

Notes on the Flora of Arizona VII

Charles T. Mason, Jr.
Rebecca K. Van Devender
Gregory D. Starr

Herbarium, University of Arizona

Thirteen interesting plant collections have come to the attention of the University of Arizona Herbarium staff and are reported here. Of these, ten are additions to the flora of Arizona, and three are confirmations of tentatively recognized species. Among the ten additions, two are Mexican species recorded north of the border for the first time, four are introduced weeds, three are newly discovered natives, and one represents the establishment without cultivation of a common ornamental shrub. Voucher specimens are deposited in the University of Arizona Herbarium.

ALISMATACEAE

Sagittaria montevidensis Cham. & Schlecht.

subsp. *calycina* (Engelm.) Bogin

Sagittaria calycina Engelm.

Lophotocarpus calycinus (Engelm.) J. G. Sm.

Emergent aquatic annual to 2 m tall; leaf blades sagittate, broadly ovate, to 20 cm or more long and wide; pistillate heads up to 2 cm in diameter; sepals orbicular-ovate, about 13 mm long.

Sagittaria montevidensis differs from other southwestern species of *Sagittaria* in having the sepals of the fruiting heads appressed or spreading not reflexed, and the pedicels recurved and noticeably thickened. The key to species of *Sagittaria* in *Arizona Flora* (Kearney and Peebles, 1960, pp. 68-69) may be amended as follows to include *S. montevidensis*:

1. Leaves all or mostly entire; linear, lanceolate, or elliptic 1. *S. graminea*
1. Leaves all or mostly sagittate; broader 1a
 - 1a. Fruiting heads maturing on stout recurving pedicels; sepals not reflexed in fruit; filaments of stamens clothed with papillae *S. montevidensis*
 - 1a. Fruiting heads maturing on slender spreading or ascending pedicels; sepals reflexed in fruit; filaments glabrous 2

The single Arizona collection was found in a stock tank 2 miles north of Elfrida, Cochise County, at least 4150 feet elevation (T. R. Van Devender, s.n., Aug. 1981). *Sagittaria montevidensis* subsp. *calycina* has a widespread distribution in the United States, ranging from Ohio and Michigan west to North Dakota, New Mexico and California, and south to Virginia, Tennessee, Louisiana and Texas (Correll and Correll, 1972). It also has been recorded from Chihuahua, Mexico (R. K. and T. R. Van Devender 84-499, Oct. 1984).

HYDROCHARITACEAE

Hydrilla verticillata (L. f.) Royle

Submerged aquatic with tuberiferous rhizomes and profusely branching stems; leaves 6-15 mm long in whorls of 4-6, sessile, obovate-oblong, sharply serrate; flowers reportedly unisexual, spathaceous, solitary in axils of leaves. No flowering specimens have been seen by us.

Vegetatively *Hydrilla* closely resembles *Elodea* (also called *Anacharis* and *Egeria*) in its whorls of 4-6 leaves, but differs in having leaves with prominent serrations on the margins and very small thornlike projections on the underside of the midrib. *Hydrilla* may be added to the Hydrocharitaceae key in the supplement to *Arizona Flora* (p. 1039) with the following modifications:

1. Stems elongated, leafy; leaves in whorls of 3-6 2
1. Stems short and condensed, bearing a tuft of elongated ribbon-like leaves, 1.5 - 2.0 dm long 2. *Vallisneria*
2. Leaves entire or at most serrulate 1. *Elodea*
2. Leaves serrate with thornlike projections on underside of midrib *Hydrilla*

This aquatic weed has recently been collected in the Phoenix area. The first specimen was sent to the Herbarium in July 1984 by John Fishler from a golf course pond at 103rd Avenue and Indian School Road. Since then an additional collection has been made in the same general area (R. D. Spilsbury, s.n., Sept. 1985).

Hydrilla is believed to have originated in Central Africa (Yeo and McHenry, 1977). In the United States it was first discovered in 1958 on Florida's west coast. By 1976 it apparently had spread throughout the Southeast, and was beginning to invade California lakes and canals. The plant propagates rapidly by vegetative methods from stem fragments, tubers, and special buds called turions. Dense mats of *Hydrilla* branches floating near the water

surface can clog waterways and displace native vegetation (*Ibid.*).

CYPERACEAE

Eleocharis parvula (Roem. & Schult.) Link

var. **anachaeta** (Torr.) Svenson

Caespitose herb 2-7 cm tall with capillary stems and small tubers; spikelets 2-3.5 mm long; perianth bristles 3 or 0; stigmas 3; achenes trigonous.

This species was provisionally included by Kearney and Peebles in the flora of Arizona because of its widespread distribution, including the adjacent states of California, Nevada and New Mexico. A specimen from the Dobson Ranch Golf Course at Baseline and Dobson Roads, Mesa, (R. D. Spilsbury, s.n., Sept. 1985) confirms its presence.

POLYGONACEAE

Eriogonum deserticola Wats.

Much branched shrub to 1.5 m tall; branchlets white tomentose and leafy, but soon glabrous and leafless; leaves ovate to suborbicular, 5-15 mm long and wide, petioles 5-12 mm long; involucre subsessile, solitary in axils of bracts, turbinate-campanulate, about 2 mm long; flowers on 3-5 mm long pedicels, yellow with greenish or reddish midribs, 3-3.5 mm long, silky villous outside.

In Kearney and Peebles' manual *Eriogonum deserticola* keys out near *E. fasciculatum* from which it differs in having yellow flowers and solitary few-flowered involucre instead of white or pink flowers and clustered, many-flowered involucre. The key to species (p. 233) may be amended to read:

- 30. Perianth silky-villous 30a
- 30. Perianth glabrous 31
- 30a. Involucre dense, subcapitate; leaves linear to narrowly elliptic, fasciculate; perianth white or pink ... *E. fasciculatum*
- 30a. Involucre solitary, leaves ovate to suborbicular, perianth yellow *E. deserticola*

Eriogonum deserticola occurs on sand dunes in southeastern California and northwestern Sonora. In Arizona it was collected about 2 miles northeast of United States-Mexico Boundary Monument 198, Yuma County, at 420 feet elevation. (G. Yatskievych 81-216 and F. Reichenbacher 644, June 1981).

AIZOACEAE

Mesembryanthemum nodiflorum L.

Much branched erect to decumbent annual, 5-20 cm tall; leaves alternate, linear, subterete, 1-2 cm long; flowers small, solitary, axillary, sessile or on short stout pedicels; petals white, 4-5 mm long; ovary 5-loculed, opening by valves.

Mesembryanthemum nodiflorum represents the second species of this genus to be reported for Arizona; *M. crystallinum* L. was recorded earlier by Pinkava *et al.* (1978). Both species are succulent annuals densely covered with large vesicles, but they can be readily distinguished by the broad ovate leaves of *M. crystallinum* as contrasted to the narrow cylindrical leaves of *M. nodiflorum*.

The genus can be added to the Aizoaceae key in *Arizona Flora* (p. 280) by including an opening couplet:

- 1a. Petals present, ovary inferior *Mesembryanthemum*
- 1a. Petals absent; ovary superior 1.

A native of Africa, *Mesembryanthemum nodiflorum* has been established for many years along California coastal areas from Santa Barbara southward (Munz, 1959). It was first collected in Arizona by K. C. Hamilton, University of Arizona weed specialist, in March and April 1983 from two localities in Maricopa County north of Maricopa.

PORTULACACEAE

Talinum humile E. L. Greene

Talinum greenmanii Harshb.

Succulent herb to 5 cm tall with a tuberous thickened root; leaves terete, 1-5 cm long, congested near the base of the plant; flowers yellow, about 4 mm long in terminal cymes overtopped by leaves; fruit a capsule 4-5 mm long.

Talinum humile differs from other Arizona *Talinum* (Kearney and Peebles, 1960) in having yellow flowers arranged in terminal cymes. It differs from *T. marginatum* from the Huachuca Moun-

tains (Toolin, in press) in having sessile leaves which overtop the inflorescence. The key to species of *Talinum* in *Arizona Flora* (p. 286) may be amended to include *T. humile* as follows:

- 2. Flowers in terminal cymes 2a
- 2. Flowers solitary or in very few-flowered axillary cymes ... 5
- 2a. Flowers yellow, overtopped by leaves *T. humile*
- 2a. Flowers pink 3

Talinum humile has only been collected in Arizona from 5.5 miles south of Sonoita, Santa Cruz County. A large population is reported over an area of 50 by 25 feet (J. Kaiser 1393, July 1981). *Talinum humile* is previously known only from the type locality in the Pinos Altos Mountains, Grant County, New Mexico (Greene, 1881), and from the Sierra de Ajusco in Mexico. The Sonoita collection represents the only known United States population, because search has failed to relocate specimens from the type locality (P. R. Neal, pers. comm.).

CRUCIFERAE

Cardaria pubescens (Meyer) Rollins

var. **elongata** Rollins

Hymenophysa pubescens C. A. Meyer

Rhizomatous perennial herb, 20-40 cm tall; leaves oblong, 10-30 mm long, all sessile and mostly auriculate-clasping, short-pubescent, margins finely serrate-dentate; flowers white, about 2 mm long in corymbose racemes; fruits inflated, subglobose silicles.

Cardaria pubescens is very similar in appearance to *C. draba* (L.) Desv., a much more common species in Arizona. Kearney and Peebles did not recognize the genus *Cardaria* in *Arizona Flora* and placed *C. draba* in *Lepidium* (*Lepidium draba* L.). In the 1960 supplement this species was transferred to *Cardaria*, which was distinguished from *Lepidium* by the subglobose, inflated and indehiscent fruits.

The two species of *Cardaria* may be separated as follows:

- 1. Pods pubescent; leaves all sessile, mostly auriculate-clasping *C. pubescens*
- 1. Pods glabrous; basal leaves petioled *C. draba*

Cardaria pubescens is an introduced weed which probably originated in Central Asia and came to the United States as a contaminant in alfalfa seed (Rollins, 1940). It is found primarily in cultivated fields, roadsides and waste ground, and has become widespread in the United States. The first collection for Arizona was made by Hugh Foraker on his ranch in Skull Valley west of Prescott, Yavapai County, in June 1984.

According to Rollins the North American plants are not typical, having a more elongate infructescence and smaller silicles than those described from Central Asia. He named the North American plants *C. pubescens* (Meyer) Rollins var. *elongata* Rollins (Rollins, 1940).

LEGUMINOSAE

Cassia artemisioides Gaud.

Rounded, gray pubescent shrub to 2 m tall; leaves pinnate, leaflets 3-6 pairs, linear-terete, 2-2.5 cm long; flowers yellow, about 1 cm long, in short racemes; pods flat, 5-7.5 cm long.

Cassia artemisioides, a winter and spring flowering species, can be distinguished from all other Arizona *Cassias* by its linear-terete leaflets. The key in *Arizona Flora* (pp. 404-405) may be altered by starting with the following couplet:

- 1a. Leaflets linear and terete, about 1 mm broad *C. artemisioides*
- 1a. Leaflets broader than 1 mm, flat 1.

A native of Australia, *Cassia artemisioides* is widely cultivated in southern Arizona under the name Feathery Cassia. Five uncultivated individuals, ranging from 0.5 to 1.0 m tall, were observed near Speedway and Anklam Roads west of Tucson in an undeveloped area (T. R. Van Devender 85-10, March 1985).

CONVOLUVULACEAE

Ipomoea cardiophylla A. Gray

Twining vine: leaves cordate-ovate, 5-8 cm long, 2-4 cm wide, acuminate; sepals white scarious-margined to the apex; corolla 20-25 mm long, tube white, limb rose or violet.

Ipomoea cardiophylla is treated in *Arizona Flora* although no specimens from Arizona were seen by the authors. They included it on the basis that House (1908) gave the range for the species as "western Texas to Arizona and Mexico", but he too did not cite an Arizona collection. The type specimen was collected by Wright on the western borders of Texas, in the mountains near El Paso (Gray, 1886). Two Arizona specimens of *Ipomoea cardiophylla* are deposited at the University of Arizona Herbarium. Both were found in Cochise County, but 14 years intervened between collections. The earlier specimen was found at the site of an old mining operation, southwest of the Mule Mountains, between Huachuca Terrace and Palominas (L.N. Goodding 206-61, Sept. 1961). In September 1975 the plant was collected again in an arroyo five miles south of Tombstone at about 3700 feet elevation (S. Walker s.n.). Therefore, *Ipomoea cardiophylla* is an established member of the Arizona flora.

VERBENACEAE

Verbena ehrenbergiana Schauer

Erect herb with opposite, pinnatifid, coarsely serrated leaves; inflorescence slender, paniculate, remotely flowered; corolla inconspicuous, about 1 mm broad; nutlets smooth, 1 mm long, commissural faces meeting sharply at right angles.

This species is tentatively recognized in *Arizona Flora*, but without definite locality. A specimen collected by D. Tuttle at Orange Avenue and Giss Access Road, Yuma, in May 1985 verifies the presence of *Verbena ehrenbergiana* in Arizona. The plant is not known to occur elsewhere in the United States, but is widespread throughout eastern Mexico.

SOLANACEAE

Solanum hindsianum Benth.

Shrub to 3 m tall, usually armed with scattered spines; leaves ovate to oblong, 2-6 cm long, covered with a dense feltlike pubescence; flowers solitary, blue to purple, to 5 cm in diameter; fruit globose, 1-2 cm in diameter, smooth and pale green with darker green stripes.

Solanum hindsianum differs from all other Arizona *Solanum* species in being a woody shrub. The key to species in *Arizona Flora* (Kearney and Peebles, 1960, pp. 756-757) may be amended to include *S. hindsianum* as follows:

4. Herbage and calyx spiny, or if (exceptionally) unarmed then densely and minutely whitish-lepidote. Corolla 20-50 mm wide, blue, purple, violet or nearly white 4a
4. Herbage and calyx not spiny, pubescence never lepidote .. 6
- 4a. Plant a shrub *S. hindsianum*
- 4a. Plants annual or perennial, never shrubby 5

Solanum hindsianum is a common plant of the Sonoran Desert flora in Baja California and coastal Sonora, Mexico. Previously it had been collected about seven miles south of the International Border in northwestern Sonora. A single collection has been made in Arizona from the Puerto Blanco Mts. Organ Pipe Cactus National Monument, 1.5 km south of Pinkley Peak, at 585 m elevation. (M.L. Lechner, January 1986). This collection is the first record for the United States.

COMPOSITAE

Dyssodia porophylla (Cav.) Cav. subsp. *porophylla* var. *porophylla*

Glabrous annual to 0.5 m tall, branching above; leaves 3-4 cm long, divided into 9-15 lobes, some of the lobes tipped with wiry setae; involucre about 12 mm high; heads discoid, 40-50 flowered, corollas yellow.

Dyssodia porophylla may be distinguished from all other Arizona *Dyssodias* by the peculiar fringed and horned bracts of the phyllaries. These characters may be worked into the key to species in *Arizona Flora* (p. 932) as follows:

1. Heads large, the disk 1-2 cm or more high; pappus of 10-20 paleae, each dissected into numerous bristles 1a
1. Heads smaller, the disk less than 1 cm high, or (in *D. acerosa*) up

to 1.5 cm 3

- 1a. Annual; calyculate phyllaries with 5-10 wiry setae; principal phyllaries keeled, with one large terminal gland, the keel produced beyond the gland into a horn-like appendage about 1 mm long *D. porophylla*

- 1a. Perennial; calyculate phyllaries entire or occasionally with one or two lateral lobes; principal phyllaries not bearing a horn-like appendage 2

Dyssodia porophylla subsp. *porophylla* was discovered in Dixie Canyon, Mule Mountains, Cochise County (R. & S. Luetcke, Sept. 1984). This is the first record for the United States, as well as for Arizona. Previously the plant has been known from Mexico, primarily the west-central states, south into Guatemala (Strother, 1969). It is also reported from at least two localities in Sonora, the nearest of these to the Arizona population being Palm Canyon, about 17 miles southeast of Magdalena (K. Birgy & G. Starr, Oct. 1982).

Hedypnois cretica (L.) Willd.

Rhagadiolus heydypnois All.

Rhagadiolus creticus All.

Diffusely branched annual, flowering March to May; leaves variously lobed to entire, cauline leaves sessile and somewhat auriculate-clasping; heads small on naked peduncles; flowers yellow, all ligulate; phyllaries subequal, hardened and keeled in fruit, enclosing the outer achenes; mature achenes incurved, narrow and elongate, multiribbed and hispidulous; pappus of outer achenes a short paleaceous crown, that of the inner achenes double, the outer series of short pales, the inner row of longer bristle-tipped scales.

The genus keys in *Arizona Flora* by modifying Division B, couplet 9 (p. 831) to read:

9. Plants scapose or subscapose 133. *Microseris*
9. Plants caulescent 9a
- 9a. Basal rosette prominent, stem leaves few 134. *Krigia*
- 9a. Basal rosette absent, stems leafy *Hedypnois*

In April 1968 Warren Jones brought a specimen of *Hedypnois cretica* that he collected on campus to the University of Arizona Herbarium for identification. More recently the plant has been found growing as a weed in yards and along roadsides from several new areas within Tucson. It has also been collected along the banks of the Santa Cruz River north of Tucson (R. Condit, s.n., April 1982). *Hedypnois* seems well established and is locally abundant in the area of the University of Arizona. It is native to the Mediterranean region, and has become rather widespread in California (Munz, 1974).

Literature Cited

- Correll, D. S. and H. B. Correll. 1972. *Aquatic and Wetland Plants of Southwestern United States*. Environmental Protection Agency. Washington, D.C.
- Gray, A. 1886. *Synoptic Flora of North America*. 2(1):213. Ivison, Blakeman, Taylor and Co. New York.
- Greene, E. L. 1881. New plants of New Mexico and Arizona. *Bot. Gaz.* 6:183.
- House, H. D. 1908. The North American species of the genus *Ipomoea*. *Ann. New York Acad. Sci.* 18:181-263.
- Kearney, T. H. and R. H. Peebles. 1960. *Arizona Flora* (with supplement). Univ. California Press. Berkeley.
- Munz, P. A. 1959. *A California Flora*. Univ. California Press. Berkeley.
- Munz, P. A. 1974. *A Flora of Southern California*. Univ. California Press. Berkeley.
- Pinkava, D. J. et al. 1978. Plants new to Arizona Flora VI and new distributional records of noteworthy species. *Journ. Arizona-Nevada Acad. Sci.* 13:84.
- Rollins, R. C. 1940. On two weedy crucifers. *Rhodora* 42:302-306.
- Strother, J. L. 1969. Systematics of *Dyssodia* Cavanilles (Compositae: Tageteae). *Univ. California Publ. Bot.* 48:1-88.
- Toolin, L. J. 1986. Rare Plants in the U.S. Flora from Southeastern Arizona. *Phytologia* (in press).
- Yeo, R. R. and W. B. McHenry. 1977. *Hydrilla*, a new noxious aquatic weed in California. *California Agric.* (Oct.) p. 4-5.