figs. 27–29) is an occasionally occurring, upright to sprawling, herbaceous, perennial subshrub and is found in a variety of habitats across Arizona from approximately 500 to 1,800 m. The species is endemic to the southwestern United States (Arizona, New Mexico, and Texas) and northern Mexico.

Plants are rarely taller than 0.5 m and lack any obvious woody tissue development. Stems are not conspicuously hairy.



Leaf blades are usually under 8 cm and usually have three distinct lobes. Blades are about twice as long as wide. Leaf teeth are acute to apiculate. Leaf venation is palmate. A weakly developed pulvinus is sometimes apparent where the petiole and blade meet. Both leaf blade margin hairs and petiole hairs are usually well under 0.25 mm and difficult to see without magnification. In sunlight, leaves may have a glistening or sparkling appearance due to the distribution and density of these minute hairs.

Corollas are yellow, and petals do not have a dark basal spot. Petals are approximately 4–7 mm long, and calyces are 3–5 mm long. Petals are often cup shaped.

The fruit is schizocarpic with 4–5 mericarps. At maturity, the dehiscing fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with apices to approximately 1 mm. Seeds are approximately 2 mm long with a subtle indentation. Seed coats are glabrous or have sparsely distributed whitish hairs.

Abutilon parvulum shares a number of characteristics with others in *Abutilon* section *Oligocarpae*, which includes *A. fruticosum*, *A. incanum*, *A. malacum*, *A. mucronatum*, and *A. trisulcatum*. See J. Fryxell (1983), P. Fryxell (1988), and Felger et al. (2015).



Figure 27. *Abutilon parvulum*. Photo by D.M. McNair.



Figure 28. *Abutilon parvulum*. Photo by D.M. McNair.



Figure 29. *Abutilon parvulum*. White scale bar = 1 cm. Photo by D.M. McNair.

***Abutilon reventum* S. Wats.**

Yellow-flower Indian mallow

Abutilon reventum (Figs. 30–34) is an uncommonly occurring, upright, herbaceous, perennial shrub growing in open washes and rocky habitats in southern Arizona from approximately 800 to 1,900 m. It is primarily known to occur in Pima and Santa Cruz counties. The species is endemic to the southwestern United States (Arizona and New Mexico) and Mexico.

Plants may reach 3 m in height with mostly herbaceous stems, though the base of the plant may become woody. The stems of this species are glabrous in comparison to similar taxa (e.g. *A. mollicomum*).

Mature blades may reach 25 cm long, often with relatively small lateral lobes (e.g. compared to *A. mollicomum*) and a long acuminate “drip” tip that curls inward. Blades are often longer than wide. Venation is palmate. Leaf teeth are usually apiculate. A pulvinus is apparent where the petiole and blade meet. Both blade margin hairs and petiole hairs are dense but usually under 0.5 mm.

Corollas are yellow-orange. Petals are approximately 10–15 mm long and calyces are 8–10 mm long. Flowers open in the afternoon to evening. The fruit is schizocarpic usually with 10 mericarps. At maturity, the dehiscent fruit begins to resemble a globose capsule with multiple chambers rather than a schizocarp. Mericarps become lignified with subtle or absent apices usually to 0.5 mm or less. Seeds are approximately 2 mm long with a conspicuous indentation. Seed coats are glabrous or have sparsely distributed, minute hairs.

This and closely related taxa in *Abutilon* sect. *Armata* (e.g. *A. mollicomum*, *A. xanti*, etc.) are treated at length by Fryxell (1976). The Latin epithet *reventum*, meaning “coming backward,” may refer to the curling behavior of the long acuminate leaf tips.

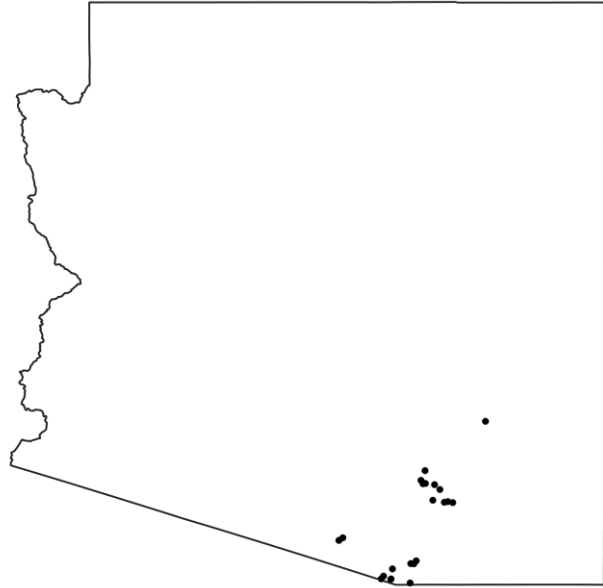




Figure 30. *Abutilon reventum*. Photo by D.M. McNair.



Figure 31. *Abutilon reventum*. Photo by D.M. McNair.



Figure 32. *Abutilon reventum*. Mature petioles with dense hairs under 0.5 mm. Photo by D.M. McNair.



Figure 33. *Abutilon reventum*. Photo by D.M. McNair.



Figure 34. *Abutilon reventum*. White scale bar = 1 cm. Photo by D.M. McNair.

Abutilon theophrasti* Medik.Sida abutilon* L.

Velvetleaf, crown weed, butterprint, chingma

Abutilon theophrasti (Figs. 35–36) is a non-native, occasionally occurring, upright, herbaceous, annual or short-lived perennial shrub in Arizona. It is sometimes cultivated and is occasionally reported as naturalized along roadsides or other disturbed sites in the state from approximately 300 to 1,100 m. The species is an Old World native.

Plants may reach 1 m in height with mostly herbaceous tissues. Stems can appear hairy or glabrous.

Leaf blades are usually under 15 cm. Blades are usually slightly longer than wide. Venation is palmate. Leaf teeth are irregular and undulating. A pulvinus is apparent where the petiole and blade meet. Both blade margins and petioles have sparse hairs that are usually under 0.5 mm. There is often a tuft or concentration of denser hairs where the blade and petiole meet on the abaxial side.

Corollas are yellow. Petals are approximately 8–13 mm long and calyces approximately 10 mm long. The fruit is schizocarpic in appearance with greater than 15 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become weakly lignified with pronounced apices to 3 mm. Seeds approximately 2 mm long with a conspicuous indentation. Seed coat hairs are minute and evenly distributed across the surface.

Abutilon theophrasti, originally native to Asia, was brought to the Americas in the 1700s as a fiber crop and has since become problematic for farmers, especially in the Midwestern U.S. See discussions in Spencer (1984), Fryxell (1988), Fryxell and Hill (2015a) and Verrier (2018). The species is the type for its genus and was named after the ancient Greek thinker and botanist Theophrastus.

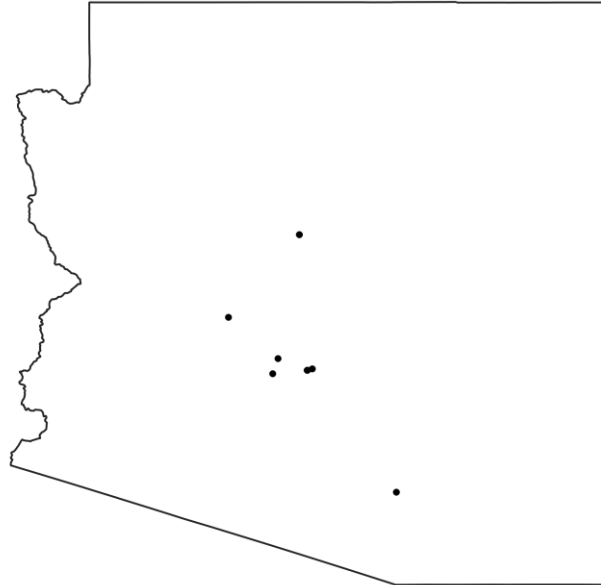




Figure 35. *Abutilon theophrasti*. Photo by D.M. McNair.



Figure 36. *Abutilon theophrasti*. White scale bar = 1 cm. Photo by D.M. McNair.

***Abutilon wrightii* A. Gray**

Wright's velvetleaf

Abutilon wrightii (Figs. 37–42) is a rarely occurring, decumbent, herbaceous, perennial subshrub only known from one population in Cochise County in southern Arizona where it occurs between 1,200 and 1,300 m. The species is endemic to the southwestern United States (Arizona, New Mexico, and Texas) and northern Mexico.

Plants may reach 0.5 m height, though all stems are eventually decumbent with age (i.e. younger shoots may be upright). Stem tissues are primarily herbaceous, though they become slightly woody at the base in older individuals. Stems are conspicuously hairy.

Leaf blades are usually less than 8 cm long. Blades are slightly longer than wide. Venation is palmate. Leaf teeth are acute, apiculate, or irregular. A pulvinus is apparent where the petiole and blade meet. Blade margin hairs are dense and may reach 1 mm long. Petioles are densely hairy to 2 mm. Petioles sometimes have glandular hairs.

Corollas are yellow. Petals are approximately 14–18 mm long, and calyces are 15–20 mm long. Flowers open late afternoon to evening. Stigmas are red.

The fruit is schizocarpic in appearance, usually with 6 to 7 mericarps. At maturity, the dehiscent fruit begins to resemble a capsule with multiple chambers rather than a schizocarp. Mericarps become lignified at maturity with apices to 2 mm or longer. Mericarps are sparsely covered with hairs to 1 mm. Sepals are prominent, often obscuring the fruit and about twice as long as the fruits. Calyces are broadly auriculate at base. Seeds are approximately 2 mm long with a conspicuous indentation. Seed coats are grayish and relatively glabrous.

In the first major review of the family Malvaceae in Arizona by Hamilton (1932), *Abutilon wrightii* was noted to be present in the vicinity of Nogales, though no voucher could be located. The species was omitted from subsequent floras until the first known voucher was collected in 2014 (*Makings* 4477; ASU) and reported in McNair et al. (2018). See also discussion in Shreve & Wiggins (1964). The species epithet commemorates American botanist Charles Wright.

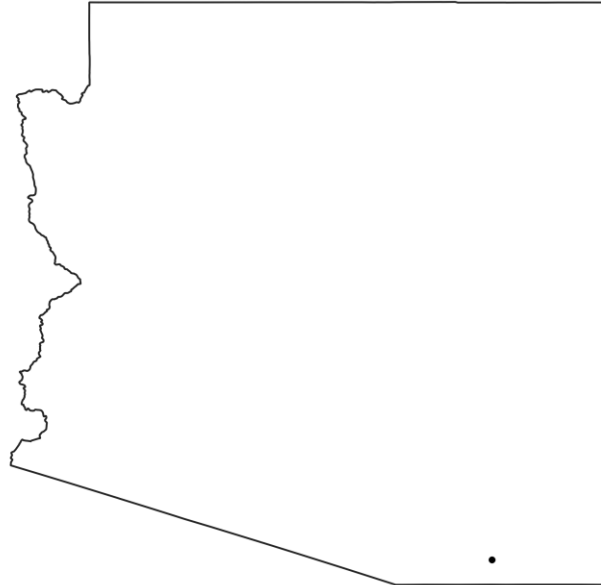




Figure 37. *Abutilon wrightii*. Photo by D.M. McNair.



Figure 38. *Abutilon wrightii*. Photo by D.M. McNair.



Figure 39. *Abutilon wrightii*. Plants are decumbent in general, though younger stems may exhibit an upright habit as seen here. Note the prominent calyx lobes and long mericarp apices. Photo by D.M. McNair.



Figure 40. *Abutilon wrightii*. Petioles with dense and sometimes glandular hairs to 2 mm. Photo by D.M.M



Figure 41. *Abutilon wrightii*. Photo by D.M. McNair.



Figure 42. *Abutilon wrightii*. White scale bar = 1 cm. Photo by D.M. McNair.

***Anoda abutiloides* A. Gray**

Indian anoda

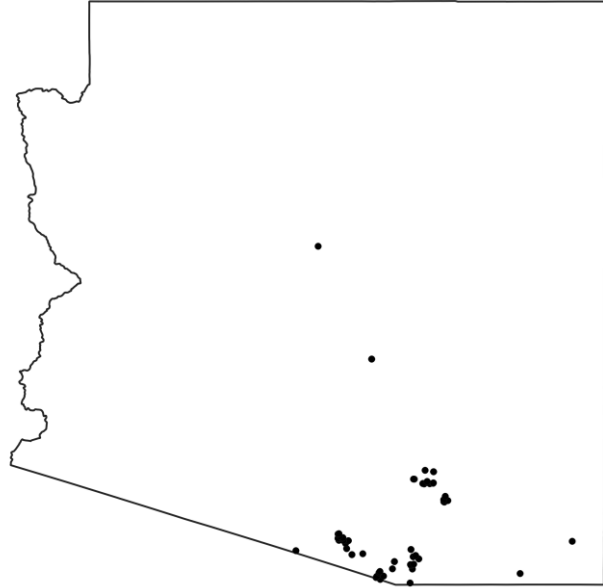
Anoda abutiloides (Figs. 43–48) is an occasionally occurring, herbaceous, annual or short-lived perennial shrub growing in rocky habitats in southern Arizona from approximately 600 to 1,600 m, primarily known from Cochise, Maricopa, Pima, and Santa Cruz counties. The species is endemic to Arizona and northwestern Mexico.

Plants may reach 3 m in height with herbaceous stems and sometimes woody bases. Mature plants have densely hairy, green-yellowish bark.

Leaf blades are 15 cm or longer with long, acuminate “drip” tips. Blades can be two or three times as long as they are wide. Venation is palmate. Leaf teeth are acute to apiculate. Leaf blade margin hairs are dense and usually less than 0.5 mm long. Petiole hairs are dense or sparse and usually under 2 mm.

Corollas are yellow, sometimes with red streaks on the abaxial surfaces. Petals are approximately 10–12 mm long, and calyces are 9–12 mm. Individual flowers seem to remain open for 24 hours or longer. The fruit is a true schizocarp with 5 to 6 mericarps that separate at maturity, resulting in one seed encased within each mericarp. Seed and mericarp do not separate easily. Mericarps are lignified with minute or imperceptible apices. Mericarps and seeds are relatively glabrous. Seeds are approximately 2 mm long with a subtle indentation.

The genus name *Anoda* is thought to originate from the vicinity of Sri Lanka, referring to mallow-like plants. The epithet *abutiloides* (used also in the genus *Abutilon*) means “looks like *Abutilon*.” See especially Fryxell (1988) and Fryxell and Hill (2015b).



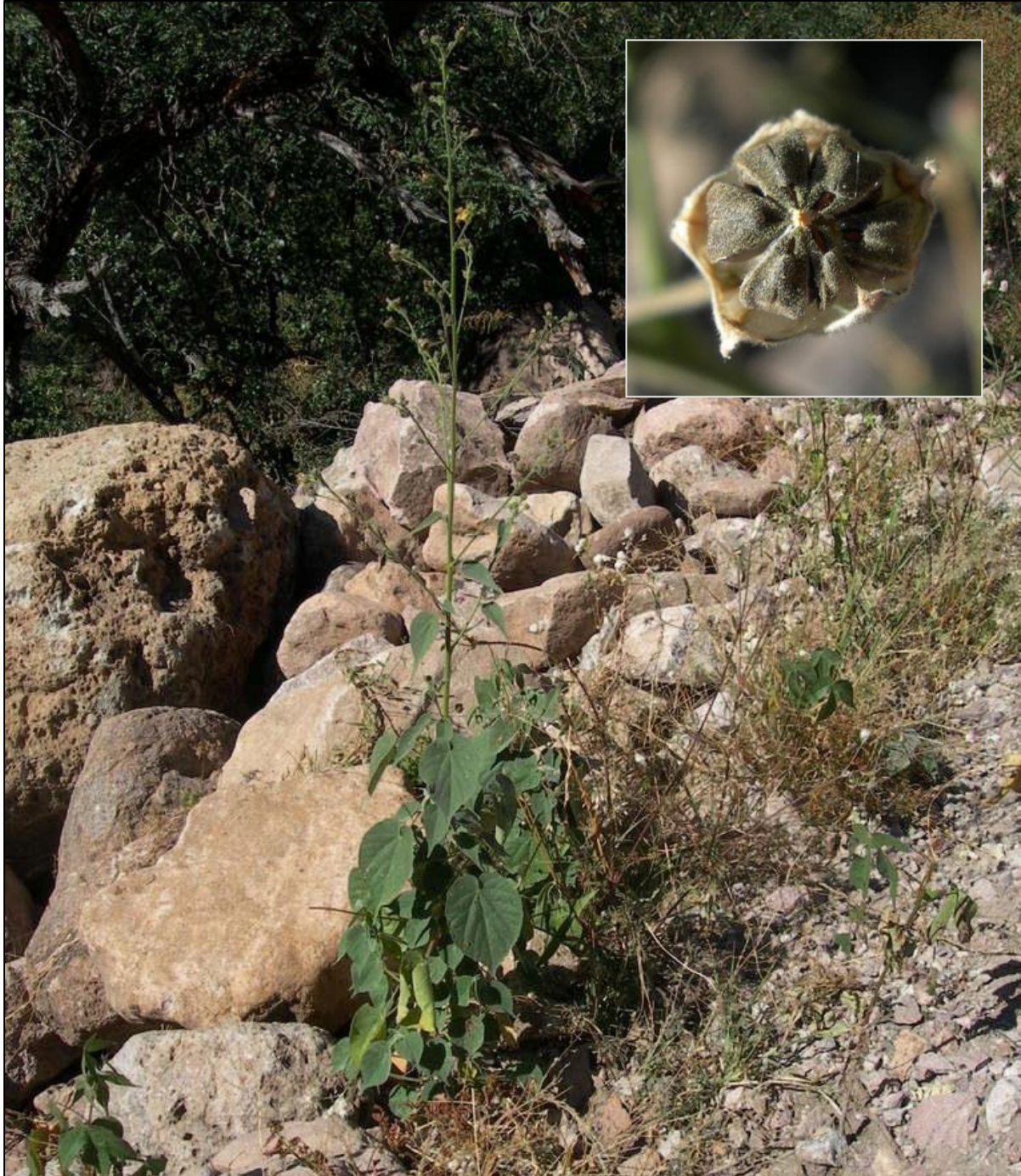


Figure 43. *Anoda abutiloides*. Photo by R. Lindley.



Figure 44. *Anoda abutiloides*. Photo by D.M. McNair.



Figure 45. *Anoda abutiloides*. Photo by D.M. McNair.



Figure 46. *Anoda abutiloides*. Abaxial surface of petals often with red-orange veining. Photo by D.M. McNair.



Figure 47. *Anoda abutiloides*. Photo by D.M. McNair.

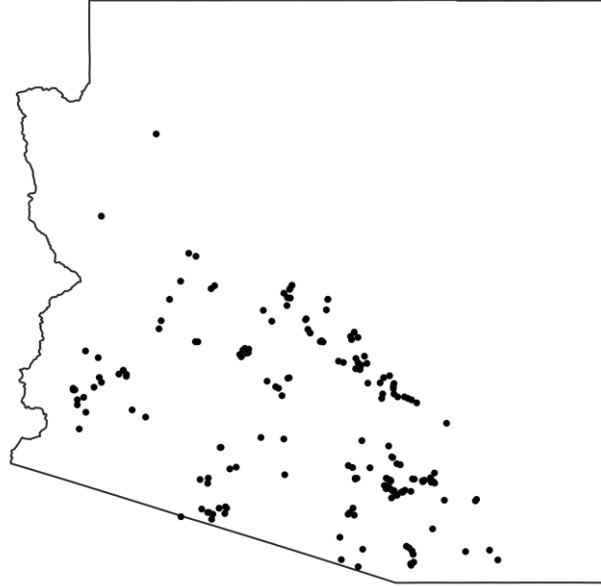


Figure 48. *Anoda abutiloides*. Mericarps (top of image) and seeds (bottom of image). White scale bar = 1 cm. Photo by D.M. McNair.

Herissantia crispa* (L.) Briz.Bogenhardia crispa* (L.) Kearney*Gayoides crispum* (L.) Small*Abutilon crispum* (L.) Medik.*Sida crispa* L.

Babosilla, monacillo blanco, pelotazo,
bladdermallow, curly abutilon

Herissantia crispa (Figs. 49–53) is an occasionally occurring, herbaceous, upright or decumbent, perennial subshrub found in washes and a variety of habitats in central and southern Arizona from approximately 200 to 1600 m. This species is native to much of the subtropical and tropical Americas.



Plants may reach 1 m with mostly herbaceous stems that may become woody at the base in older individuals. Stems may be upright, sprawling, or decumbent. Stems are conspicuously hairy.

Leaf blades are usually less than 10 cm long. Blades are slightly longer than they are wide. Primary venation is palmate. Distinctly prominent secondary veins are a consistently helpful characteristic for vegetative identification of this species. Leaf teeth are usually distinctly rounded and often doubly serrate. A pulvinus is apparent where the petiole and blade meet. Leaf blade margins are densely hairy to 0.5 mm. Petiole hairs reach 1 mm or longer.

Corollas are yellow or white. If white, the petals usually have a yellow basal spot. Petals are approximately 6–11 mm long, and calyces are 3–7 mm. Pedicels are jointed and curved during flowering and become distinctly right-angled in fruit. Flowers open in the late morning and throughout much of the day.

The fruit is a papery-transparent, globose schizocarp usually with 10 chambers and tissues that do not become lignified at maturity. Long straight hairs adorn the schizocarp. Mericarp apices are absent. At maturity, the schizocarp may easily split in distinct sections or may be slow to separate. Seeds are 1–3 per chamber. Seeds are 1.5 mm long with a conspicuous sinus, such that they appear distinctly “U” shaped. Seed coats may have minute hairs but otherwise appear relatively glabrous.

See discussion of the history of various generic placements of this species in Brizicky (1968). The genus name *Herissantia* commemorates the French naturalist Louis Antoine Prospère Hérissant. The Latin epithet *crispum*, meaning “wavy” or “curly,” in this context refers to the appearance of the mericarp margins.



Figure 49. *Herissantia crispera*. Photo by S.D. Carnahan.



Figure 50. *Herissantia crista*. Photo by S.D. Carnahan.



Figure 51. *Herissantia crista*. Photo by D.M. McNair.



Figure 52. *Herissantia crista*. Photo by S.D. Carnahan.



Figure 53. *Herissantia crista*. White scale bar = 1 cm. Photo by D.M. McNair.

***Malvastrum bicuspidatum* (S. Watson) Rose**
Malvastrum tricuspdatum var. *bicuspidatum* S.
 Watson

Malva, tuchi, shrubby false mallow, Sonoran
 Desert false mallow

Malvastrum bicuspidatum (Figs. 54–55) is an uncommonly occurring, herbaceous to woody, perennial shrub growing in rocky areas and canyons in southern Arizona from approximately 400 to 1,500 m elevation. The species is endemic to Arizona and Mexico.

Plants may reach 1.5 m in height with both herbaceous and woody tissues. Stems are conspicuously hairy.

Leaf blades are usually under 10 cm and about twice as long as they are wide. Venation is pinnate. Leaf teeth are acute to apiculate. The leaf blade margin hairs and petiole hairs are dense and generally do not exceed 1 mm in length.

Corollas are yellow. Petals are approximately 6–8 mm long, and calyces are 6–9 mm long. The fruit is schizocarpic in appearance, usually with 9 to 12 horseshoe-shaped mericarps. Mericarps may be slow to separate from each other at maturity. Mericarp apices are pronounced and measure approximately 1–2 mm in length. Each mericarp contains a single seed.

A similar but apparently non-native species, *Malvastrum coromandelianum*, has begun to naturalize in the vicinity of Phoenix, Arizona. Discussion and illustration of the distinction between this species and the native *Malvastrum bicuspidatum* are presented by Darrow and Makings (2016). See also illustration in Felger et al. (2015).

The genus name *Malvastrum* is a combination of the genus name *Malva* and the Latin suffix *astrum* meaning “incomplete resemblance to the genus *Malva*.” The epithet *bicuspidatum* means “having two points” and refers to the digit-like mericarp apices of this species. See R. Hill’s treatments (1982 and 2015).

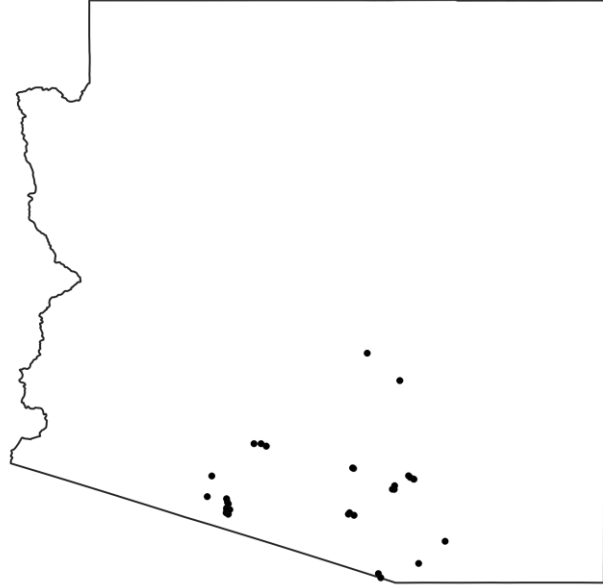




Figure 54. *Malvastrum bicuspidatum*. Photo by D.C. Beckman.



Figure 55. *Malvastrum bicuspidatum*. Photo by S.D. Carnahan.

***Pseudabutilon thurberi* (A. Gray) Fryxell**
Pseudabutilon sonorae Wiggins
Abutilon thurberi A. Gray

Thurber's false velvetleaf

Pseudabutilon thurberi (Figs. 56–60) is an uncommonly occurring, upright or decumbent, herbaceous, perennial shrub or subshrub in southern Arizona known only from Santa Cruz and Pima counties and found at elevations between 1,000 and 1,200 m. The species is endemic to Arizona and Mexico.

Plants may reach 1.5 m with primarily herbaceous tissues. The stem hairs are of various densities and lengths but often have sparse, long, straight hairs to 2–3 mm long.

Blades usually under 8 cm long. Blades are about twice as long as wide. Venation is palmate. Leaf teeth are acute to rounded. Leaf margin hairs are usually to 0.5 mm. Petiole hairs are sparse to 2–4 mm long or petioles relatively glabrous in appearance.

Corollas are yellow. Petals are approximately 4–6 mm long and calyces are 4–7 mm long. The fruit is schizocarpic with 5 mericarps, each mericarp containing 1–3 seeds. Calyxes and fruits have distinctive, long, white hairs to 3 mm. Mericarps are thinly lignified at maturity with apices to 3–4 mm and slightly recurved. A distinct aspect of the mericarp is the presence of an endoglossum, which Fryxell (1997b, p.175) characterized as “an internal partition that divides the carpel into two chambers, one above the other.”

Populations examined in southern Arizona are strongly rhizomatous. Kearney & Peebles (14970 ARIZ) described “creeping rootstocks” on plants they collected from the Baboquivari Mountains. The holotype of *Abutilon thurberi* was collected just south of the international border in Magdalena, Sonora (*Thurber 911*, Oct 1851 GH).

See especially the discussion and illustration in Keener (2015). The genus name means “false *Abutilon*.” The specific epithet commemorates American botanist George Thurber.

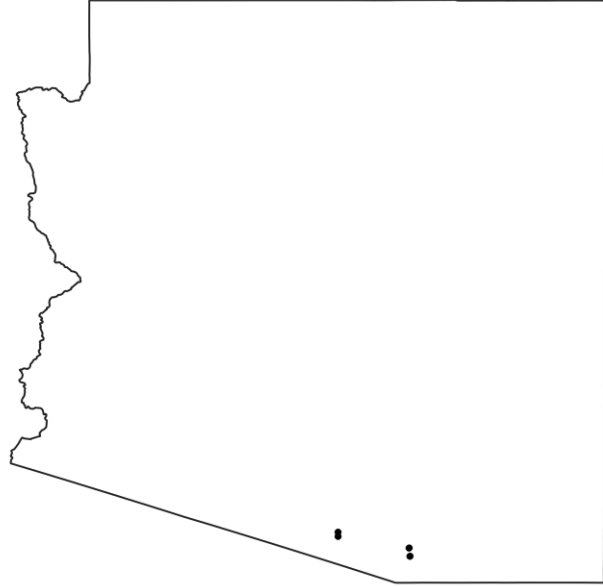




Figure 56. *Pseudabutilon thurberi*. Photo by S.D. Carnahan.



Figure 57. *Pseudabutilon thurberi*. Photo by J.T. Verrier.



Figure 58. *Pseudabutilon thurberi*. Photo by S.D. Carnahan.

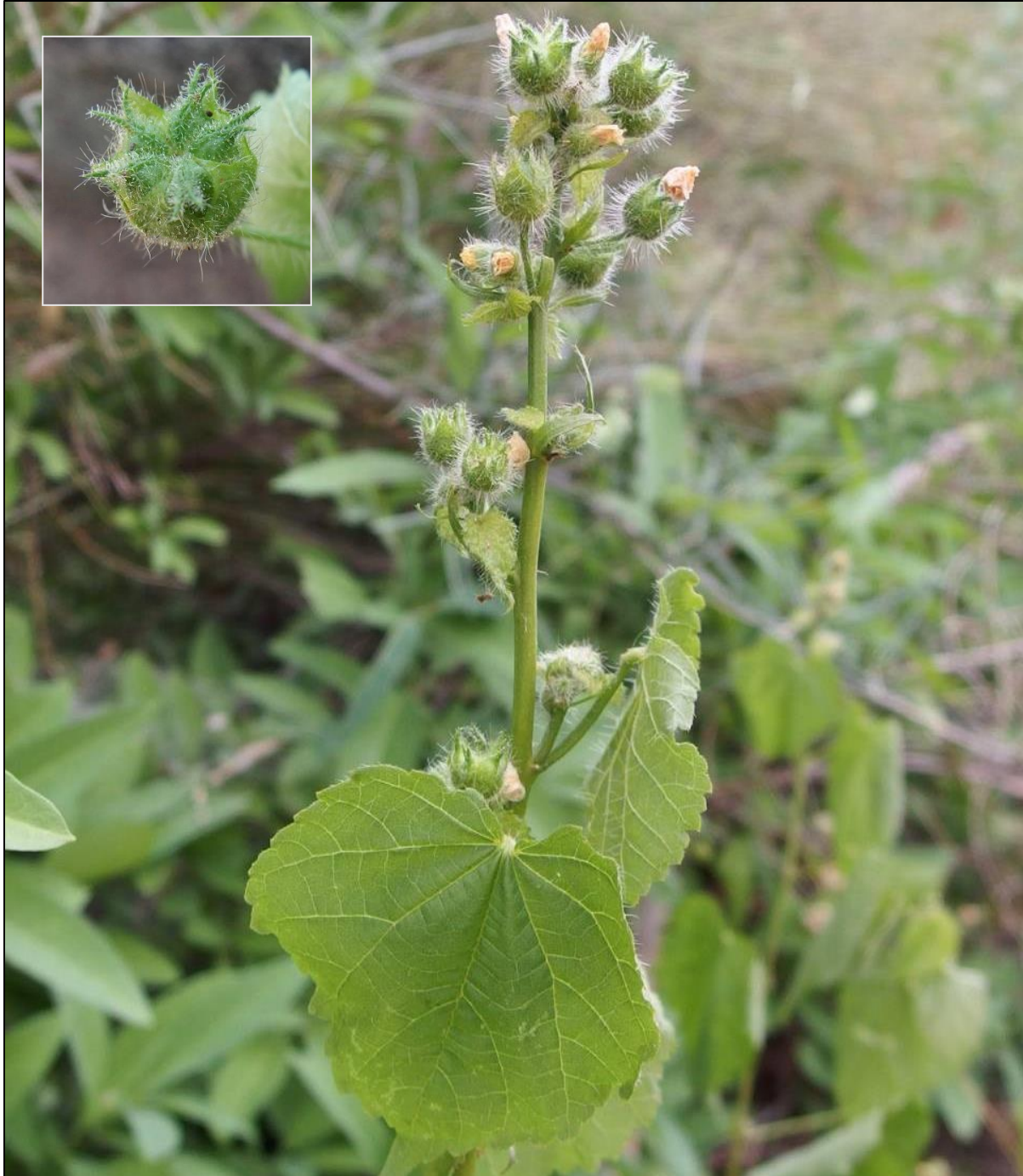


Figure 59. *Pseudabutilon thurberi*. Photo by S.D. Carnahan.



Figure 60. *Pseudabutilon thurberi*. Photo by S.D. Carnahan.

***Rhynchosida physocalyx* (A. Gray) Fryxell.**
Sida physocalyx A. Gray

Buffpetal, tuberous sida

Rhynchosida physocalyx (Figs. 61–62) is a commonly occurring, herbaceous, perennial, decumbent subshrub occurring in riparian, disturbed, and other areas in central and southern Arizona from approximately 300 to 1700 m. The species is endemic to the southwestern United States and Mexico.

Plants rarely exceed 0.5 m in height but can spread to 1 m horizontally in ideal growing conditions. Young stems may be upright but will eventually be decumbent. The stems are conspicuously hairy. The stems and leaves produce sharp stiff hairs approximately 1.5 mm long that can become easily lodged in skin.

Leaf blades are usually under 8 cm in length. Blade length is about two or three times the width. Venation is pinnate. Leaf teeth are generally rounded and minutely apiculate. Leaf blade margin hairs reach 1.25 mm, and petiole hairs reach 2.5 mm.

Corollas are yellow. Petals are approximately 5–8 mm long, and calyces are approximately 10–15 mm long. Flowers sometimes remain closed, or if open, then only for a few hours in the morning to afternoon, usually at a consistent time of day.

The fruit is a schizocarp with 8–10 mericarps. While maturing, the fruit is completely enveloped by the calyx. At maturity, the calyx and schizocarp begin to turn brown-black, and the schizocarp eventually shatters into distinct mericarps, each consisting of a thin papery covering that completely surrounds the seed. Mericarps are papery. Each mericarp contains only one seed. Mericarps separate easily from the seed. Seeds are approximately 2 mm long with a pronounced sinus. Seed coats are glabrous or scabrous.

A thick tuber is present in older individuals, hence the common name tuberous sida. The genus name *Rhynchosida* combines the Greek word *rhynchos* meaning “beaked” and the genus name *Sida* (itself of uncertain etymology). The Greek epithet *physocalyx* probably means something like “bellows-shaped calyx,” referring to the prominent calyx of this species or perhaps a reference to the fruit-enveloping calyx in the genus *Physalis* (Solanaceae).

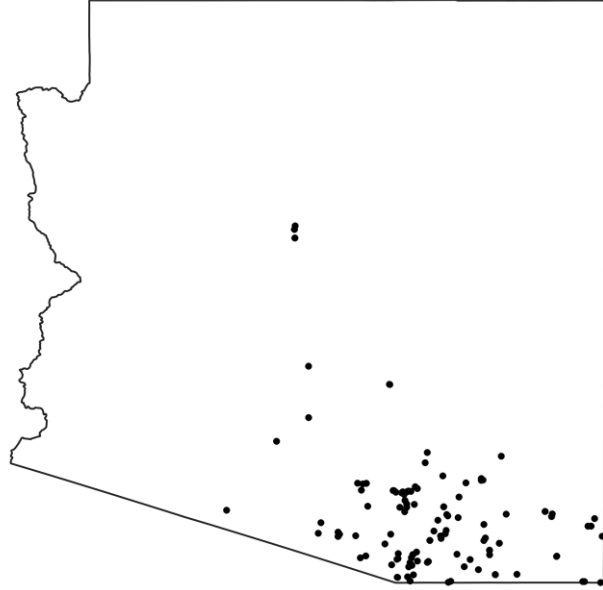




Figure 61. *Rhynchosida physocalyx*. Photo by D.M. McNair.



Figure 62. *Rhynchosida physocalyx*. Mericarps (top of image) and seeds (bottom of image). White scale bar = 1 cm. Photo by D.M. McNair.

Sida abutilifolia* Mill.Sida diffusa* Kunth*Sida filicaulis* Torrey & A. Gray*Sida procumbens* Sw.*Sida supina* L'Héritier

Axocatzín, buen día, hierba del buen día, malva,
yerba de la viejita, creeping sida

Sida abutilifolia (Figs. 63–65) is a commonly occurring, herbaceous, decumbent, perennial shrub growing in a variety of habitats in central and southern Arizona from approximately 100 to 1,900 m elevation. The species is native to the tropical and subtropical Americas.

Plants are usually less than 0.5 m tall.

Young shoots from newly germinated individuals may appear upright for a time, but all other stages are characterized by a decumbent habit. Stems have long straight hairs to 2.5 mm.

Blades are rarely longer than 5 cm and are three or four times longer than wide. Venation is pinnate. Leaf teeth are acute to rounded. Leaves have both short, dense hairs at the blade margin to about 0.25 mm as well as longer hairs to about 2 mm that are concentrated along the abaxial, primary vein and along the leaf teeth. Petioles also have hairs to about 2 mm.

Corollas are yellow. Petals are approximately 5–10 mm long, and calyces are 4–7 mm. Flowers open in the afternoon to evening (often at a predictable hour). Sepals have dense hairs under 0.25 mm and relatively sparse, long hairs to 3.0 mm.

The fruit is a true schizocarp that easily separates into 5 distinct mericarps at maturity. Mericarps are strongly lignified at maturity with two sharp apices that are approximately 1–2 mm long. Each mericarp contains a single seed. Mericarps do not easily separate from the seeds.

The epithet *abutilifolia*, meaning “leaves like *Abutilon*,” has been alternatively spelled *abutifolia* (see discussion in Fryxell 1988). The genus name *Sida* is of uncertain etymology. Note that the genus is especially diverse in Arizona, with many more species present in the state than are illustrated in these pages.

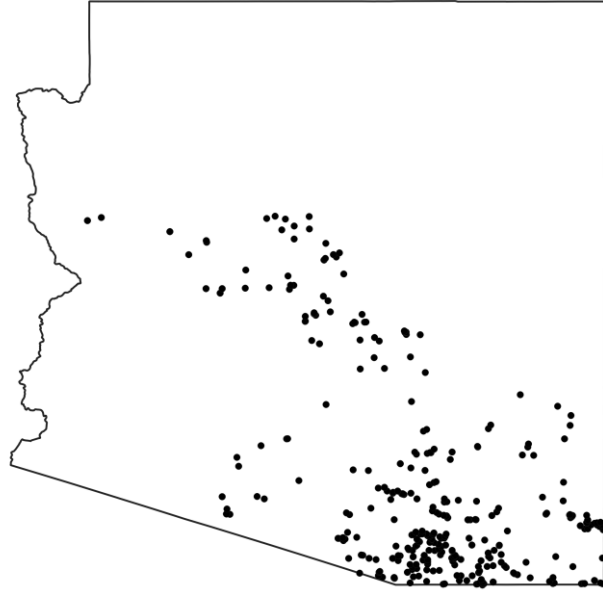




Figure 63. *Sida abutilifolia*. Photo by S.D. Carnahan.



Figure 64. *Sida abutilifolia*. Photo by D.M. McNair.

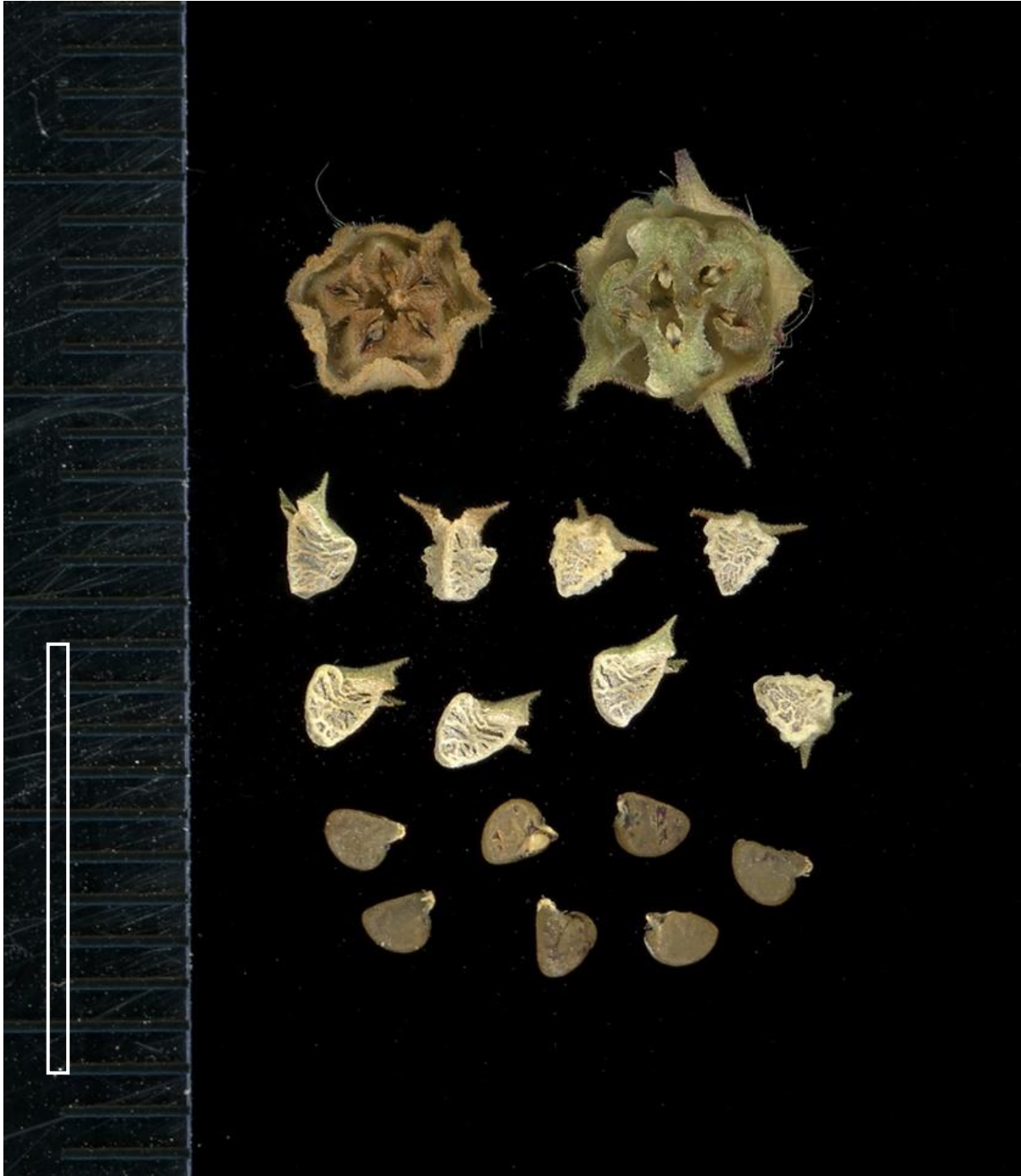
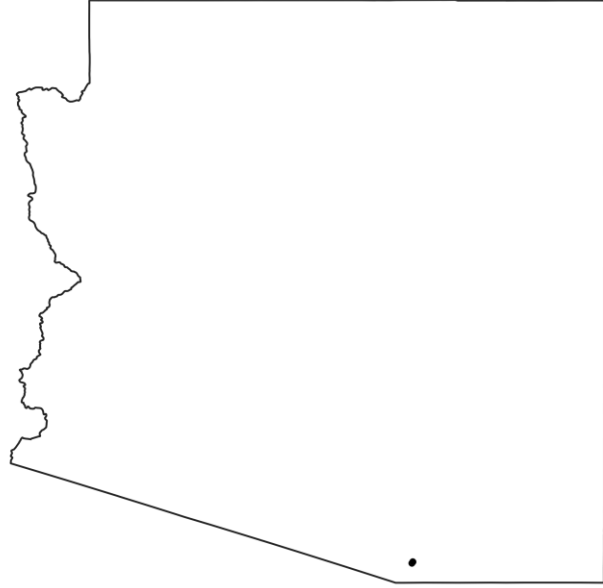


Figure 65. *Sida abutilifolia*. Shizocarps (top), mericarps (middle), and seeds (bottom). White scale bar = 1 cm. Photo by D.M. McNair.

Sida glabra* Mill.Sida ulmifolia* Cav.*Sida glutinosa* Cav.*Sida arguta* Swartz*Sida nervosa* de Candolle*Sida viscidula* Blume

Malva, malva blanco, ortiga, ostotlachpanoni

Sida glabra (Figs. 66–67) is a rarely occurring, upright to sprawling, herbaceous, perennial shrub growing from approximately 1,100 to 1,300 m in Santa Cruz County in southern Arizona. This wide ranging, morphologically variable species becomes much more common to the south of the study area and is native to much of the subtropical and tropical Americas and is also introduced in parts of southeast Asia.



Plants may reach approximately 2 m in height with primarily herbaceous stems. Stems are conspicuously hairy.

Leaf blades are usually less than 8 cm long. The venation is palmate. Leaf teeth are roughly acute. A distinct feature of this species within the genus is its relatively broad, ovate-cordate leaf base (cf. *A. abutilifolia* above).

Corollas are yellow. Petals are approximately 4–10 mm, and calyces are 4–6 mm long. The fruit is a schizocarp with 5 mericarps. Each mericarp contains a single seed and each mericarp has two hardened apices that are approximately 1 mm long.

This species has only recently been documented as part of the North American flora (Carnahan 2017). A relatively long list of synonyms (i.e. more than those listed above) and accompanying discussion can be found in Fryxell (1988).



Figure 66. *Sida glabra*. Photo by S.D. Carnahan.



Figure 67. *Sida glabra*. Photo by S.D. Carnahan.

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