The New Mexico Botanist

Number 49 **January 5, 2010**

A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agricultural, Consumer, and Environmental Sciences, New Mexico State University.

In This Issue —

The Status of the Genus *Asclepias* in New Mexico

Eugene Jercinovic

6285 Algodón Road SW, Deming, NM 88030

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

(*Continued on page 2, Asclepias*)

Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus

(*Asclepias, continued from page 1*)
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.
- a 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. rusbyi*** (Vail) Woodson RUSBY'S MILKWEED. Rocky soil in pine/oak, piñon/juniper communities, open pine forests.
    - 4 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
    - 5 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*** Rafinesque GREEN COMET. 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. tuberosa*** Linnaeus subsp. ***interior*** Woodson BUTTERFLY MILKWEED. Prairies, thickets, open woods, canyons.
    - 8 Corolla lobes whitish, pinkish, greenish or purplish
      - 9 Hoods not longer than 2.5 mm
        - 10 Leaves filiform or linear
          - 11 Leaves whorled, occasionally opposite above
            - 12 Stem leaves (4) 6 – 13 cm long, often with opposite-leafed dwarf branches in axils; roots well-developed, woody…***A. subverticillata*** (Gray) Vail HORSETAIL MILKWEED. Plains, mesas, moist areas, piñon/juniper or ponderosa communities, roadsides, sandy soils. Widespread.
            - 12 Stem leaves 1.5 – 6 cm long, without dwarf axillary branches; roots fibrous, numerous **…*A. verticillata*** Linnaeus WHORLED MILKWEED. Dry soils of prairies, thickets, open woods; sand dunes.
          - 11 Leaves approximate to alternate or spiral, occasionally verticillate below
            - 13 Horn subequal to hood…***A. cutleri*** Woodson CUTLER'S MILKWEED. Dry sandy areas, dunes, gravelly areas of the northwesternmost portion of the state..
            - 13 Horn approximately 1.5 – 2 times as long as hood…***A. pumila*** (Gray) Vail LOW MILKWEED. Sandy soil, plains and low hills, mesquite prairies.
        - 10 Leaves narrowly lanceolate or broader (distal cauline leaves sometimes linear in *A. uncialis*)
          - 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 prairies.
              - 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. sanjuanensis*** 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. scaposa*** 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 longer than 7 mm
  - 21 Horn reduced to an apiculate winglike crest adnate for its entire length to hood…***A. nyctaginifolia*** Gray MOJAVE MILKWEED. Plains and mesas, swales, arroyos. Southwest corner and eastern plains.
  - 21 Horn adnate to near the hood tip, free portion falciform, arching over anther head…***A. oenotheroides*** Chamisso & Schlectendal ZIZOTES 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) 10 – 30 cm tall, hoods erose, dentate or 2-lobed…***A. quinquedentata*** Gray SLIMPOD MILKWEED. Rocky hills and arroyos. Southwestern.
    - 23 Stems (branches) 50 – 200 cm tall…***A. linaria*** Cavanilles 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 conduplicate…***A. involucrata*** Engelmann ex Torrey DWARF MILKWEED. Dry plains, mesas, gravelly hills; chaparral and arroyos.
      - 25 Leaves oblong, oval, ovate-lanceolate or suborbicular
        - 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

(*Continued on page 3, Asclepias*)

(*Asclepias, continued from page 2*)

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.

References

Allred, Kelly. 2008. Flora Neomexicana I: The Vascular Plants of New Mexico. Lulu.com

Correll, Donovan S., and Marshall C. Johnston. 1996. Manual of the Vascular Plants of Texas. The University of Texas at Dallas.

Cronquist, Arthur, Arthur H. Holmgren, Noel H. Holmgren, James L. Reveal, and Patricia K. Holmgren. 1984. Intermountain Flora, Vol. 4. The New York Botanical Garden.

Kearney, Thomas H., Robert H. Peebles, and collaborators. 1960. Arizona Flora. University of California Press.

Martin, W.C. and C.R. Hutchins. 1980.1981. A Flora of New Mexico, Vol. 2. Vaduz, West Germany, J. Cramer.

McGregor, Ronald L., T.M. Barkley, Ralph E. Brooks, and Eileen K. Schofield. 1986. Flora of the Great Plains. University Press of Kansas.

Reif, Brian, Jill Larson, Brian F. Jacobs, B.E. Nelson and Ronald L. Hartman. 2009. Floristic Studies in North Central New Mexico, U.S.A. The Tusas Mountains and the Jemez Mountains. J.Bot. Res. Inst. Texas 3(2): 921-962.

Standley, Paul C. 1910. The Type Localities of Plants First Described from New Mexico. Contr. U.S. Nat. Herb. 13: 143-246.

Weber, William A. and Ronald Wittman. 2001. Colorado Flora. University Press of Colorado.

Welsh, S.L., N.D. Atwood, S. Goodrich and Larry C. Higgins. 1993. A Utah Flora. Brigham Young University.

Wooton, E.O. and Paul C. Standley. 1972. Reprints of U.S. Floras, Flora of New Mexico. Wheldon & Wesley, Ltd. Stecher-Hafner Agency, Inc.

Internet References:

Botanicus http://www.botanicus.org/
NM Biodiversity http://nmbiodiversity.org/
NYBG http://www.nybg.org , http://sciweb.nybg.org/science2/
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

(*Continued on page 4, Asclepias*)

Botanical Literature of Interest

Locklear, J.H. 2009. **Nomenclatural innovations in *Phlox* (Polemoniaceae), with updated circumscription of *P. caespitosa, P. douglasii, P. missoulensis,* and *P. richardsonii*.** J. Bot. Res. Inst. Texas 3(2):645-658.

Kiefer, C., C. Dobes, & M.A. Koch. 2009. ***Boechera* or not? Phylogeny and phylogeography of eastern North American *Boechera* species (Brassicaceae).** Taxon 58(4):1109-1121.

Michael, P.W. 2009. ***Echinochloa colona* versus "*Echinochloa colonum*" (Poaceae).** Taxon 58(4):1366-1368.

Reif, B., J. Larson, B.R. Jacobs, B.E. Nelson, & R.L. Hartman. 2009. **Floristic studies in north central New Mexico, U.S.A., the Tusa Mountains and the Jemez Mountains.** J. Bot. Res. Inst. Texas 3 (2):921-961.

Schultz, L.M. 2009. **Monograph of Artemisia Subgenus Tridentatae (Asteraceae—Anthemideae).** Syst. Bot. Monogr. 89.

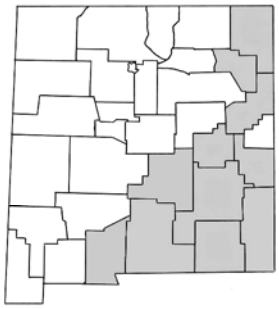
Weber, W.A. & R.C. Wittmann. 2009. **Two new combinations in *Tryphane* (Alsinaceae).** J. Bot. Res. Inst. Texas 3(2):501-502.

Botany is the natural science that transmits the knowledge of plants.

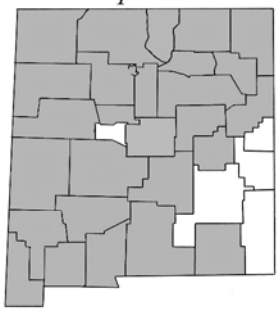
— Linnaeus

(*Senecio, continued from page 3)*

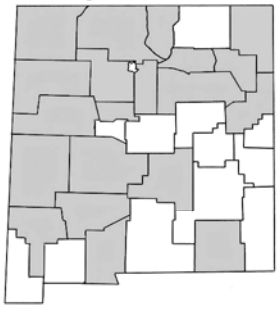
A. arenaria



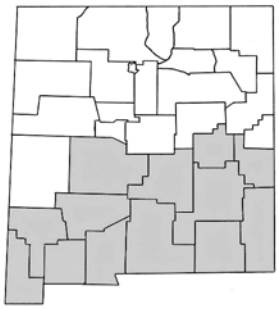
A. asperula subsp. *asperula*



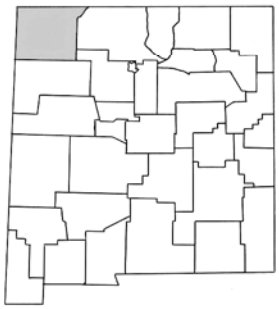
A. asperula subsp. *capricornu*



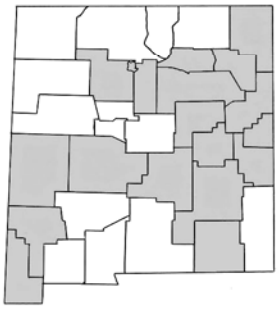
A. brachystephana



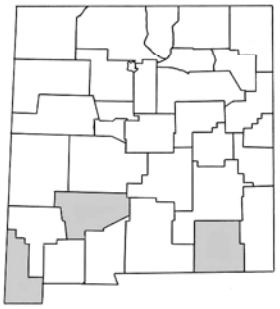
A. cutleri



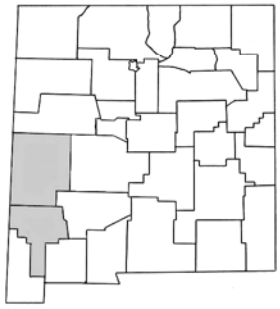
A. engelmanniana



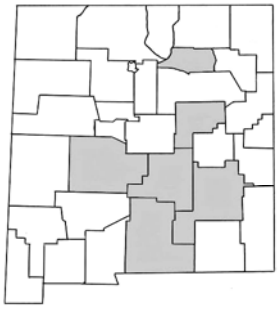
A. glaucescens



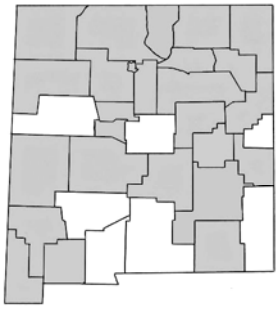
A. hypoleuca



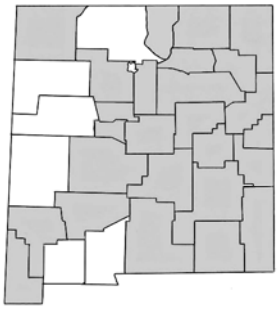
A. incarnata



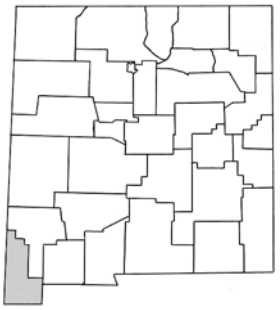
A. involucrata



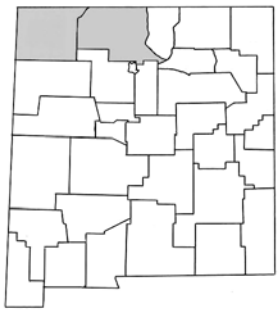
A. latifolia



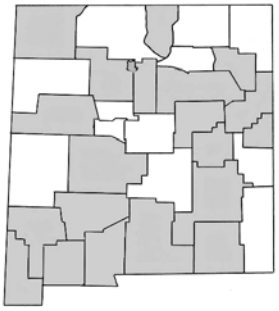
A. linaria



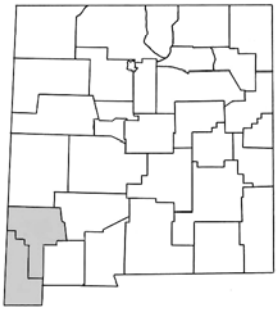
A. macrosperma



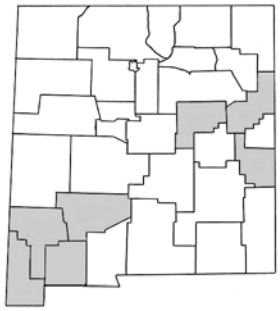
A. macrotis



A. nummularia



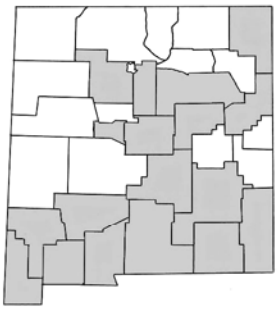
A. nyctaginifolia



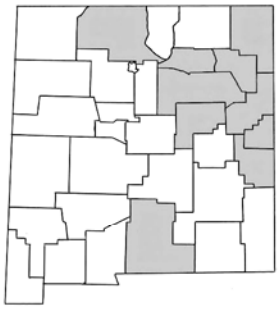
(*Continued on page 5, Asclepias*)

(*Asclepias, continued from page 4*)

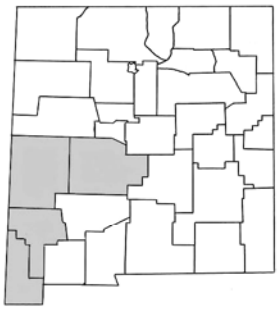
A. oenotheroides



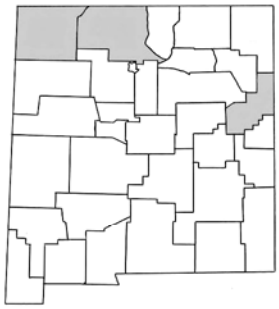
A. pumila



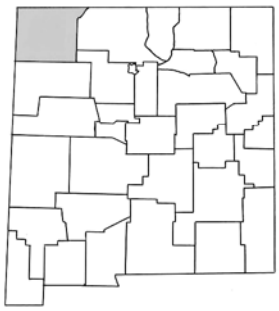
A. quinquedentata



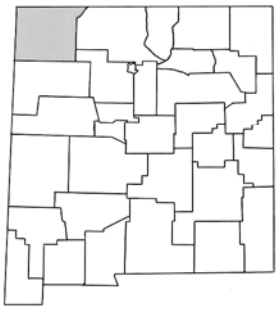
A. rusbyi



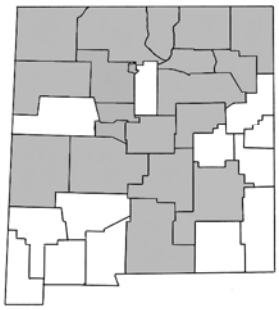
A. ruthiae



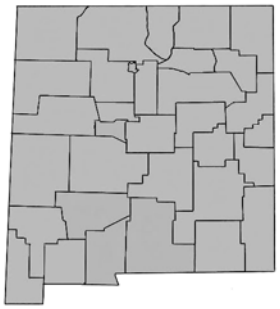
A. sanjuanensis



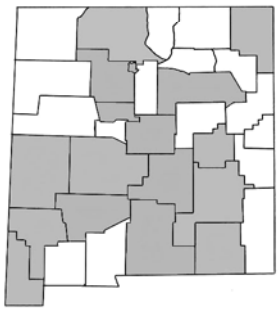
A. speciosa



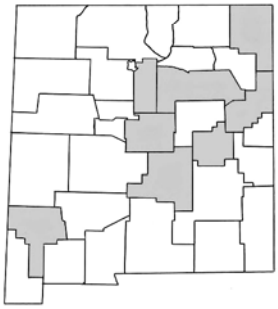
A. subverticillata



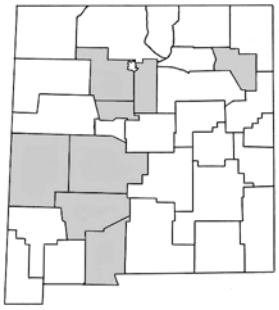
A. tuberosa subsp. *interior*



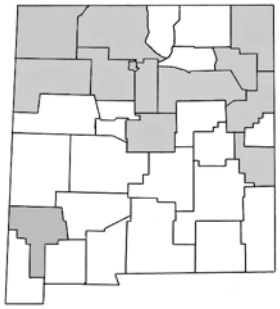
A. uncialis



A. verticillata



A. viridiflora



☺

Notes on *Senecio* and *Packera* in Northern New Mexico

Chick Keller

4470 Ridgeway, Los Alamos, NM 87544

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 I*ntermountain 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. pseudaurea* 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 amplectens 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/quaerens* vs. *Packera pseudaurea*. These two (*quaerens* 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 pseudaurea*. If, as many keys do, *crocata* must have orange to brick red ray flowers, there is no problem is 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 integrade. 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, *streptanthifolia* grades into *hartiana*.)

(7) *Packera paupercula*. This species may not be in the state (although I have seen a potential specimen from northern NM in Roger Peterson's herbarium), and it doesn't occur in Colorado counties bordering New Mexico. It is somewhat similar to *pseudarea* both in shape and habitat and so might be easily mis-identified.

(8) *Packera spellenbergii, Packera cliffordii*, and a newly discovered species. The first two of these are rayless and have been lumped together as *P. spellenbergii*. However, *cliffordii* is larger and found in a different habitat. Another species or variety has recently been discovered by Al Schneider and others. While the plant also grows in low mats, its flowers have showy rays. It might be a dryland variety of *P. werneriifolia* since its cauline lvs are vestigial.

Alpine Senecios

(1) In New Mexico's highest mountains, at or above tree line there are only two species of *Senecio — amplectens var. holmii* and *fremontii var. blitoides*. In Colorado there are at least two more, one of which (*Senecio soldanella)* has been incorrectly reported in New Mexico, and *Packera werneriifolia var. alpina*.which apparently does not occur in New Mexico either. Both can be easily confused with *holmii* if you are not familiar with them. In Colorado, *soldenella* is found only in the very highest places, above 12,500 ft. in scree slopes devoid of much other vegetation. *Holmii* is usually found lower with other plants in rocky areas. The two plants are quite distinct when viewed together but, because most of their characteristics overlap to some extent, keys have a hard time separating them. For example, *holmii*'s basal leaf blades leaves are dentate and longish while *soldanella's* are nearly entire and roundish. But I have seen *holmii* leaves that are nearly entire and *soldanella* with slightly dentate leaves. Similarly with ray flowers, which are long and reflexed in *holmii*, and shorter and not reflexed in *soldanella*, but there exist examples where these characters cross.

Soldanella's leaves are usually very maroon/purple, but *holmii*'s are sometimes the same color at least on their underside. And so what might a key use for definitive characters? I have found two which require digging up the plant. The roots are quite different, *holmii*'s being dark and fibrous while *soldanella*'s are thick, fleshy, and light colored. Also, the basal leaf petioles of *soldanella* are long and light colored because its caudex is submerged and long petioles are necessary to get the blades above ground. *Holmii* petioles are shorter as its caudex is at the surface. Given *soldanella*'s Colorado distribution (it does not occur in the southern Sangre de Christos), a New Mexico record is very unlikely but not impossible. Photos of any candidates should be circulated for verification.

(2) *Packera werneriifolia* is commonly an alpine species in Colorado, but it has a lower-altitude variety with different leaf characters that makes me wonder if this species should not be split into two varieties, low altitude (8,500-11,500) and alpine (above 12,000 ft.). Indeed Dorn (Vascular Plants of Wyoming 3rd Ed.) recognizes two such varieties. The low altitude specimens I have collected in Colorado (Dorn's variety *werneriifolia*) all had basal lvs that were long, narrow and entire, the blades cuneate (tapering gradually to the petioles). Tundra specimens, on the other hand, (Dorn's var. *alpina*) have more rounded leaves shallowly dentate and rather abruptly contracting to long petioles in a spoon-like shape. Several collections of the low altitude variety have been made in New Mexico, but to my knowledge only one of the alpine variety (Roger Peterson, Big Costilla Pk, ~12,000 ft.)

The defining character of *werneriifolia* is its scapose nature with none or only the most vestigial bracts on the stem. Otherwise it can be confused with *P. cana* which is usually densely hirsute, so much so that it looks gray. A good discussion of other differences between *cana and werneriifolia* is given in Debra Trock's paper "The Genus

(Continued on page 7, Senecio)

(*Senecio, continued from page 6*)
Packera in Colorado, U.S.A."

"There are two features distinguishing these two species: 1) *Packera cana* nearly always has more than 3 heads in the inflorescence. At high elevations the inflorescence is often very compact and the heads are small. *Packera werneriifolia*, on the other hand, normally has only 1 or two large heads. It can occasionally have 3-5 heads, in which case they are smaller than normal. 2) *Packera cana* always has some cauline 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) *Packeras 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 calyculi, while *P. crocata* has no calyculi. The absolutely most distinguishing feature of *P. dimorphophylla* however are its clasping cauline 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 (cypsellae), 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 cauline 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 pseudaurea* has deeply dentate basal and cauline 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 northwestern New Mexico and south-central Utah while *spellengergii* 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

Barkely, T.M., Senecio, *North American Flora*, Series II, Part 10, 50.
Cronquist, A. et al., *Intermountain Flora*, Vol. 4.
Ivey, R.D., *Flowering Plants of New Mexico*.
Trock, D.K., Packera, *Flora of North America*, Vol. 20, 570.
Trock, Debra, The Genus Packera in Colorado, U.S.A., *SIDA*, 20(3), 1023-1041, 2003.
Weber, William A. and Wittmann, Ronald C., *Colorado Flora: Eastern Slope*, revised edition. ☺

Publication and Subscription Information

"The New Mexico Botanist" is published irregularly (as information accrues) at no charge. You may be placed on the mailing list by sending your name and complete mailing address to the editor:

Kelly Allred
The New Mexico Botanist
MSC Box 3-I
New Mexico State University
Las Cruces, NM 88003
or
Email: kallred@nmsu.edu

Available on-line at http://aces.nmsu.edu/academics/rangescienceherbarium/

Kelly Allred

Kelly Allred

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, N33º22.681 W104º32.287, 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]

Lomatium triternatum (Pursh) Coulter & Rose var. ***platycarpum*** (Torrey) Boivin (Apiaceae, nineleaf biscuit-root): Rio Arriba County. [first report for NM]

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

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

Silene drummondii Hooker var. ***striata*** (Rydberg) 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] ☺

The New Mexico Botanist

COOPERATIVE EXTENSION SERVICE
U.S. Department of Agriculture
New Mexico State University
Las Cruces, NM 88003