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A NEW SPECIES OF ASCLEPIAS (ASCLEPIADACEAE) FROM NORTHWESTERN NEW MEXICO

Kenneth D. Heil1, J. Mark Porter2, and Stanley L. Welsh3

ABSTRACT.—Asclepias sanjuanensis Heil, Porter, & Welsh, a new species from the pinyon-juniper woodlands of the San Juan River Valley, San Juan County, New Mexico, is described and illustrated. The species appears to be local and rare. Similar to A. ruthiae Maguire, it is distinguished by the greater number of flowers per inflorescence, the larger number of stems, and the pubescence characters.

A new species of Asclepias was discovered among specimens taken recently from the San Juan Valley of northwestern New Mexico. The rare new entity apparently falls into the subgenus Asclepiodella (Small) Woodson according to Woodson (1954). The subgenus is represented by A. ruthiae Maguire in Maguire & Woodson, A. eastwoodiana Barneby, A. cutleri Woodson, A. cordifolia (Benth.) Jepson, A. brachystephana Torr., and A. uncialis Greene, all occurring in western North America. Additional species, A. cinerea Walt. and A. feayi Chapm. ex Gray, occur in the eastern United States. The species described herein was discovered by Barbara Jenkins, Londa Smith, and Marc Werthington while performing a floristic study of the Fred Edwards Wilderness Walk at San Juan College, Farmington, New Mexico, during the spring of 1988. Following the initial discoveries, a survey of surrounding areas was conducted to ascertain the distribution of the taxon. The plant is described as follows.

Asclepias sanjuanensis Heil, Porter, & Welsh, sp. nov.

Asclepiate ruthia Maguire affinis sed in floribus et caulis plus numerosis et pubescentis differt.

Herbaceous perennial; stems prostrate to ascending, 4–8.3 cm long, glabrous below, becoming minutely tomentulose above, branched below ground, with 2–7 stems from a woody taproot; lowermost leaves scalelike; leaves (1) 2–4 cm long, 0.4–2.5 cm broad, oblanceolate, narrowly acute, approxi-

mate to opposite, petiolate, the petiole 0.2–0.5 cm long, white tomentulose on leaf margins and midrib of abaxial leaf surface only; inflorescence terminal, rarely axillary, sessile, sparsely pilosulose, umbelliform cyme, with 4–15 flowers; pedicels 1.2–2.8 cm long; flowers small; calyx lobes lanceolate, 1.8–3.2 mm long, reflexed; corolla reflexed-rotate, pale violet, the lobes 3.5–6 mm long; column 0.4–0.7 mm high, ca 1.3–3 mm thick, reddish green; hoods 1.5–2.5 mm long, saccate, truncate, reddish violet with cream to yellowish margins, glabrous, the marginal auricles more or less erect, lanceolate; horn ca 2.3 mm long, included to barely exerted from the hood, attached near the middle and erect from it; anther head 1.9–3 mm high, ca 1.3–2 mm in diameter, the wings narrow; pollinarium ca 0.23 mm long, the corpusculum ca 0.08 mm long, ca 0.04 mm wide, the translator arm ca 0.07 mm long, the pollinia 0.15 mm long; follicle 3.5–6.5 mm long, 1.1–1.6 mm wide, puberulent, smooth, erect on a reflexed pedicel; seeds ca 1 mm long.

TYPE.—USA: New Mexico, San Juan County, Farmington, along the Fred Edwards Wilderness Walk on the campus of San Juan College; T30N, R13W, S35, NW 1/4, 22 May 1988, K. D. Heil 4338 (Holotype BRY; Isotypes ARIZ, MO, NY, NMC, SJNM).

Asclepias sanjuanensis occurs on sandy or sandy loam soils, usually in disturbed sites, i.e., erosion channels, trails (human or animal), and two-track roadways. The populations are known from 1,524 to 1,676 m on

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slopes and floodplains of the San Juan River Valley. They occur in pinyon-juniper woodlands (with *Pinus edulis*, *Juniperus osteosperma*, *Quercus gambeli*, *Purshia tridentata*, *Mirabilis multiflora*, *Eriogonum microthecum*, and *Penstemon ophianthus*). Subsequent to the initial discovery, two additional collections were made at Farmington and near Bloomington, New Mexico. Only solitary plants were found at both of those locations. Preliminary field investigations indicate that the taxon is a local endemic in a region approximately 33 km in length along the San Juan River. The plants flowered first between early and late April in 1988 and continued to flower into May. Fruit matured by mid-June.

The sessile or essentially sessile, erect, open hoods, which possess a deeply saccate basal attachment, are characters that associate *A. sanjuanensis* with members of subgenus Asclepiodella. The species is a near congener of both *A. ruthiae* and *A. eastwoodiana*, with which it can be easily confused. However, it is
Table 1. Morphological and ecological comparison of *Asclepias sanjuanensis*, *A. ruthiae*, *A. eastwoodiana*, and *A. cutleri*.

<table>
<thead>
<tr>
<th>Character</th>
<th>sanjuanensis</th>
<th>ruthiae</th>
<th>eastwoodiana</th>
<th>cutleri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of flowers</td>
<td>4–15 (mean = 10)</td>
<td>2–6</td>
<td>3–5(14)</td>
<td>3–5(7)</td>
</tr>
<tr>
<td>Number of branches</td>
<td>2–7</td>
<td>1(2)</td>
<td>1(3)</td>
<td>1(2)</td>
</tr>
<tr>
<td>Herbage pubesence</td>
<td>sparsely puberulent</td>
<td>densely puberulent</td>
<td>sparsely puberulent</td>
<td>appressed puberulent</td>
</tr>
<tr>
<td>Hood pubesence</td>
<td>glabrous</td>
<td>puberulent or glabrous</td>
<td>glabrous</td>
<td>glabrous</td>
</tr>
<tr>
<td>Arricles of hood</td>
<td>erect</td>
<td>obscure, not erect</td>
<td>erect</td>
<td>erect</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>lanceolate to broadly lanceolate</td>
<td>broadly ovate to broadly lanceolate</td>
<td>lanceolate to broadly ovate</td>
<td>filiform</td>
</tr>
<tr>
<td>Leaf pubesence</td>
<td>margins and veins</td>
<td>dense on entire surface</td>
<td>margins and veins</td>
<td>entire surface</td>
</tr>
<tr>
<td>Habit</td>
<td>prostrate to ascending</td>
<td>prostrate</td>
<td>prostrate to ascending</td>
<td>erect–ascending</td>
</tr>
<tr>
<td>Habitat</td>
<td>disturbed</td>
<td>undisturbed to disturbed</td>
<td>disturbed</td>
<td>disturbed</td>
</tr>
<tr>
<td>Locale</td>
<td>NW New Mexico</td>
<td>SE Utah, N Arizona</td>
<td>Central Nevada</td>
<td>SE Utah, N Arizona</td>
</tr>
</tbody>
</table>

allopatic with both of those taxa. The close relationship between *A. ruthiae* and *A. eastwoodiana* is not disputed (Cronquist et al. 1984); in fact, these taxa were at one time considered conspecific (Woodson 1954). *Asclepias sanjuanensis* fits well into this species group based on morphological and ecological characteristics (Table 1). It differs from *A. ruthiae* by the greater number of flowers per inflorescence, the larger number of branches from the summit of the root crown, the leaf pubescence characters, the leaf shape, and the erect arricles. From *A. eastwoodiana* it differs in flower number (but not as greatly as from *A. ruthiae*) and in the number of branches from the root crown.

It appears that *A. sanjuanensis* is most like the remote *A. eastwoodiana*, which occurs in central Nevada (Barney 1945, Cronquist et al. 1984). Between these two species is the much more widespread *A. ruthiae*, which occurs in southeastern Utah and north central Arizona (Welsh et al. 1987, Cronquist et al. 1984). It seems probable that both *A. sanjuanensis* and *A. eastwoodiana* diverged from an ancestral series now called *A. ruthiae*. Possibly the similarities between the two geographical isolates are the result of parallel evolution.

*Asclepias cutleri* Woodson is quite distinct morphologically from the aforementioned western members of this complex (e.g., appressed pubescence and filiform leaves). *Asclepias brachystephana*, located from Trans-Pecos Texas to southern Arizona and south to central Mexico, differs in its linear lanceolate leaves, its sparse, more or less appressed pubescence of the leaves, and its ascending to erect habit.

*Asclepias sanjuanensis* is, however, strikingly similar to these and other members of the subgenus in its ecological adaptations. *Asclepias cutleri* is adapted to unstabilized sand and is conspicuously absent from undisturbed localities. Likewise, *A. eastwoodiana*, *A. cordifolia*, and *A. brachystephana* are adapted to sites that undergo continuous erosion or prolonged disturbance, usually sandy or alkaline clay sites. We reject the proposition that these are pioneer species of succession but, rather, believe they are species highly adapted to sites that undergo continual disturbance, e.g., erosion channels, wash slopes, and dunes. *Asclepias eastwoodiana* is associated with highly erodable alkaline clay hills. *Asclepias cordifolia* grows on gravel hills or talus slopes. *Asclepias ruthiae*, while found occasionally on
undisturbed habitats, grows often in areas of shifting sands and in gullies and other erosion channels (Cronquist et al. 1984).

Until a detailed study of *Asclepias* is undertaken, the relationships of this complex to other subgenera will remain unclear. Barneby (1945) suggested that *A. eastwoodiana* is closely allied to *A. involucrata* Engelm. ex Torr., considered by Woodson (1954) to be within subgenus Asclepias, series Macrodictes. We do not consider *A. sanjuanensis* to be closely allied to *A. involucrata*.

**Acknowledgments**

Much credit is due the systematic botany students Barbara Jenkins, Londa Smith, and Marc Werthington for the discovery of this plant. We thank Fred Edwards for searching for populations in the San Juan College area and acknowledge Kaye Hugie Thorne for the illustrations.

**Literature Cited**


