

TWO NEW SPECIES OF MALVACEAE FROM SONORA, MEXICO AND TEXAS

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Abstract: *Batesimalva stipulata* is described from Sonora, Mexico (Mpio. de Alamos) and *Wissadula parvifolia* from Texas (Hidalgo County). The positions of both species in their respective genera are discussed, and keys are provided for the distinction of the new species from their congeners.

Resumen: Se describen *Batesimalva stipulata* de Sonora, México (Mpio. de Alamos) y *Wissadula parvifolia* de Texas (Hidalgo County). Las colocaciones de las dos especies en sus propios géneros son discutidos, y se presentan claves para distinguir las especies nuevas de otras especies relacionadas.

Keywords: Malvaceae, *Batesimalva*, *Wissadula*, Sonora, Texas.

Batesimalva stipulata Fryxell, sp. nov. (Fig. 1).

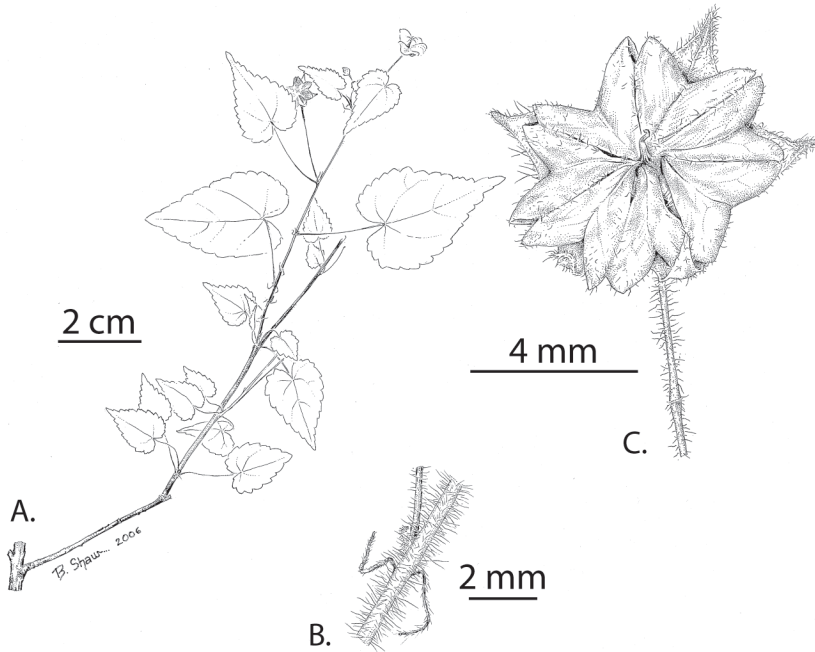
TYPE: MEXICO. SONORA. Mpio. de Alamos: Arroyo Las Rastras, SW edge of the Sierra de Alamos, 26°56'N, 109°3'30"W, 300 m elevation, in tropical deciduous forest understory, 9 Dec 1993, T. R. Van Devender, R. López-E. & D. A. Yetman 93-1457A (HOLOTYPE, TEX).

Suffrutex caulibus pilosis glabrescentibus, laminis foliorum ovato-crenatis, petiolis tenuibus quam laminas subaequantibus, stipulis filiformibus, pedicellis axillaribus quam petiolos brevioribus, involucellis destitutis, calyce pilosi, petalis flavis; fructis 7–8-lobatis.

SUBSHRUB of indeterminate height (specimen apparently grazed); young stems pilose, the hairs whitish, 0.5–1 mm long, soon glabrescent. LEAF BLADES ovate-cordate, 2–3.5 cm long, 2–2.5 cm wide, prominently and coarsely crenate, acute or acuminate, discolorous (at least when young), the lower surface felted-pubescent when young, the upper surface sparsely pubescent (hairs appressed), the climax leaves more or less concolorous and green, the pubescence scattered; petioles 2–3.5 cm long, very slender (0.25 mm diameter), pilose like stem; stipules filiform, 3 mm long, sparsely pilose. INFLORESCENCE with

flowers on pedicels solitary in the leaf axils, 1.5–2 cm long, articulated ca. 5 mm below the flower, sparsely pilose above the articulation; involucler absent; calyx (in bud) prominently and densely pilose, ca. 4 mm long, ca. half-divided; petals yellow, 7–8 mm long, evidently glabrous; staminal column 2.5 mm long, pallid, glabrous, the filaments 1–1.5 mm long, inserted at apex of column, the anthers yellow, numerous (ca. 20?). FRUIT ca. 8 mm in diameter, radiately 7–8-lobed, subglabrous; mericarps 7–8, slightly shorter than the calyx lobes, slightly dehiscent but not fully mature.

Batesimalva Fryxell (Fryxell, 1975, 1988a) is a small neotropical genus now including five species. Four of these occur in northern Mexico and one (*B. killipii* Krapov. ex Fryxell) in Venezuela. The Venezuelan species (Fryxell, 1985), however, has a chromosome number ($2n = 24$) that is different from that of the two Mexican species that are currently cytologically known ($2n = 32$) and it is therefore possibly not congeneric with them (Fryxell and Stelly, 1993). It was initially placed in the genus *Batesimalva* because of the nature of fruit morphology, but this placement is now doubtful because of the differing chromosome number as well as



Batesimalva stipulata

FIG. 1. *Batesimalva stipulata*. A. Branch with flower and fruit. B. Node of stem showing manifest stipules. C. Fruit from above. (Van Devender et al. 93-1457A, TEX).

other morphological differences. The correct generic placement of *B. killipii* is a problem yet to be resolved, especially since the base chromosome number ($x = 12$) is a relatively unusual one for the Malvaceae.

Batesimalva is distinguished generically by the conformation of the fruit and its constituent mericarps. Species of *Batesimalva* have an internal endoglossum in the mericarp that is variably developed. In *B. pulchella* Fryxell it nearly covers the lower cell of the mericarp and confines the solitary seed; in *B. violacea* (Rose) Fryxell the lower cell is partially covered; in *B. lobata* Villarreal-Quintanilla & Fryxell it is greatly reduced; and its nature is unknown in the new species. The fruit and mericarps are well illustrated in Fryxell (1975, Fig. 1) and Villarreal-Quintanilla and Fryxell (1990, Fig. 1). *Batesimalva* bears some resemblance in fruit morphology to *Briquetia* Hochr., *Dirhamphis* Krapov.,

Horsfordia A. Gray, and *Fryxellia* D. M. Bates, but the relationships among these genera remain problematical (Fryxell, 1997) and some realignment of generic boundaries is probably in order. A connection between *Batesimalva* and *Fryxellia* D. Bates remains plausible with consonant chromosome numbers of $2n = 32$ and $2n = 16$, respectively, and such a connection is given weak support by the ITS sequence data of Tate et al. (2005). The close alliance of *Batesimalva* to *Neobrittonia* indicated by the ITS data is contrary to the morphological evidence, although the two genera do share the same base chromosome number ($x = 16$).

The remaining four species (with the exclusion of *Batesimalva killipii*) are compared in Table 1 and in the following key. The new species is distinguished most notably by its yellow corolla, small calyx, and evident stipules, as well as by its Sonoran distribution.

TABLE 1. Distinguishing characters of the Mexican species of *Batesimalva*.

Character	<i>B. violacea</i>	<i>B. pulchella</i>	<i>B. lobata</i>	<i>B. stipulata</i>
Growth habit	shrub	shrub	subshrub	subshrub
Leaf blade	ovate	ovate	lobed	ovate
Stipule length	<0.5 mm	absent	2–3 mm	3 mm
Calyx length	6–8 mm	10–13 mm	7–10 mm	ca. 4 mm
Calyx lobe width	2–4 mm	5–7 mm	2–3 mm	ca. 3 mm
Petal length	6–8 mm	?	10–12 mm	7–8 mm
Petal color	blue-violet	white	lavender	yellow
Flowers	1–4 in the axils	solitary	solitary	solitary
Pediceal	shorter than petiole	longer than petiole	longer than petiole	shorter than petiole
Number of carpels	8–10	8–11	8–10	7–8
Endoglossum	partial	complete	incomplete	?
Distribution	Nuevo León, Coahuila, and Texas (one station)	Tamaulipas	Coahuila	Sonora

KEY TO THE MEXICAN SPECIES OF *BATESIMALVA*

1. Leaf blades palmately 3–5-lobed; corolla 10–12 mm long, lavender (Coahuila) *B. lobata*
1. Leaf blades ovate; corolla 6–8 mm long, variously colored.
 2. Corolla yellow; stipules 3 mm long; carpels 7–8; subshrubs (Sonora) *B. stipulata*
 2. Corolla blue-violet or white; stipules 0–0.5 mm long; carpels 8–11; shrubs.
 3. Flowers usually fasciculate in the leaf axils, the pedicels shorter than the corresponding petiole; corolla blue-violet; stipules less than 0.5 mm long; calyx 6–8 mm long, the lobes 2–4 mm wide (Nuevo León, Coahuila) *B. violacea*
 3. Flowers solitary, the pedicel longer than the corresponding petiole; corolla white; stipules suppressed; calyx 10–13 mm long, the lobes 5–7 mm wide (Tamaulipas) *B. pulchella*

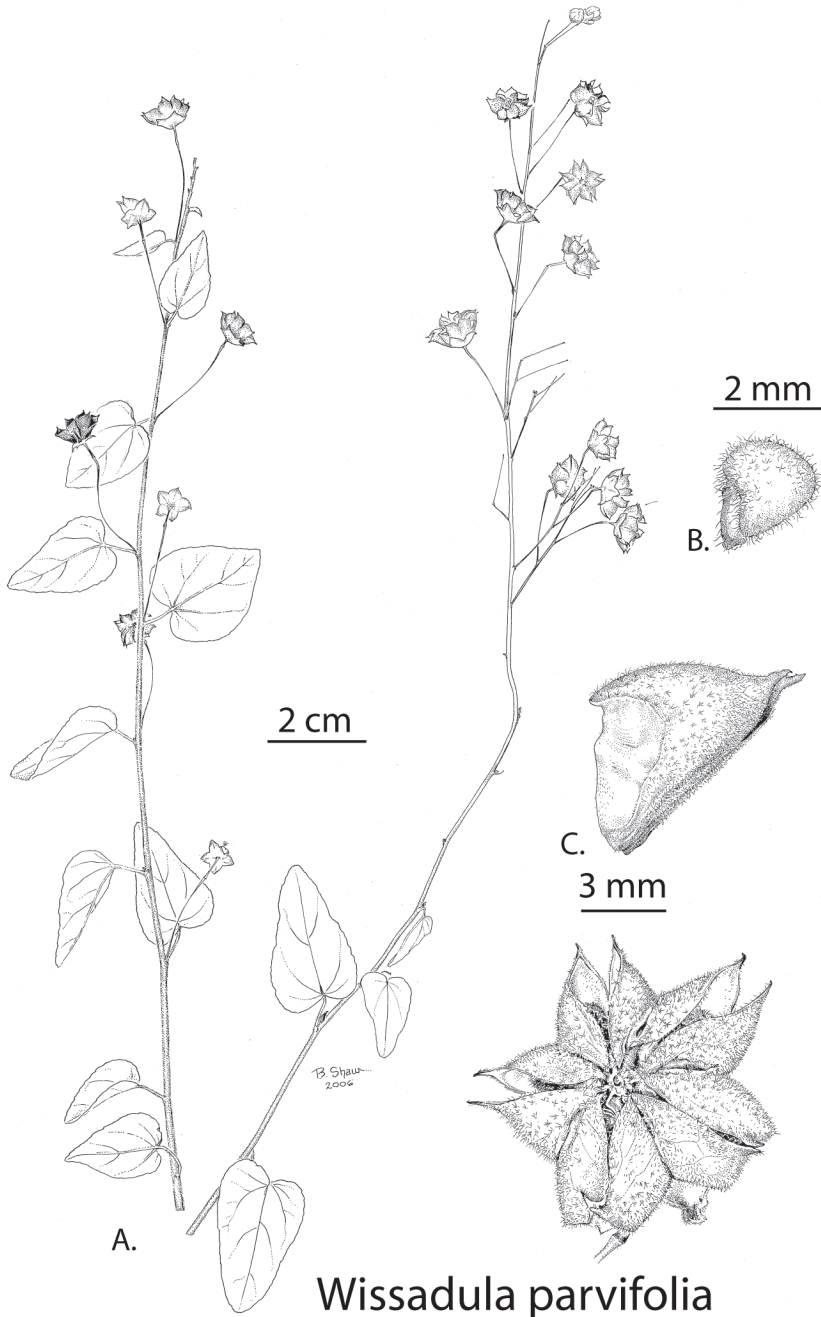
Wissadula parvifolia Fryxell, sp. nov. (Fig. 2).

TYPE: UNITED STATES. TEXAS: **Hidalgo County**: near La Sal del Rey, on roadside, 7 Jul 2005, A. Richardson & K. King 3239 (HOLOTYPE: TEX; ISOTYPE: RUNYON, n.v.).

Suffrutices erecti ramificantes, caulibus tenuis obscure pubescentibus, laminis foliorum discoloribus plerumque quam 3.5 cm longis parvioribus, floribus fructibusque in racemis vel paniculis terminalibus dispositis, pedicellis tenuis 2–3 cm longis, calyce 3–5 mm longi lobis apiculatis, corollis luteo-aurantiacis, fructibus 7–9 mm longis, calycem excedentibus, mericarpiis 5, bulboso-apiculatis.

Erect branched SUBSHRUBS, ca. 1 m tall, the stems slender, minutely and obscurely stellate-pubescent, the hairs scattered, brownish, persistent. LEAF BLADES ovate, more or less cordate, acute or subobtuse, 2.5–3.5 cm long, 2–2.5 cm wide (smaller upward), discolorous, the margins (in

sicc) somewhat undulate (seemingly crenate but actually entire), curved; petioles 1–1.5 (–2) cm long, with pubescence like stem although somewhat denser; stipules minute, early deciduous. INFLORESCENCE a terminal raceme or panicle surpassing the foliage; the pedicels axillary, slender, 2–3 cm long, articulated ca. 5 mm below the flower, minutely stellate-pubescent, more densely so above the articulation; involucrel absent; calyx 3–5 mm long, ca. half-divided, the lobes short-apiculate, the midribs obscure but sometimes raised distally; corolla ca. 5 mm long, seen only in bud (when yellow, but collectors' note: "flowers orange color, with a reddish ring about 1 mm from the base, leaving an orange colored inner ring"). FRUITS exceeding the calyx, 7–9 mm long, minutely and obscurely pubescent; mericarps 5, distally bulbous-apiculate, divided into lower and upper



Wissadula parvifolia

FIG. 2. *Wissadula parvifolia*. A. Fruiting branches. B. Seed. C. Mericarp (lateral view), and mature fruit from above. (Richardson & King 3239, TEX)

cells by a relatively obscure constriction, the lower cell indehiscent, 1-seeded, the upper cell dehiscent, with 2 collateral seeds, the seeds blackish, 2.5 mm long, minutely pubescent.

ADDITIONAL SPECIMEN EXAMINED: **UNITED STATES. TEXAS: Hidalgo Co.:** Tres Corales Reserve (Nature Conservancy), at intersection of Linn-Raymondville hwy. and Sal del Rey road, locally common in disturbed sites, 13 Oct 1985, A. D. Zimmerman & J. Poole 2303 (PARATYPE: TEX).

The genus *Wissadula* was treated comprehensively by Fries (1908) but now needs a modern revision. The majority of species are South American (some of which are now pantropical weeds) and only a few species reach as far north as Mexico and the southern United States (Fryxell 1988b). The new species is distinguished from other species of *Wissadula* by its smaller leaves, obscure stipules, and the relatively obscure constriction in the center of the mericarp. It is similar in the latter characteristic to *W. contracta* (Link) R. E. Fries, but is very different from it in most other characters and thus not to be confused with it.

The new species cannot be accommodated among the four species previously known from Mexico, *Wissadula contracta*,

W. excelsior (Cav.) C. Presl, *W. hernandioides* (L'Hér.) Garcke (as *W. amplissima* (L.) sensu R. E. Fr.), and *W. periplocifolia* (L.) Presl ex Thwaites (Fryxell, 1988b), and does not match the two heretofore reported from the United States, *W. periplocifolia* and *W. hernandioides*. It should be noted that most authors (including Fryxell, 1988b and Correll & Johnston, 1970) followed the usage of Fries (1908) in giving the name *Wissadula amplissima* (L.) R.E. Fr. to the plant that is common in Mexico and southern Texas (and elsewhere), until Krapovickas (1996) pointed out that this name correctly applies to a different Central American species and that the name *Wissadula hernandioides* should be used instead. The following key presents the distinctions.

KEY TO THE TEXAS-MEXICAN SPECIES OF *WISSADULA*

- 1. Leaf blades up to 3.5 cm in length; stipules essentially obsolete; corolla orangish *W. parvifolia*
- 1. Leaf blades 4–11 cm long; stipules manifest, 3–12 mm long; corolla usually yellowish or white, sometimes with a reddish center.
 - 2. Leaf blades more or less elliptic, widest above the base, truncate; herbage ferruginous-tomentose *W. excelsior*
 - 2. Leaf blades ovate or triangular, widest at the base, more or less cordate; herbage with whitish to tan tomentum.
 - 3. Leaves shallowly cordate, narrowly triangular with straight margins; corollas sometimes with a red center *W. periplocifolia*
 - 3. Leaves deeply cordate, broadly ovate with rounded margins; corollas never with a red center.
 - 4. Inflorescence an open panicle; corollas yellow; mericarps with the medial constriction pronounced *W. hernandioides*
 - 4. Inflorescence a crowded, narrow, racemiform panicle; corollas white; mericarps with medial constriction imperfectly developed *W. contracta*

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LITERATURE CITED

Correll, D. S. and M. C. Johnston. 1970. *Manual of the vascular plants of Texas*. Renner: Texas Research Foundation.
 Fries, R. E. 1908. Entwurf einer Monographie der Gattungen *Wissadula* und *Pseudabutilon*. Kongl.

Svenska Vetenskapsakad. Handl. 43(4): 1–114 + 10 plates.
 Fryxell, P. A. 1975. *Batesimalva* y *Meximalva*: dos géneros nuevos de malváceas mexicanas. Bol. Soc. Bot. México. 35: 23–36.
 ———. 1985. Four new species of Malvaceae from Venezuela. Syst. Bot. 10: 273–281.
 ———. 1988a. *Batesimalva*, pp. 129–131 in Malvaceae of Mexico. Syst. Bot. Monogr. 25: 1–588.
 ———. 1988b. *Wissadula*, pp. 449–455 in Malvaceae of Mexico. Syst. Bot. Monogr. 25: 1–588.
 ———. 1997. The American genera of Malvaceae—II. Brittonia 49: 204–269.
 ——— and D. M. Stelly. 1993. Documented chromosome numbers 1993: 2. Additional chromosome counts in the Malvaceae. Sida 15: 639–647.

- Krapovickas, A.** 1996. La identidad de *Wissadula amplissima* (Malvaceae). *Bonplandia* 9(1-2): 89-94.
- Tate, J. A., J. Fuertes Aguilar, S. J. Wagstaff, J. C. La Duke, T. A. Bodo Slotta, and B. B. Simpson.** 2005. Phylogenetic relationships within the tribe Malveae (Malvaceae subfamily Malvoideae) as inferred from ITS sequence data. *Amer. J. Bot.* 92: 584-602.
- Villarreal-Quintanilla, J. A. and P. A. Fryxell.** 1990. Una nueva especie de *Batesimalva* (Malvaceae) de Coahuila, México. *Acta Bot. Mex.* 11: 19-22.