The Status of the Genus Asclepias in New Mexico

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The genus Asclepias contains about 120 species, most of which are native to the Americas. A recent summary of the genus in New Mexico lists 31 taxa. There have been several additions to the group since the publication of Martin and Hutchins *A Flora of New Mexico*. Below are a few comments on the group, and updated key to the species, and distribution maps for each taxon.

Since the late nineteenth century New Mexico has been carrying a phantom taxon in its flora, *Asclepias scaposa*. No specimens exist in local herbaria. Its presence in New Mexico depends on a single sheet at the Missouri Botanical Garden. R.E. Woodson, in his 1954 monograph of the genus *Asclepias*, describes the problem:

*Asclepias scaposa* has been rather an enigma since its description from a single fruiting specimen by Miss Vail in 1898. This, which remains the only specimen recorded from the United States [no longer the case] as well as the only fruiting specimen of the species, was found duplicated in both the Gray Herbarium and the herbarium of the New York botanical Garden without a number; in the herbarium of he Missouri Botanical Garden a third duplicate bears the number 7, which probably is an arbitrary number assigned by Engelmann and not a field number in the true sense. Without a field number, the actual place of collection of Wright's specimen cannot be ascertained; it appears more than possible that it may have been actually in Coahuila, considerably south of the present boundary of New Mexico.

The label on the sheet in question at MO shows: *Asclepias scaposa* Vail, New Mexico, Coll. C. Wright, and 1851. In the upper left corner appears No. 7, in quotes. It is on this basis that New Mexico is credited with this taxon. The herbarium database from the University of Arizona shows no specimens of *A. scaposa*. The herbarium database from the University of Texas at Austin shows one specimen from Brewster County (Big Bend) and one from Terrell County (immediately east of Brewster). These counties border the Mexican State of Coahuila, where a number of specimens of *A. scaposa* have been collected. Both are remote from New Mexico. The likelihood of *A. scaposa* occurring in the state is small, yet the possibility cannot really be eliminated.

Another taxon of question in New Mexico is *A. emoryi*. No specimens are listed in the New Mexico Biodiversity database or the SEINet database. Several collections originally designated as *A. emoryi* have been determined to be *A. oenotheroides* (Robert Sivinski, personal communication). Two specimens impinge on this taxon's presence in the state. The holotype (as *Podostemma emoryi*, US) was collected by C.C. Parry during the Mexican Boundary Survey, but the location given; “Rio Grande Valley below Dona Ana” is quite indefinite. In fact, the location shown on the sheet is “Texas or New Mexico.” Wooton and Standley in their 1915 *Flora of New Mexico* state, “It is impossible to tell where the type was collected…” Wooton and Standley also indicate an incidence of *A. emoryi* at Mangas Springs in Grant County. It is interesting that Woodson shows *A. emoryi* only in Texas and the Mexican States of Nuevo Leon and Tamaulipas. It is also of note that Wooton and Standley's description of the hoods as 3.5 mm or less is significantly at variance with Woodson's description of "about 5 mm". Regardless of how these two collections are evaluated, they do not seem to define a viable collection within the state. The typical range of this species is from central Texas southward into Coahuila and Nuevo Leon in Mexico, but the herbarium database at the University of Texas at Austin shows a specimen from Ector County, Texas, whose western boundary is a mere 15 miles from Lea County, New Mexico. So, as with *A. scaposa* the presence of *A. emoryi* is unclear, but cannot be discounted, particularly in the light of the proximity of known collections.

*A. hallii* is another taxon for which no specimens appear in local herbarium databases. Two specimens are known from Conejos County, Colorado (Antonito), which were gathered about 5 miles north of the New Mexico border. Other Colorado collections have been made from Montezuma County (Cortez) and

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Costilla County (San Luis) both of which border New Mexico. *A. hallii* has also been collected in San Juan County, Utah (SE corner). There is no record of this taxon having been collected in New Mexico, but due to the collections quite nearby, it is retained in the key below.

The range maps included here were prepared using online databases and through communications with individuals collecting around the state.

**Key to the Species**

1 Corolla lobes erect or spreading at anthesis... *A. asperula* (Decaisne) Woodson. We have two subspecies:

a Inflorescences pedunculate; hoods dark purple; leaves linear-lanceolate... *subsp. asperula* (Decaisne) Woodson SPIDER MILKWEED. Desert swales, sandy and rocky hillsides; oak and juniper communities.

b Inflorescences sessile or subsessile; hoods greenish-cream to pinkish; leaves more broadly lanceolate... *subsp. capricornu* (Woodson) Woodson ANTELOPE-HORNS. Prairies, plains, limestone or clay hills; occasionally openings in pine forests.

1 Corolla lobes reflexed at anthesis

2 Horn absent from hoods or reduced to a small crest

3 Leaves linear or filiform

4 Hoods containing a small (sometimes horn-like) crest; anther wings with a spur at the base... *A. rushyi* (Vail) Woodson RUSBY’S MILKWEED. Rocky soil in pine/oak, píñon/juniper communities, open pine forests.

5 Hoods lacking horn or crest; anther wings without a spur at the base... *A. engelmanniana* Woodson ENGELMANN MILKWEED. Prairies and swales, open sandy hillsides, draws, washes.

3 Leaves narrowly lanceolate or broader

4 Leaves opposite, ovate to oval; flowers dark red... *A. hypoleuca* (Gray) Woodson MAHOGANY MILKWEED. Open pine forests.

Southwestern.

5 Leaves opposite to irregularly approximate; oval to narrowly lanceolate; flowers pale green... *A. viridiflora* Torrey LONG-HOOD MILKWEED. Dry hills and mesas, limestone ridges.

Glades, prairies, rocky or sandy hillsides.

2 Horn well developed

6 Hoods or apical portion widespread from anther head

7 Leaves filiform; hoods narrowly acuminate, 3–6 mm long... *A. macrotis* Torrey LONG-HOOD MILKWEED. Dry hills and mesas, limestone ridges.

7 Leaves ovate to ovate-lanceolate or oval; hoods narrowly attenuate, 10–14 mm long... *A. speciosa* Torrey SHOWY MILKWEED. Moist meadows, riparian areas, roadsides, open coniferous forests.

6 Hoods erect to suberect, not spreading away from anther head

8 Corolla lobes and hoods orange, rarely reddish or yellow... *A. speciosa* (Gray) Vail BEAR MOUNTAIN MILKWEED. Dry gravelly openings in oak scrub, mountainsides and flats.

18 Stems (branches) 40 – 150 cm tall... *A. incarnata* Linnaeus SWAMP MILKWEED. Wetlands and marshes.

9 Hoods longer than 2.5 mm

20 Hoods shorter than 7 mm

21 Horn reduced to an apiculate winglike crest adnate for its entire length to hood... *A. nyctaginifolia* (Vail) SAN JUAN MILKWEED. Plains and mesas, swales, arroyos. Southwestern.

21 Horn adnate to near the hood tip, free portion falciform, arching over anther head... *A. oenotheroides* Chamisson & Schlectendal JOYCE'S MILKWEED. Mesas, hills, thickets, roadsides in chiefly rocky clay soils, or sandy or rocky calcareous soils.

20 Hoods shorter than 7 mm

22 Leaves linear to filiform, plants suffrutescent to shrubby

23 Stems (branches) 50 – 200 cm tall... *A. linearis* CAVILLE'S PINE NEEDLE MILKWEED. Open oak, pine, juniper woodlands; canyons and arroyos; dry rocky hills and slopes. Known only from Hidalgo County.

22 Leaves narrowly lanceolate or broader

24 Leaves sessile or subsessile

25 Leaves narrowly lanceolate, somewhat conuplicate... *A. involucrata* Engelmann ex Torrey DWARF MILKWEED. Dry plains, mesas, gravelly hills; chaparral and arroyos.

25 Leaves oblong, ovate-lanceolate or sub-biangular

26 Stems 4 – 10 cm long... *A. nummularia* Torrey Tufted MILKWEED. Dry mesas and slopes, rocky hillsides, arid grassland, dry ravines in gravel or clay. Grant and Hidalgo counties.

26 Stems 30 – 70 cm long... *A. glaucescens* Kunth NODDING MILKWEED. Dry, rocky

14 Plants low, mostly below 10 cm, prostrate to somewhat ascending

15 Hoods pale

16 Corolla lobes purple or purplish rose; hoods white... *A. uncialis* Greene WHEEL MILKWEED. Sandy or rocky plains.

16 Corolla lobes pale yellow or yellowish green; hoods yellowish... *A. macrosperma* Eastwood EASTWOOD'S MILKWEED. Dry sandy places in the northwesternmost portion of the state.

15 Hoods reddish-violet

17 Leaves tomentulose on leaf margins and midrib of abaxial leaf surface only... *A. sanjuansenensis* Heil, Porter, & Welsh SAN JUAN MILKWEED. Sandy or sandy loam soils, usually in disturbed areas. San Juan River Valley endemic.

17 Leaves densely white-tomentulose... *A. ruthiae* Maguire RUTH’S MILKWEED. Sandy and hard-packed loamy soils, desert scrub and gullies of the northwestern portion of the state.

14 Plants taller, erect or strongly ascending

18 Stems (branches) 10 – 30 cm tall

19 Corolla lobes 4 – 6 mm long, reddish-purple or violet... *A. brachystephana* Engelmann ex Torrey SHORTCROWN MILKWEED. Sandy or rocky plains, dry flats, gullies. Southern half of the state.

19 Corolla lobes 3 – 4 mm long, bright pink or rarely white... *A. scoposa* Vail BEAR MOUNTAIN MILKWEED. Dry gravelly openings in oak scrub, mountainsides and flats.

18 Stems (branches) 40 – 150 cm tall... *A. incarnata* Linnaeus SWAMP MILKWEED. Wetlands and marshes.
slopes in open pine, juniper, or oak woods; roadsides and washes. Southern third of the state.
24 Leaves with petioles at least 1.5 mm long
27 Corollas pale green, pale yellow, or greenish yellow
28 Stems stoutly erect, longer than 25 cm
29 Herbage densely tomentulose; horns adnate to hoods for approximately half their length, narrowly falciform…A. arenaria Torrey SAND MILKWEED. Sandy areas. Eastern plains.
29 Herbage minutely puberulent; horns adnate to hoods for almost entire length, broadly falciform…A. latifolia (Torrey) Rafinesque BROAD-LEAF MILKWEED. Mixed prairies, high plains, roadsides. Widespread.
28 Stems ascending to decumbent or prostrate, generally less than 20 cm long
30 Leaf petioles 10 – 15 mm; hoods approximately 5 mm long…A. emoryi (Greene) Vail EMORY’S COMET. Sandy prairies and dry plains.
30 Leaf petioles 1.5 – 5 mm; hoods 2.5 – 3 mm long…A. macrosperma Eastwood EASTWOOD’S MILKWEED. Dry sandy places in the northwesternmost portion of the state.
27 Corollas pink, rose, or purplish
31 Hoods 5 – 6 mm long…A. hallii Gray HALL’S MILKWEED. Canyons and mountainsides of piñon, yellow pine, and aspen belts. 31 Hoods 2 – 3 mm long…A. scaposa Vail BEAR MOUNTAIN MILKWEED. Dry, gravelly openings in oak scrub, mountain sides and flats.

Acknowledgments
I very much appreciate the information provided by Ken Heil, Chick Keller, Roger Peterson, and Richard Worthington on the localities of their Asclepias collections. Thanks also to Perk and Shelley Perkins for their efforts in spotting strange plants on their unusual acreage in Luna County.

Botanical Literature of Interest

Internet References:
Botanicus http://www.botanicus.org/
NM Biodiversity http://nmbiodiversity.org/
SEINet http://swbiodiversity.org/seinet/index.php
Smithsonian http://botany.si.edu/index.htm
Tropicos http://www.tropicos.org
UA http://ag.arizona.edu/herbarium/
UT Austin http://www.biosci.utexas.edu/prc/databases.html

References

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Notes on Senecio and Packera in Northern New Mexico

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In the Senecio/Packera group are some of our most varied species occurring from our highest mountains to our lowest deserts. I do not know what identification problems beset our southern species, but the northern species pose some sticky ones. From my collections in Colorado and from mentoring by Bill Weber I have a fair collection of carefully identified specimens and will draw on these to help make differentiation easier. I would also like to thank Debra Trock (author of Packera in Flora of North America, Vol. 20) for very helpful comments which have changed my ideas on the presence of some “Colorado” Packeras in New Mexico. (Some of her comments are incorporated in the text in quotation marks.) I would also like to thank Al Schneider, Roger Peterson, Jim McGrath, and Ken Heil for helpful discussions. In this paper I will first give thumbnail discussions of the problem species followed by more detailed treatment of how to tell them apart. (Note that both Intermountain Flora, Vol. 5 and Dewitt Ivey's Flowering Plants of New Mexico contain excellent drawings of most of these species, but due to my error Dewitt labeled one incorrectly — P. pseudareae should be P. crocata. The drawing in Intermountain Flora is correct.)

Species that cause the most problems are usually in pairs of look-alikes.

(1) Senecio soldanella vs. Senecio amplexctens var. holmii. There appear to be no specimens of soldanella in the state. All the specimens I have seen were holmii. Side by side the two are fairly easy to tell apart, but since this is hardly ever the case in the wild, and because most of their defining characters overlap, clear differentiation has eluded most keys.

(2) Packera werneriifolia vs. Packera cana. There are two varieties of werneriifolia—alpina (above treeline) and werneriifolia (montane). Apparently both occur in New Mexico. Alpina is at least in the Costilla Peaks area while its montane cousin seems more widespread. Packera cana seems restricted to northern counties (Harding and Colfax). Collections of cana are rare—there are none from New Mexico in the UNM herbarium.

(3) Packera hartiana/quareens vs. Packera pseudareae. These two (quareens is no longer thought to be separate from hartiana) are often confused but are rather easily separated on the basis of habitat as well as basal leaf characters.

(4) Packera crocata vs. Packera dimorphophylla. There are records of crocata from Rio Arriba and Sandoval Counties, and perhaps elsewhere. The problem with identification is that most keys require that crocata have orange or red flowers. But there are cases of crocata flowers also being yellow. Happily cauline leaves are different. So far all orange/red-petaled ones identified as crocata have turned out to be dimorphophylla.

(5) Packera crocata vs. Packera pseudareae. If, as many keys do, crocata must have orange to brick red ray flowers, there is no problem in this separation. But, Trock writes that there are cases of crocata with yellow rays. Indeed it appears that most (all?) in New Mexico have yellow rays. When this occurs separation becomes more problematic because their habitats and altitudes are similar.

(6) Packera streptanthifolia vs Packera neomexicana. I continue to have trouble separating these perhaps because they intergrade. Also, most keys don’t compare them directly, making it unclear just how similar they are. Both are definitely in the state but claims of the former need to be carefully made. (To further the confusion, streptanthifo-

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About other hand, has nearly entire blades which are very thin. See note basal leaves. Both of these species have long-petioled basal leaves and mostly has more than 3 heads in the inflorescence. At high elevations the inflorescence is often very compact and Packera cana always has some cauleine leaves even if they are very reduced and mostly on the lower portion of the stem, while P. werneriifolia is nearly always scapose, or in some very robust specimens, may have a few bract-like leaves on the stem. My collections of P. cana from Colorado all have well-developed leaves.

Montane Senecios

(3) Packera hartiana and Packera pseudaurea can be separated usually by habitat. Hartiana prefers moist to dry understory from ponderosa to mixed conifer, while pseudaurea likes to have its “feet” wet and is most often found in open wet places or along streams, although there are cases where these overlap. Basal leaf shape is usually distinctive. Both have long petioles and minutely dentate leaf blades, but hartiana’s basal blades taper to the petiole while at least some of pseudaurea’s are definitely cordate. Cauline leaves also differ in that hartiana’s are usually small and shallowly dentate, while pseudaurea’s are often lyrate and at times large and deeply dentate. Phyllaries of both are essentially glabrous, but hartiana has tomentum at the base of the involucre especially when young.

(4) Packera dimorphophylla vs. Packera crocata. Both these species can have yellow, orange, or red rayflowers. Trock separates them by several characters: “Packera dimorphophylla var. dimorphophylla and P. crocata are easy to tell apart. The heads of P. dimorphophylla are in distinctly congested corymbs while those of P. crocata are open and loose. Also P. dimorphophylla has conspicuous calyciuli, while P. crocata has no calyciuli. The absolutely most distinguishing feature of P. dimorphophylla however are its clasping cauleine leaves.” However specimens annotated by Trock at UNM as being P. crocata look very similar to a Utah endemic, P. dimorphophylla var. intermedia, and since none of these has orange petals, I am leaning towards saying crocata may not occur in N.M. and these are instead range extensions of the Utah variety. More study is needed here.

(5) Since some specimens of Packera crocata have yellow rayflowers, it becomes necessary to distinguish it from P. pseudaurea with which it co-habitates. This is done most easily by examination of the basal leaves. Both of these species have long-petioled basal leaves and both can have truncate bases. But, true to its name (pseudo-aurea), this species has basal leaves similar to those of its eastern relative, P. aurea, being very dentate and generally thick. Packera crocata, on the other hand, has nearly entire blades which are very thin. See note about crocata at the end of (4).

(6) It is often very difficult to separate Packera streptanthifolia from P. neomexicana. At their extremes there is little problem, especially in Colorado, but in New Mexico the extremes are seldom met and the "look alikes" abound. This occurs to the point where I'm beginning to wonder if these are really two different species or simply a gradation from one to the other. For example, in the Jemez Mountains, streptanthifolia seems to dominate on the western side where non-volcanic soils predominate (although even there many apparent streptanthifolia turn out to be neomexicana). On the eastern side of the Jemez where nearly everything is volcanic, streptanthifolia seems to be absent.

One often-mentioned character of streptanthifolia is the thickish, turgid leaves. But I have collections from Little Costilla Peak (annotated by Trock) that are glabrous but with thin, non-turgid leaves. On the east side of the Jemez P. neomexicana can also have thick-turgid leaves. Finally I have a very tomentose specimen of streptanthifolia from the western Jemez (collected by B. Reif and annotated by Trock). So, are these intergrades?

Most texts agree that one reliable difference between streptanthifolia and neomexicana is that the former has glabrous achenes (cypsella), and the latter has hairs at least on the ridges. Another potential character is noted by Trock: “The vast majority of the Packera’s that I’ve collected from New Mexico, especially early in the season are P. neomexicana. I only have a few records of P. streptanthifolia, and they don’t flower until late summer.”

Trock also says: “The leaf blades of P. neomexicana are narrow – usually lyrate or lanceolate. P. streptanthifolia is variable, but the blades tend to be more rounded, ranging from orbiculate to spatulate. Also P. neomexicana is always tomentose to some degree and P. streptanthifolia rarely is (and then usually only in the leaf axils)”. This last character is used in many keys to separate them, but I find it often unsatisfactory. Thus identification of a specimen usually is done by a vote compiled from each of these characters. However, for me there are just some specimens that cannot be certainly identified.

(7) Packera paupercula resembles pseudaurea and grows in similar wet habitats. It is distinguished by its deeply scalloped cauleine leaves. The scallops are so deep and internally rounded that there is often hardly any leaf left. Basal leaf blades are very long and thin, and 5-7 times longer than wide. It is found in very wet meadow conditions. Packera paupercula has deeply dentate basal and cauleine leaves but none are as long nor as deeply scalloped as paupercula. As noted above, P. paupercula may not to be present in the state, but it should be looked for.

(8) Currently Senecio cliffordii is thought to be the same species as Packera spellenbergii. Both these plants are rayless, but cliffordii is from southwestern New Mexico and south-central Utah while spellenbergii is from the northeastern plains. Thus the ranges of these two species are widely separated. Cliffordii approaches spellenbergii in general aspect, but is a larger plant with longer, broader leaves, less tomentum, and has nearly hairless achenes. More collections of cliffordii will be needed to determine if indeed it really is a different species.

A third short, mat-forming species was discovered only a year ago and so has yet to be described. From its photos it appears to be a floccose version of P. werneriifolia with showy-petalled flowers.

Conclusion

Perhaps it might be well to end with another quote (private communication) from Debra Trock, who has looked at thousands of Packera.

“Welcome to the world of Packera (just kidding). Nearly all of the species in the Rocky Mountains are difficult for precisely the reasons noted here. … These things probably do interbreed with each other where they come into contact. Barkley used to hold up his hand, point to the tips of his fingers and indicate that the tips represent our concept of each of these difficult species, but the bulk of the hand represents the majority of the plants that you find, with intergradation common place.”

References

Plant Distribution Reports

New records and significant distribution reports for New Mexico plants should be documented by complete collection information and disposition of a specimen (herbarium). Exotic taxa are indicated by an asterisk (*), endemic taxa by a cross (+). Comments [in brackets] are the editor’s.

— Russ Kleinman [25 Oxbow Drive, Silver City, NM 88061]

*Najas guadalupensis* (Sprengel) Magnus (Hydrocharitaceae: Guadalupe Water Nymph): Grant County: Bear Canyon Lake, Mimbres Valley, growing with Potamogeton foliosus along north shore, 6100 ft, 4 November 2009, R. Kleinman 2009-11-4-1, (Dale A. Zimmerman Herbarium, Silver City). [Apparently, the only known locality for this species thus far in the state is Bear Canyon Lake; this marks the second collection from there]

— Kelly Allred [Department of Animal & Range Sciences, New Mexico State University, Las Cruces, NM 88003]

*Hedera helix* Linnaeus (Araliaceae, English ivy): Chaves County: Roswell, growing along south side of the Hondo River, midway between Summit and Union streets, N33°22.681 W104°32.287, 3600 ft, 17 Nov 2009, Sandra Barraza s.n. (NMCR). [first report of this common ornamental escaping and persisting in the wild in NM]

— Chick Keller [4470 Ridgeway, Los Alamos, NM 87544]

*Packera werneriifolia* var. *alpina* (Asteraceae): Taos County: Costilla Massif, above south fork of Willow Creek, north-facing slope, N36°58′30" W105°19′30", 12,050 ft, 26 June 1982, Roger Peterson #82-169 (New Mexico Natural History Institute Herbarium). [first report of this variety from NM]

— Reif et al. 2009. [see Botanical Literature of Interest; specimen data are online at http://www.rmh.uwyo.edu/]

*Lomatium grayi* (Coulter) Coulter & Rose (Apiaceae, Gray’s biscuit-root): Rio Arriba County. [verifies earlier questionable reports for NM]


*Hieracium ×floribundum* Wimmer & Grabowski (Asteraceae, pale hawkweed): Rio Arriba County. [first report for NM]

— Reif et al. 2009. [see Botanical Literature of Interest; specimen data are online at http://www.rmh.uwyo.edu/]

*Descurainia pinnata* (Walter) Britton var. *paysonii* Deiting (Brassicaceae, tansy mustard): Rio Arriba County. [verifies earlier questionable reports for NM]

*Silene drummondii* Hooker var. *striata* (Rydbberg) Bocquillon (Caryophyllaceae, Drummond’s catchfly): Rio Arriba County. [first report for NM]

*Chenopodium capitatum* (Linnaeus) Ambrosi var. *capitatum* (Chenopodiaceae, strawberry blite): Sandoval County. [first report for NM]

*Astragalus cerussatus* Sheldon (Fabaceae, powdery milkvetch): Rio Arriba, Taos counties. [first report for NM]

*Epilobium campestre* (Jepson) Hoch & W.L. Wagner (Onagraceae, smooth willow-herb): Rio Arriba County. [first report for NM]