



A Newsletter for the flora of New Mexico, from the Range Science Herbarium and Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University.

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The Botanical Brandegees and their Eponyms

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The flora of New Mexico includes several taxa with epithets honoring the botanists Townsend Stith Brandegee (1843–1925, herein referred to as TS) or his wife, Mary Katharine (Layne) (Curran) Brandegee (1844–1920, herein referred to as Kate). Most of these have traditionally used the eponym “brandegei,” but recommendation 60C.3 of the 1994 International Code of Botanical Nomenclature states that “In forming new epithets based on personal names, the original spelling of the personal name should not be modified unless it contains letters foreign to Latin plant names or diacritical signs.” In accordance with this, for A Working Index to New Mexico Vascular Plant Names (Allred 2000) all of these epithets have been changed to “brandegeei.”

In the course of reviewing these changes, we were surprised by the extent of botanical work completed by the Brandegees and the degree to which they were honored with eponyms. There are 9 eponyms currently in the flora of New Mexico honoring one or the other of them (it is unclear which, except for *Elodea brandegeae*, where the feminine ending celebrates Kate) and another four eponymous types that are synonymous with New Mexico taxa (Table 1). Outside of New Mexico, there are an additional 111 species names with the epithet “brandegeei,” or the combination of their name with a non-standard ending such as –ana, –anum, –ae, –ea, or –a. An additional 17 eponyms were published at the subspecific rank. There is one genus commemorating TS, the monotypic *Brandegea* in the Cucurbitaceae. The eponyms do not end there, however, since Kate had been an active botanist prior to her marriage (her second, at age 45) to TS. There are 67 eponyms honoring her as Kate Curran and another 7 based on “Layne” (2 at subspecific rank), her maiden name.

TS Brandegee is the author of 5 New Mexico taxa (Table 2). Outside of New Mexico, however, it becomes a much more laborious effort to determine which of the Brandegees described a given taxon. The authority abbreviation “Brandegee” is reserved for TS and “K. Brandegee” for Kate (Brummitt and Powell 1992); however, in practice “Brandegee” is often used to refer to either. In any case, 18 genera were described by the Brandegees (across 12 families) and 957 species or subspecific taxa (881 retrieved as Brandegee, 43 as K. Brandegee, 33 as Curran, all data from The Plant Names Project 1999). As far as we can tell, there are no taxa described by both (e.g. Brandegee et K. Brandegee), even though there are several groups worked on by both. For example, *Astragalus haydenianus* A. Gray ex Brandegee was collected by TS from SW Colorado, *A. brandegeei* Porter & J. M. Coult., from Colorado, was named after TS and *A. coccineus* from California was described by TS. On the other hand, *Astragalus layneae* Greene and *Astragalus malacus* var. *layneae* Jones were named for Kate. Among the monkey-flowers, *Mimulus layneae* was named for Kate, *M. brandegeei* for TS (Crosswhite and

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Botanice est Scientia Naturalis quae Vegetabilium cognitiorem tradit.
— Linnaeus



(Brandegees, Continued from page 1)

Crosswhite 1985). Four other species (*M. androsaceus*, *M. nudatus*, *M. pictus*, and *M. kelloggii*) were described by Kate under the authority "Curran" and one species, *M. clevelandii*, was described by TS.

Townshend Stith Brandegee had a remarkable career first as a collector and later, under the influence of Kate, as a taxonomist and more general plant scientist. Though his training was in civil engineering, he studied botany with D.C. Eaton while at Yale. He became county surveyor and city engineer in Cañon City, Colorado in 1871, and while there collected ferns for John H. Redfield (Elliott 1979). Other unknown plants he sent to Asa Gray of Harvard (both Gray and Sir Joseph Hooker visited Brandegee in Cañon City in 1877). In 1875, Gray recommended TS as a botanical collector for Ferdinand V. Hayden's exploring expedition in SW Colorado and adjacent Utah. He subsequently served as engineer for various railway surveys in the west including at least some work in New Mexico and a posting in Santa Fe (Setchell 1925, Slack 2000b). All the while he was botanizing. Asa Gray described *Galium brandegeei* in 1877 from material collected by TS in the "Valley of the Rio Grande, on the Los Pinos Trail" (there is a Los Pinos trail near the Puerco between Rio Arriba and Sandoval Counties, 13 km N of Cuba, however, it is more likely the collection is from near the town of Los Pinos in the far north of Rio Arriba county near the Colorado border where there is also the C&T scenic railway).

TS collected logs of wood of trees for Charles Sprague Sargent's "Report on the Forests of North America" as a side job. He published "The Flora of Southwestern Colorado" in 1876 and was singled out in the preface to the first full flora of Colorado (Porter and Coulter 1874) for "his large and fine collections from the southern part of the territory." After leaving railway work, TS mapped the forests of the Adirondacks in New York state and then worked two years as a forest surveyor and botanical collector in the Cascade Mountains of Washington. In 1886 and 1887 he again collected tree trunks for Sargent, visiting Montana, Nevada and California among other states. Asked to collect logs of two species from Santa Cruz Island, TS took the opportunity to make "a complete collection of the plants of the island and also of those of Santa Rosa Island. California became my home state then and botany alone my study and work" (Setchell 1926). He settled in San Francisco, California, and began a study of the islands off the coast of California and Baja California. Beginning in 1889, he made many expeditions into Baja California and other regions of Mexico, becoming one of the earliest plant explorers and collectors in these regions (Slack 2000b). In San Francisco, TS became a member of the California Academy of Sciences and came into the scientific circle of such men as H.W. Harkness, Albert Kellogg, E.L. Greene and Mary Katharine Curran. After his first trip to Baja, California in 1889, he married Kate in San Diego. For the honeymoon, they walked back to San Francisco, botanizing all the way.

At age 22, Kate, a school teacher, married an alcoholic constable, Hugh Curran. When he died in 1874 Kate moved to San Francisco and entered medical school. She gained her M.D. in 1878, but had little success as a medical doctor. Meanwhile, she spent a great deal of time in the California Academy of Sciences "making myself useful, especially around the herbarium" (from autobiographical notes quoted by Setchell 1925). She began to collect plants in 1882 and in 1883 succeeded Albert Kellogg as curator of the CAS herbarium. The CAS was unusual among scientific organizations of the time in that it welcomed women members. Crosswhite and Crosswhite (1985) detail the extreme barriers in place during this time to women professionals (and to Kate specifically) and noted the difficulties that she faced as the highest placed female plant scientist of the time. As curator, Kate was very active in herbarium work and exploration. She took many botanical trips using the railroads, for which she enjoyed a general pass. Truly one of the leading authorities on California plants, she never completed a projected flora of the state, although she did provide a flora for Yosemite. She was extremely attentive to variation among plants, particularly among certain groups including the Cactaceae, *Lupinus*, *Eriogonum*, *Oenothera*, *Quercus* etc. She had broad species concepts and viewed plant variation as part of the evolutionary process. This put her at odds with other leading botanists, notably the western botanist E.L. Greene, who was both a creationist and a "splitter".

Kate Brandegee has also been called a reformer (Crosswhite and Crosswhite 1985) and had little patience with careless or untidy botany. For example, she objected to the practice of reporting new species at oral meetings that would be eventually "published" in the Proceedings of the CAS up to four years later. She helped to establish and then edited the Bulletin of the CAS as a more direct venue for publication. In its first volume she published a 22-page article giving the results of her identifications of each of the species proposed in the old Proceedings. To promote even freer discussion and criticism, she and her new husband (TS) founded the journal *Zoe* in 1890. Kate is best known for her critical reviews that appeared here, most notably of the work of E.L. Greene and Nathaniel Britton. She started the first West Coast botanical club in 1891.

In 1894, Kate and TS moved to San Diego, turning over the curatorship of CAS to Kate's protégé, Alice Eastwood. From their "botanical paradise" that was their home in San Diego, Kate continued her explorations in California, while TS continued his explorations of Baja California and extended his explorations into mainland Mexico. During this period C.A. Purpus began sending TS specimens from California and surrounding states, but later took up sending him specimens from Mexico, including the states of Vera Cruz, Oaxaca, and Chiapas. Through an inheritance to TS, the Brandegees were largely of independent means, but in 1897, TS accepted employment mapping the Teton Forest Reserve in Wyoming. In

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1906, the Brandegees donated their botanical collection (>75,000 specimens) and botanical library to the University of California and moved to Berkeley, where they lived the rest of their lives. In these later years, Kate published less and completed less field work, but had a great effect on the maturation of her husband's professional career (Crosswhite and Crosswhite 1985). TS published extensive studies of the plants of Mexico, culminating in his best known work, the twelve volume *Plantae mexicanae Purpusianae*, published between 1909 and 1924.

Together, the Brandegees had an important and lasting influence on western North American botany. They were integral in the matriculation of the Pacific school from reliance on the expertise of Eastern botanists and they played an important role in the maturation of general botanical thinking in the west. Outside of botany, Kate was at the leading edge of what was a very significant assertion of rights for women professionals (Crosswhite and Crosswhite 1985). Their work reflects a life-long and honest respect for nature as reflected in the diversity of plants, an interest that went well beyond the desire to have their names associated with as many botanical entities as possible.

Table 1. Eponymy of New Mexico Plant Names (13)

- Astragalus brandegeei* Porter
Corydalis brandegeei S. Wats. (= *Corydalis caseana* Gray subsp. *brandegeei* (S. Wats.) G. Ownbey)
Dicoria brandegeei Gray (= *Dicoria canescens* A. Gray var. *brandegeei* (Gray) Cronquist)
Erigeron brandegeei A. Gray (= *Erigeron concinnus* (Hook. & Arn.) Torr. & A. Gray var. *concinnus*)
Eriogonum brandegeei Rydb.
Gilia brandegeei A. Gray (= *Polemonium brandegeei* (A. Gray) Greene)
Hymenoxys brandegeei Porter ex A. Gray (= *Tetranuris brandegeei* (Porter ex A. Gray) Parker)
Penstemon brandegeei Porter ex Rydb. (= *Penstemon glaber* Pursh var. *brandegeei* (Porter ex Rydb.) Freeman)
Trifolium brandegeei S. Wats.
Zuckia brandegeei (A. Gray) Welsh & Stutz
Elodea brandegeae St. John (= *Elodea canadensis* Michx.)
Galium brandegeei A. Gray (= *Galium trifidum* L. subsp. *subbiflorum* (Wieg.) Puff)
Ranunculus macauleyi A. Gray var. *brandegeei* L. Benson (= *Ranunculus macauleyi* Gray)

Table 2. Authorship of New Mexico Plant Names (5)

- Helianthus niveus* (Benth.) Brandegee subsp. *canescens* (A. Gray) Heiser [Mexico]
Krynitzkia mexicana Brandegee (= *Cryptantha mexicana* (Brandegee) I.M. Johnst.) [Coahuila, Mexico]
Thelypodium purpusii Brandegee (= *Thelypodopsis purpusii* (Brandegee) Rollins) [Mexico]
Hosackia plebeia Brandegee (= *Lotus plebeius* (Brandegee) Barneby) [Baja, Mexico]
Scutellaria potosina Brandegee [Mexico]

Note: Complete lists of all taxa used for this report may be obtained from Chris Frazier.

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Literature Cited

- Allred, K.W. 2000. A Working Index to New Mexico Vascular Plant Names. Published on the Internet: <http://web.nmsu.edu/~kallred/herbweb/Index-web-title.htm>
 Brummitt, R.K., and C.E. Powell. 1992. Authors of Plant Names. Royal Botanic Gardens, Kew, England.
 Crosswhite, F.S., and C.D. Crosswhite. 1985. The plant collecting Brandegees, with emphasis on Katharine Brandegee as a liberated woman scientist of early California. *Desert Plants* 7:128-139, 158-162.
 Elliott, C.A. 1979. Biographical dictionary of American Science. The 17th through 19th century. Greenwood Press. Westport, Connecticut. Pages 39-40.
 Porter, T.C., and J.M. Coulter. 1874. Synopsis of the Flora of Colorado. Government Printing Office, Washington, D.C.
 The Plant Names Project. 1999. International Plant Names Index. Published on the Internet: <http://www.ipni.org>
 Setchell, W.A. 1926. Townshend Stith Brandegee and Mary Katherine (Layne) (Curran) Brandegee. *University of California Publications in Botany* 13: 154-178.
 Slack, N.G. 2000a. Brandegee, Mary Katharine Layne Curran. *American National Biography Online*. <http://www.anb.org/articles/13/13-01940>. Oxford University Press.
 Slack, N.G. 2000b. Brandegee, Townshend Stith. *American National Biography Online*. <http://www.anb.org/articles/13/13-00185>. Oxford University Press.

What's In A Name?

I sometimes ask students about the meaning of the specific epithet of *Eragrostis cilianensis*. Almost invariably, they respond that it signifies something about hairs, relying on their knowledge of the term ciliate. This allows me to take a little jaunt into the interesting world of botanical Latin and the use of adjectival suffixes to indicate geographic origin. Whenever we see the ending *-ensis*, we can be sure that the word is referring to a place, in this case, the Ciliani Estate in Italy, from whence came a specimen of stinkgrass. Other *-ensis* names from the New Mexico flora are *Cheilanthes alabamensis*, *Juniperus coahuilensis*, *Osmorhiza chilensis*, *Asclepias sanjuanensis*, *Helianthus arizonensis*, *Astragalus missouriensis*, *Cryptantha nevadensis*, *Lesquerella navajoensis*, *Echinocactus texensis*, *Escobaria organensis*, *Lonicera utahensis*, and *Penstemon alamosensis*, to name just a few. There are no "new-mexicensis" names. Rather, our fair state is commemorated by "neomexicana" or "novomexicana" (with appropriate endings to reflect gender), such as *Stipa neomexicana*, *Cirsium neomexicanum*, *Erigeron neomexicanus*, *Delphinium novomexicanum*, and *Heuchera novomexicana*. — ka



A Key To *Calochortus* In New Mexico

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This key is offered as an alternative to existing keys; it is not revisionary. An exhaustive study was not made of the regional herbaria to obtain the most complete range data. Therefore, sego lilies may be found in more counties than those indicated below. When collecting, press the flowers so the inside of at least one petal is visible, preferably with the flower completely open. Note the color and gland characteristics of fresh flowers before pressing.

Terminology: **Bulbiferous** = producing solitary bulblets in axils of lowest leaf or leaves, usually at or below ground level; the stems arise from deep-seated bulbs. **Glands** are usually depressed and encircled entirely or partially by a ± fringed membrane, and are densely short-hairy inside. **Petal hairs** are longer than the gland hairs located on the inner surface of the petals, and are located outside but near the gland. **Hair tips** of either type may be entire or sometimes dilated or branched, depending on the species.

- 1 *Stems* decumbent to weakly erect, often twining among other plants or straggling along ground, branched; *plants* rarely bulbiferous; *petals* white with lilac tinge to purplish, with transverse yellow band at the gland & usually with purple spot on claw below gland; *glands* not (or only slightly) depressed, transversely lunate to orbicular; *membrane* around gland none; *petal hairs* few, short, thick or petals glabrous; dry stony slopes & rocky mesas & flats; 1600–6600 ft; sw&nwNM (HI, SJ), swCO, nAZ, s&eUT, sNV, seCA; Apr–Jun.....*Calochortus flexuosus* S. Wats.
- 1 *Stems* strict, erect; *plants* usually bulbiferous; *petals* white, purplish, yellow, sometimes or often with narrow curved purple band above gland & a purple spot on claw below gland; *petal hairs* usually elongate, simple or branched; *glands* transversely elongate or circular, depressed; *membrane* partly or completely surrounding gland
 - 2 *Glands* narrowly or broadly elongate transversely, bottom of gland not curved downward, usually arched upward or at least perpendicular to axis of petal (sometimes curved downward & gland orbicular in *C. ambiguus*); *petal hairs* yellow, tips enlarged or branched & ± glandular, bases of petal hairs sometimes purplish; *petals* sometimes marked with many short, narrow purple striae that are often associated with the purple bases of petal hairs, particularly in *C. gunnisonii*; *anther tips* acute or obtuse
 - 3 *Glands* narrow, oblong, elongate, usually arched; *petal hairs* elongate, tips branched; *petals* white to purple or yellow; *sepals* often with purple band & spot (but no gland); *anther tips* acute to apiculate; dry to moist slopes, primarily in Rocky Mountains; 7200–9200 (10,500) ft; Jun–Aug.....*Calochortus gunnisonii* S. Wats.
 - 4 Petals white or purple; NM (BE [Sandia Mts], CA, CO, LA, MC [Chuska Mts], RA, SA [Jemez Mts], SJ [Chuska Mts], TA, TO [Manzano Mts], UN [Sierra Grande]), seAZ, eUT, CO, WY, MT, SD (Black Hills)..... var. *gunnisonii*
 - 4 Petals yellow; known only from nNM (MO, SM)..... var. *perpulcher* Cockerell
 - 3 *Glands* transversely lunate to orbicular; *petal hairs* yellowish, elongate, tips expanded to slightly lobed; *petals* pinkish to bluish-gray, rarely with narrow longitudinal gray stripe on petals & sepals; *anther tips* usually obtuse (rarely acute); may be confused with *C. nuttallii*; dry slopes & hills; 6600–8200 ft; swNM (GR, HI, MC), AZ, swUT; May–Jul*Calochortus ambiguus* (M.E. Jones) Ownbey
 - 2 *Glands* circular; *petal hairs* simple; *anther tips* obtuse
 - 5 *Glands* orbicular to transversely lunate; *petal hairs* yellowish, elongate, tips expanded to slightly lobed; *petals* pinkish to bluish-gray, rarely with narrow longitudinal gray stripe on petals & sepals; *anther tips* usually obtuse (rarely acute); may be confused with *C. nuttallii*; dry slopes & hills; 6600–8200 ft; swNM (GR, HI, MC), AZ, swUT; May–Jul*Calochortus ambiguus* (M.E. Jones) Ownbey
 - 5 *Glands* circular; *petal hairs* few, elongate, yellowish, tips simple (rarely slightly dilated); *petals* & *sepals* with reddish-brown or purple band or spot above gland
 - 6 Petals lemon yellow; dry sandy or clayey locations; 3900–6600 ft; nwNM (CI, MC, SJ), ec&nAZ, s&eUT, May–Jun.....*Calochortus aureus* S. Wats.
 - 6 Petals white, tinged with lilac (rarely magenta), yellow at base of claw; state flower of UT; bulbs edible; most widespread species of genus; may be confused with *C. ambiguus*; dry slopes & flats; 2400–8200 ft; northern Great Plains to Wyoming Basin & south, nwNM (GR, RA, SA, SJ, TA), nAZ, wCO, UT, e&sNV, WY, MT, seID, ND; Jun–Jul.....*Calochortus nuttallii* Torr. & Gray var. *nuttallii*

REFERENCES

- Beal, J.M. and M. Ownbey. 1943. Cytological studies in relation to the classification of the genus *Calochortus*, III. Bot. Gaz. **104**:553–562.
 Ownbey, M.A. 1940. A monograph of the genus *Calochortus*. Ann. Missouri Bot. Gard. **27**:371–560.
 Ownbey, M.A. 1969. *Calochortus*. Univ. Wash. Publ. Biol. **17**(1):765–779

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

— L. innaeus



On Our Alpine Potentillas

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There are problems with classifying, identifying, and finding the alpine cinquefoils reported for New Mexico. This note does not solve the problems but is meant to promote observations and reflections that will do so.

To put all the names on the table, I begin with a key that uses species-names for taxa reported from the state's tundra, though some of these taxa are better treated at lower levels. The key borrows from Weber and Wittman (1996) and from Holmgren (1997). These sources and others disagree in characterizing several species, especially *Potentilla rubricaulis*.

- 1 Shrub; style lateral.....*Potentilla fruticosa* (*Pentaphylloides floribunda*)
- 1 Herb, style basal or near-terminal
 - 2 Basal leaves pinnate, most leaves with 7 to 13 leaflets
 - 3 Style basal; plant often sticky.....*Potentilla glandulosa* (*Drymocaulis glandulosa*)
 - 3 Style near-terminal; plant not sticky
 - 4 Style to 1.1 mm long, conical from base; leaflets revolute.....*Potentilla pensylvanica*
 - 4 Style 1.2 mm or longer, cylindrical; leaflets not revolute
 - 5 Basal leaves with 7-15 leaflets evenly reduced in size downward.....*Potentilla hippiana*
 - 5 Basal leaves with 5 to 7 leaflets, lowest leaflet-pair(s) much reduced and separated.....*Potentilla subjuga*
 - 2 Basal leaves digitate or subdigitate, most leaves with 3 to 7 leaflets
 - 6 Style to 1.1 mm long, at the base conical or papillose or glandular-thickened
 - 7 Leaflets 5 (-7), the petioles pilose, some also obscurely tomentose.....*Potentilla rubricaulis*
 - 7 Leaflets 3, the petioles various
 - 8 Petioles densely pilose (with or without tomentum); flowers (1)-2-3 per stem.....*Potentilla uniflora*
 - 8 Petioles densely tomentose (with or without some straight hairs); usually more than 3 flowers per stem.. *Potentilla nivea*
 - 6 Style 1.2 mm or longer, cylindrical to claviform
 - 9 Leaflets glabrous to sericeous below, not tomentose
 - 10 Leaflets 5 with 3 apical teeth; leaf surfaces usually glabrate.....*Potentilla sierrae-blancae*
 - 10 Leaflets 5-7 with 3-7 teeth above the middle; leaf surfaces usually sericeous (to glabrate).....*Potentilla diversifolia*
 - 9 Leaflets white-tomentose below
 - 11 Leaflets incised 1/2 to 2/3 toward midrib
 - 12 Leaves digitate or nearly so; usually flowering in June, stems spreading in fruit.....*Potentilla divisa*
 - 12 Leaves loosely subdigitate, the lowest leaflets reduced and separated, flowering in July-August; stems erect.....*Potentilla subjuga*
 - 11 Leaflets incised less than 1/2 way to midrib
 - 13 Plants (in tundra) 2-8 cm tall; 1-6 flowers per stem; anthers 0.6-0.9 mm long; usually flowering in June.....*Potentilla concinna*
 - 13 Plants taller than 15 cm; stems many-flowered; anthers 0.7-1.1 (-1.4) mm long; flowering July-August.....*Potentilla pulcherrima*

Potentilla concinna Richardson var. *concinna* is widespread in northern New Mexico. Riffle (1973) has it from 8 collecting areas in the Zuni Mountains. Garcia (1970) has it from Mt. Taylor and Sugarite Canyon, and I too have it from Sugarite, among other low-elevation areas. Johnston (1980) has 3 map-dots in Colfax and Taos counties. In alpine tundra, Baker (1983) found it in 7 of 10 alpine vegetation types on Mt. Wheeler and I have collections from the Costilla Massif (Taos County near the Colorado border) to 12,880 feet elevation and from Gold Hill (Taos County) to 12,700. I emphasize these records because Allred's (1999) dropping var. *concinna* from the list of New Mexican plants was the occasion for this review. *P. concinna* as keyed above includes plants of very different appearances, even aside from the variant called *P. divisa* above. Alpine plants are compact and usually 2-3 cm tall; lower-elevation plants are sprawling and 6-10 cm tall. All have leaflets densely white-tomentose below but their upper surfaces vary from shiny green

with a few strigose hairs to thinly white-tomentose. In my experience the inflorescences are always spreading or ascending and become more nearly horizontal as the fruits mature.

Potentilla diversifolia Lehmann is reported (correctly?) as low as 8,000 feet elevation in the San Francisco, Jemez, and Sandia Mountains, but the species is alpine or near-alpine in the Sacramento and Sangre de Cristo Mountains, and on some mountains is the most common alpine potentilla.

Potentilla divisa (Rydb.) Rydb. is also known as *P. concinna* var. *divisa* Rydb. and (a name applied mistakenly) *P. quinquefolia* Rydb. It has not previously been reported in New Mexico, but is common on the Costilla Massif (RSP 79-32). However, Johnston (1980) states that this form of *P. concinna* with deeply cut leaflets occurs throughout the range of *P. concinna* var. *concinna* and is not worthy of taxonomic separation from that variety.

(Continued on page 6, *Potentilla*)



(*Potentilla*, Continued from page 5)

Potentilla fruticosa L. [*Dasiphora fruticosa* (L.) Rydb., *Pentaphylloides floribunda* (Pursh) Löve] occurs mainly at timberline and in the subalpine but is also alpine. Baker (1983) designated stands dominated by it as one of the ten alpine vegetation types of Mt. Wheeler.

Potentilla glandulosa Lindl. [*Drymocaulis glandulosa* (Lindl.) Rydb.] occurs mostly at lower elevations (Martin and Hutchins have it at 7000-9000 feet) but was reported (as *P. filipes* Rydb.) from alpine tundra by Wootton and Standley (1915). I have not seen it above timberline. Harrington (1954) and Weber and Wittman (1996) have *P. glandulosa* in northern Colorado and northward; perhaps they would assign the New Mexican plant to *P. fissa* Nutt. [*Drymocaulis fissa* (Nutt.) Rydb.].

Potentilla gracilis Dougl. ex Hook. is reported from the alpine of Mt. Wheeler by Baker (1983). Because *P. gracilis sensu stricto* is mostly found in the lower subalpine or lower vegetation, and because Baker does not otherwise mention *P. gracilis* var. *pulcherrima*, I assume that he refers to the taxon here treated as *P. pulcherrima* so I have omitted *P. gracilis sensu stricto* from the key.

Potentilla hippiana Lehmann occurs mainly at lower elevations but is also above timberline. It is said to form a confusing array of hybrids with *P. pulcherrima*, *P. diversifolia*, and *P. concinna* (Garcia 1970, Johnston 1980, Weber and Wittmann 1996, Holmgren 1997).

Potentilla nivea L. is known on alpine ridges in Colorado and Utah. Welsh et al. (1993) state that the species occurs in New Mexico. I've seen no other such record. Taxonomy of *P. nivea* and its close relatives is confused and controversial; see Hansen et al. (2000).

Potentilla pensylvanica L. is widespread in New Mexico but its alpine occurrences may be limited to Mt. Wheeler and Sierra Blanca. Welsh et al. (1993) and Weber and Wittman (1996) record an alpine, subdigitate form, var. *paucijuga* (Rydb.) Welsh and Johnston (but see *P. rubricaulis* below). I know no record of this variety from New Mexico, but palmately 5-7 foliolate plants should be checked for the short styles of var. *paucijuga* or *P. rubricaulis*.

Potentilla pulcherrima Lehmann is widespread in New Mexico, mostly at lower elevations but also in tundra. It is variable and sometimes is difficult to distinguish from *P. concinna*, and with *P. hippiana* it produces a confusing array of hybrids. Holmgren (1997) and some other authors treat *P. pulcherrima* as *P. gracilis* var. *pulcherrima* (Lehm.) Fernald.

Potentilla rubricaulis Lehmann is to my knowledge unknown in New Mexico except for Baker's (1983) report of it in the tundra of Mt. Wheeler. The name has been variously applied (Welsh et al. 1993). Weber and Wittman (1996) treat *P. hookeriana* Lehm. as a separate species (with leaflets 3) but Welsh et al. include it in *P. rubricaulis* (with leaflets 5-7). Holmgren (1997) includes *P. pensylvanica* var. *paucijuga* in his version of *P. rubricaulis*. That "*Potentilla rubricaulis*" represents different entities is indicated by Holmgren's measuring anthers 0.3-0.5 mm long (smaller than in any other potentilla) and Harrington (1954) 0.5-0.8 mm.

Potentilla sierrae-blancae Woot. & Rydb. is known only

from Sierra Blanca, where it is on rock ridges and alpine fell-fields. Keys that claim the plant to be "completely glabrous" (Wootton and Standley 1915; Martin and Hutchins 1980) are wrong; stems, bracteoles, sepals, and hypanthiums are villous, leaflets are coarsely ciliate and their lower surfaces are sparsely villous to glabrate. The anthers seem never to have been described; they are 0.5-0.7 mm long.

Potentilla subjuga Rydb. is known from northern Taos County (Johnston 1980), from Wheeler Peak (McKay 1970), from the Latir Peaks (Spellenberg et al. 1986), and from the Costilla Massif (RSP 79-32, 82-375) and Gold Hill (RSP 00-276). It has also been known as *P. concinna* Richardson var. *rubripes* (Rydb.) C. L. Hitchcock.

Potentilla uniflora Ledeb. (*P. ledebouriana* Porsild) is to my knowledge recorded for New Mexico only by McKay (1970), although he did not regard his report as a state record so must have known an earlier report.

Of the above 14 entities, two (*P. gracilis sensu stricto* and *P. glandulosa*) are not reliably reported from New Mexican tundra, one (*P. divisa*) reduces to *P. concinna* var. *concinna*, and three (*P. nivea*, *P. rubricaulis*, and *P. uniflora*) are known from single reports about which there could be questions of identification. That leaves eight alpine species, plus hybrids of *P. hippiana*. Characteristics of these species in New Mexico are inadequately known and no existing key will reliably identify them.

Literature cited

- Allred, K.W. 1999. A Working Index of New Mexico Vascular Plant Names. Limited copies printed by the author. [The 2000 version is available at <http://web.nmsu.edu/~kallred/herbweb/>]
- Baker, W. L. 1983. Alpine vegetation of Wheeler Peak, New Mexico, U.S. A.: gradient analysis, classification, and biogeography. *Arctic and Alpine Research* 15: 223-240.
- Garcia, J. D. 1970. A study of the genus *Potentilla* in New Mexico. M.S. thesis. Albuquerque: University of New Mexico. 93 pp.
- Hansen, K. T., R. Elven, and C. Brochmann. 2000. Molecules and morphology in concert: tests of some hypotheses in Arctic *Potentilla* (Rosaceae). *American Journal of Botany* 87: 1466-1479.
- Harrington, H. D. 1954. *Manual of the Plants of Colorado*. Denver: Sage Books. 666 pp.
- Holmgren, N. H. 1997. Rosaceae. IN: Cronquist, A., et al., editors. *Intermountain Flora* 3A: 64-158. Bronx: New York Botanical Garden.
- Johnston, B. C. 1980. Studies of population variability leading to a new classification of *Potentilla* sect. *Multijugae* (Rosaceae). Ph.D. thesis. Boulder: University of Colorado.
- MacKay, H. A. 1970. A comparative floristic study of the Rio Hondo Canyon-Lake Fork-Wheeler Peak locale, New Mexico, and the Huerfano River-Blanca Peak locale, Colorado. Ph.D. thesis. Albuquerque: University of New Mexico. 226 pp.
- Martin, W. C., and C. R. Hutchins. 1980. *A Flora of New Mexico*. Vol. 1. Vaduz, Germany: J. Cramer. 1276 pp.
- Riffle, N. L. 1973. The flora of Mt. Sedgwick and vicinity. M.S. thesis. Albuquerque: University of New Mexico. 114 pp.
- Spellenberg, R. R., et al. 1986. Additions to the flora of New Mexico. *Sida* 11: 455-470.
- Weber, W. A., & R. C. Wittmann. 1996. *Colorado Flora: Eastern Slope*. Third Edition. Niwot: University Press of Colorado. 524 pp.
- Welsh, S. L. et al. 1993. *A Utah Flora*. Second Edition. Provo: Brigham Young University. 986 pp.
- Wootton, E. O., and P. C. Standley. 1915. *Flora of New Mexico*. Contributions from the U. S. National Herbarium 19: 1-794.



New Plant Distribution Records

New records for New Mexico are documented by complete collection information and disposition of a specimen (herbarium).

— Steve L. O’Kane [Department of Biology, University of Northern Iowa, Cedar Falls, IA 50614] and Ken Heil [San Juan College, Farmington, NM 87402]

Lesquerella pruinosa Greene (Brassicaceae): Rio Arriba Co: Rolling low hills of sage and grassland WSW of Eagle Point, 1.2 miles west of hwy 84 on County Road 349, Mancos Shale. 36°56'15"N 106°48'58"W. Elev. 2312m. 6 June 2000. O’Kane & Heil, 4822B (ISTC, SJNM).


— Richard Worthington [P.O. Box 13331, El Paso, TX 79913]
Agastache pallidiflora (Heller) Rydberg subsp. *pallidiflora* var. *havardii* (A. Gray) R. Sanders (Lamiaceae): Eddy Co: Guadalupe Mts, upper part of south fork of Big Canyon, 6900 ft, 13 Aug 2000, Worthington 30198 (NMCR, UTEP).

— Ken Heil [San Juan College, Farmington, NM 87402] and Kelly W. Allred [MSC Box 3-I, New Mexico State University, Las Cruces, NM

88003]

Salsola paulsenii Litv. (Chenopodiaceae): McKinley Co: Navajo Nation, ca. 5 miles north of Tohatchi on US 666, 6180 ft, 23 Aug 2000, K. Heil 15367 (NMCR, SJNM); San Juan Co: B-Square Ranch, Gallegos Wash near the junction with San Juan River, 5200 ft, K. Heil & S.L. O’Kane 14694 (NMCR, SJNM).

— Tim Reeves [San Juan College, Farmington, NM 87402]

Glaux maritima L. (Primulaceae): San Juan Co: San Juan River, BLM Valdez Tract, *Juncus* marsh west of picnic area, with cattails, salt cedar, Russian olive, and cottonwood, one local patch, T29N, R10W, S19 & 20, 7 July 1999, Tim Reeves 9887 (SJNM). 

Botanical Literature of Interest

TAXONOMY AND FLORISTICS:

MISCELLANEOUS:

Stuckey, R.L. & W.R. Burk (eds.). 2000. **History of North American Botany**. Sida, Botanical Miscellany #19 (ISSN 0883-1475). 376 pp.

RARE, THREATENED, AND ENDANGERED PLANTS:


[See New Mexico Rare Plants, presented by the NM Rare Plant Technical Council: <http://nmrareplants.unm.edu>]

WEB SITES OF INTEREST:


PhyloCode: a formal set of rules governing phylogenetic nomenclature: <http://www.ohiou.edu/phylocode/>

NatureServe: An Online Encyclopedia of Life. Gives “authoritative conservation information on more than 50,000 plants, animals, and ecological communities of the United States and Canada.” <http://www.natureserve.org/index.htm>

Astragalus website: http://loco.ucdavis.edu/astragalus/astragalus_home.htm

Plant Trivia Timeline from Huntington Botanical Gardens: <http://www.huntington.org/BotanicalDiv/Timeline.html> 

CALENDAR —

- Botany 2001: 12-16 August 2001, Albuquerque, NM. Details at www.botany2001.org
- Andre Michaux International Symposium: 15-19 May 2002, Gaston County, NC. Details at www.michaux.org 



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Range Plant Specialist

JUNIPER MISTLETOES: 1, 2, and *Phsp.*?

Roger S. Peterson
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In New Mexico three species of *Phoradendron* parasitize junipers. All are dioecious. They are spread mainly by the thrushes (including bluebirds), waxwings, and phainopeplas that eat their berries. Unlike the more destructive dwarf mistletoes (*Arceuthobium*) on other conifers, phoradendrons manufacture much of their own food, taking only water and minerals from their hosts.

Most abundant is the leafless *Ph. juniperinum*, found throughout the state except along the eastern border. Winter-flowering *Ph. capitellatum*, with pubescent leaves 1-2 x 8-14 mm., is in Arizona and southwestern New Mexico, west of the Rio Grande. A summer-flowering *Phoradendron* sp., with glabrous leaves that measure 1.5-3 x 6-20 mm., is in southwestern Texas and southeastern New Mexico well east of the Rio.

Why "sp."? It does have names: *Ph. bolleanum* subsp. *hawksworthii* (which first appeared in Correll and Johnson, 1970, Manual of the Vascular Plants of Texas) and *Ph. hawksworthii* (which has appeared for 20 years in Forest Service publications and the draft Chihuahuan Desert Flora). Their authors are cited respectively as "Wiens" and "(Wiens) Wiens." But Del Wiens (University of Utah) says that he's never published the names, for reasons too long to recite from his present location (he's currently docked in Australia while taking a sailboat around the world). So it's *Phoradendron* sp. or *Ph. hawksworthii* ined. for those of us working on Guadalupe Mountains plants. 



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