



# Sego Lily

Newsletter of the Utah Native Plant Society

## Developing a Utah Rare Plant List

by Walter Fertig, UNPS Rare Plant Committee



November 2009

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*Left: Charleston Mountain violet (Viola purpureus var. charlestonensis or V. charlestonensis) can be easily recognized by its yellow flowers and gray-pubescent foliage. This Carmel Formation endemic of southern Utah and southern Nevada is on the UNPS Watch list. Photo from Zion National Park by W. Fertig.*

While they often do not get the same attention or notoriety, plants can be just as endangered or threatened with extinction as animal species. With a few notable exceptions, conservationists have traditionally been more concerned with the plight of rare game animals, showy birds, and edible fish than with less charismatic vertebrates, invertebrates, or plants. This bias was reflected in early efforts to protect endangered species. The first national law, passed in 1966, only addressed vertebrates and was little more than an effort to compile a list of vulnerable species. It provided little in the way of habitat protection or penalties.

The law was amended in 1969, but it remained until 1973 before an Endangered Species Act was passed that had real teeth. The 1973 act was also the first to extend endangered species protection to plants and invertebrates deemed worthy of listing by the US Fish and Wildlife Service. Specifically, the new law protected listed species from direct harm, preserved critical habitat, and required development projects on public lands and using federal funds to consider the potential impacts on these species during the planning process. This landmark piece [continued on page 4]

## Utah Native Plant Society



## Utah Native Plant Society

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### Many thanks to Xmission for sponsoring our website.

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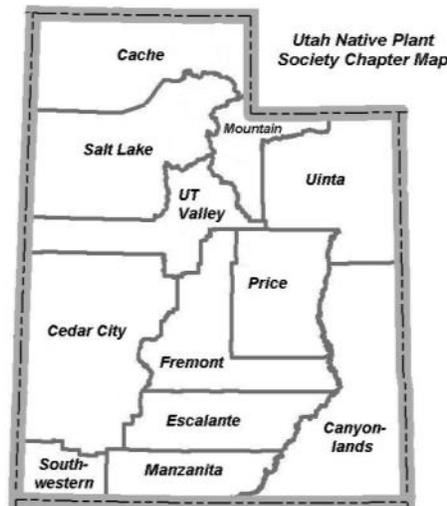
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## Chapter News

**Cedar City:** Gayle Horn, CCNP treasurer and local bee expert, will discuss "Why pollinators are important" as well as how to attract them, how to collect honey, and Africanized bees (are they a threat?) at our October meeting, Wednesday evening, October 21st at the Community Presbyterian Church at 7 PM. - Alice Maas

**Escalante:** Upcoming meetings include: Tuesday, November 10th—"History of the Colorado Plateau—Vegetation and Environment" by Eric Feiler, 7PM Interagency Office. Tuesday, December 8th—Christmas finger food pot luck party at the Priska's new home on the corner of 200 West and 200 South, 6-8 PM. Bring food bank donations if you wish. There will be a plant-related gift exchange if you would like to participate. Please contact Harriet if you can help set up or provide drinks.



Wednesday, January 13th, 2010—"Growing Edible and Medicinal Natives" by Deborah McLaughlin, 7 PM at the Interagency Office.

The following is a 'recipe' for lasagna composting I found on the internet that might be helpful to gardeners:

Sheet or Lasagna Composting  
Sheet composting is an ancient technique that has many practical applications today. It is a cold composting method that is an excellent way to convert grass to vegetable beds, create new or enlarge perennial borders, improve soil and soil structure, and recycle organic material at home. As with all compost, sheet composting needs carbon, nitrogen, oxygen, and water in proper proportions to break down the organic materials into a good growing medium.

To build any good compost you need to plan ahead. Sheet composting is best started several months before you want to use the planting area. Fall is an excellent time to sheet compost as the material breaks down slowly over the winter and is ready for planting in the spring. But a bed may be started any time materials are available. The basic technique involves placing alternate layers of carbon materials and nitrogen materials directly onto the soil. Layers should be fairly



Above: White Dome, on the Utah-Arizona state line south of St. George, is a block of SITLA land being sold to The Nature Conservancy to protect the endangered Dwarf bearclaw poppy, Siler's pincushion cactus, and many other rare Mohave Desert plant and animal species. The plant in the foreground is the pale blue-flowered phase of *Delphinium scaposum* var. *scaposum*. Photo by Tony Frates.

equal to allow for even decomposition. One inch is recommended, although deeper layers can be used. For more information, go to <http://extension.oregonstate.edu/lane/sites/default/files/documents/Lasagna.pdf> - Harriet Priska

**Manzanita (Kane County):** Our October meeting featured paleobotanist Dr. Ian Miller of the Denver Museum of Nature and Science. Dr. Miller's team has spent the past two summers excavating late Cretaceous age floodplain deposits of the Kaiparowits Formation in the Grand Staircase-Escalante National Monument between Henrieville and Escalante. So far Miller has identified fossil leaf impressions of at least 86 species of flowering dicots, aquatic monocots, gymnosperms, and fern allies from the strata. Based on morphological characteristics of the leaves and other physical evidence, Miller believes the vegetation of the area was a subtropical swamp and had a climate similar to the Gulf Coast of North America today. The site will likely have one of the most species-rich floras of any late Cretaceous site in western North America when their study is complete.

### **UNPS Contributes to White Dome Preserve**

Thanks in part to contributions from UNPS members and sponsors, the Society finished in the black after hosting the fifth Southwest Rare Plant Conference in March 2009. The UNPS Board voted in September to donate half of this extra money to The Nature Conservancy's Utah Field Office to help them purchase the final 470 acres of the White Dome Preserve south of St. George. When completed, the White Dome Preserve will protect critical habitat for one of Utah's rarest plant species, the Dwarf bearclaw poppy (*Arctomecon humilis*), Siler's pincushion cactus (*Pediocactus sileri*) and over a dozen other rare and unusual plant and animal species restricted to the Mohave Desert. Elaine York of The Nature Conservancy thanked UNPS for the gift of \$2000, which will help TNC match other donations. As reported in the September issue of the *Sego Lily*, more funds are still needed to make the project a reality. If you wish to help, contact TNC's Heidi Mosburg at [hmosburg@tnc.org](mailto:hmosburg@tnc.org) or (801) 531-0999.

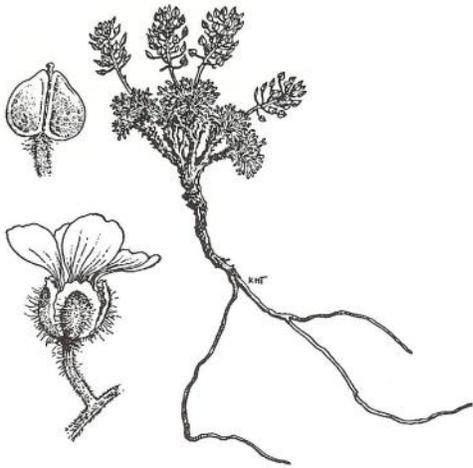
In November, I will be speaking about the Deer Creek bio-blotz project conducted by The Nature Conservancy outside of Boulder, Utah in July 2007 and May 2008. The bio-blotz was a 48 hour effort by a team of wildlife biologists, entomologists, botanists, and ecologists to record as many species of animals and plants as possible from the study area (a tributary of the Escalante River). The meeting will be held on Tuesday, November 10 at 7 PM in the Grand Staircase visitor center.— *Walter Fertig*

**Mountain (Summit County):** On September 5, about 10 members of the chapter went out to a property just east of Park City and collected native seed for a native plant propagation workshop in the spring. Most everyone got a bit of that 'seed greed'

going ("just a few more should be fine"). Species we collected include: *Frasera speciosa*, *Penstemon subglaber*, *Elymus elymoides*, *Balsamorhiza macrophylla*, *Castilleja chromosa*, and *Tetradymia canescens*. Let's hope for a successful propagation! - *Mindy Wheeler*

**Southwestern:** The chapter held a "Landscaping and Water Conservation" hands-on presentation by Tim McAlmond (from Shadow Farm Native Plant Nursery) on October 5th. Our field trip to Ali's Organics in La Verkin on October 21st was a huge success. Ali has created a small farm within the town and showed us how she set up a small greenhouse and several cold frames. Her enthusiasm was reflected in our desires to find ways to successfully propagate. - *Barbara Farnsworth*

## Developing a Utah Rare Plant List [continued from page 1]



*Left: Ostler's pepperwort (Lepidium ostleri) is endemic to the San Francisco Mountains of Beaver County. This low-growing mustard was first collected by Kent Ostler in 1978 while conducting a rare plant survey and named as a new species in his honor by Stan Welsh and Sherel Goodrich two years later. L. ostleri is one of 10 Utah plant species currently being re-viewed for possible candidate status under the ESA (see story on page 18) and is ranked as a "high priority" for conservation attention by UNPS. Illustration by Kaye Thorne.*

of legislation was passed by wide, bipartisan majorities in the house and senate and signed by President Nixon. In the ensuing 36 years the act has helped prevent the extinction of hundreds of plant and animal species. Mechanisms in the act have allowed most conflicting development projects to proceed with modifications to protect impacted species, though the law remains controversial among those opposed to any such government interference.

Extending endangered species protection to plants was a remarkable legal precedent in that plants had traditionally been viewed as private property rather than a public resource (as wild, free-roaming animals have historically been). Nonetheless, protections for plants remain less stringent than those for animals on private lands. ESA protection for plants is mostly limited to illegal harvest or harm on federal lands, or if federal funds are involved.

Fewer than 200 species were on the endangered and threatened species list in 1973, none of which were plants. To amend this situation, Congress directed the Secretary of the Smithsonian Institution to develop a list of vascular plants that might warrant listing. Unfortunately for the Secretary, a well-respected ornithologist named S. Dillon Ripley, he was given only one year to do so, and essentially no funding.

The challenge to develop a list of endangered plants for the United States was especially daunting in the early 1970s due to a lack of basic information. Prior to passage of the ESA, the topic of rarity in plants was mostly limited to phytogeographers debating theoretical matters of species senescence and centers of origin and a few taxonomists interested in finding and describing novel species. Surprisingly little field work had been done on many of the rarest species.

One of the most important outcomes of the Endangered Species Act was to motivate and provide funding opportunities for the most intensive period of botanical field work in the history of North America (even surpassing the original phase of scientific exploration of the 19th Century). Ron Hartman and Ernie Nelson recently reported that nearly 1200 new vascular plant species had been described in North America from 1975-1994, or an average of 60 new species per year. In Utah alone, Stan Welsh, Duane Atwood, Sherel Goodrich, Larry Higgins, Noel and Pat Holmgren, Rupert Barneby, and a host of others have described over 250 new plant species since the early 1970s. Not surprisingly, most of the newly discovered taxa have restricted ranges and small populations, making them potential candidates

for state and federal rare species lists.

Amazingly, the Smithsonian Institution met its congressional deadline in January 1975 and compiled a thorough list of 761 endangered, 1238 threatened, and 100 extinct plant species in the continental United States (another 1088 endangered, threatened, and extinct plants were reported for Hawaii). All told, 2099 plant taxa were cited as being vulnerable in the continental US, representing just over 10% of the total flora. Of these, 194 species were from Utah, including 56 listed as endangered, 133 threatened, and 5 extinct\* (Ayensu and dePhillips 1978).

Prompted by the Smithsonian report, Stan Welsh and Duane Atwood of Brigham Young University and James Reveal of the University of Maryland took a more in-depth look at the status of rare plants in the state and published the first Utah-specific rare plant list in 1975. Welsh and colleagues analyzed the status of 382 of the state's rare and endemic species and found that 66 were possibly endangered, 198 threatened, and 27 were probably extinct range-wide or within Utah (Welsh et al. 1975). Welsh revised this list in 1978, drawing on new herbarium and field research to suggest changes in the status of over 50 species (Welsh 1978).

The US Fish and Wildlife Service proposed nearly 1700 of the plants identified in the Smithsonian report for listing as endangered or threatened in June 1976. The first four plant species, all endemics of California's Channel Islands, were officially listed the following year.

\*Of the extinct species, *Astragalus desereticus*, *Ranunculus acriformis* var. *aestivalis*, and *Penstemon scariosus* var. *garrettii* were subsequently rediscovered. Taxonomic questions continue to surround *Astragalus lentiginosus* var. *ursinus*, which has either not been relocated in Utah since Palmer's 1877 type collection, or is equivalent to what is now called var. *mokiensis* and is extant in the state. Only *Cuscuta warneri* remains missing from the Utah flora, though it apparently persists in New Mexico.

Amendments to the ESA in 1978 changed the listing process, and the mass proposal of 1700 species was withdrawn. Under the new rules, species would go through a more formal process in which they were first nominated as candidates before being carefully scrutinized as to whether listing was appropriate. Those that passed muster would then be proposed for listing in the *Federal Register*. After a public review process, proposed species would then either be listed as threatened or endangered or dropped from consideration.

Of the nearly 200 Utah plants initially considered for listing, two were officially designated in 1978: Rydberg milkvetch (*Astragalus perianus*) as threatened and Clay phacelia (*Phacelia argillacea*) as endangered. These were followed by six additional species in 1979. From this original group of eight, three would eventually be dropped from the endangered species list following subsequent surveys that found them much more abundant and less threatened than initially thought (as in the case of Rydberg milkvetch), or because of changes in taxonomic concepts (Purple hedgehog cactus, *Echinocereus engelmannii* var. *purpureus* and Spineless hedgehog cactus, *E. triglochidiatus* var. *inermis*).

The Utah Native Plant Society was founded in November 1978, in part to bring together professional and amateur botanists concerned over the plight of the state's indigenous rare flora. As one of the fledgling Society's first projects, Stan Welsh and other members of the original UNPS Endangered Plants Committee developed a revised list of rare plants of Utah that was published in the January 1980 issue of the Society's newsletter (the precursor of the *Sego Lily*). The committee identified 14 species as "critically endangered", 31 as "endangered", and 68 as "threatened". The list was presented to the US Fish and Wildlife Service as supporting documentation for potential listings.

\*Critically endangered species were differentiated from plain endangered based on their heightened threat from over-collection.

## Utah's Endangered and Threatened Plants

The following 25 Utah plant species are listed under the Endangered Species Act as of October, 2009. Nomenclature follows *A Utah Flora* (2008)

- Arctomecon humilis* (Dwarf bearclaw poppy) Endangered
- Asclepias welshii* (Welsh's milkweed) Threatened
- Astragalus ampullarioides* (Shivwits milkvetch) Endangered
- Astragalus desereticus* (Deseret milkvetch) Threatened
- Astragalus holmgrenii* (Holmgren's milkvetch) Endangered
- Astragalus montii* (Heliotrope milkvetch) Threatened
- Carex specuicola* (Navajo sedge) Threatened (recently verified for SE Utah by sedge expert Anton Reznicek of the Univ. of Michigan)
- Cycladenia humilis* var. *jonesii* (Jones' cycladenia) Threatened
- Erigeron maguirei* (Maguire's daisy) Threatened, proposed for de-listing
- Lepidium barnebyanum* (Barneby's pepperwort) Endangered
- Pediocactus despainii* (Despain's pincushion cactus) Endangered
- Pediocactus sileri* (Siler's pincushion cactus) Threatened
- Pediocactus winkleri* (Winkler's pincushion cactus) Threatened
- Phacelia argillacea* (Clay phacelia) Endangered
- Physaria rubicundula* var. *tumulosa* (*Lesquerella tumulosa*, Kodachrome bladderpod) Endangered
- Primula maguirei* (Maguire's primrose) Threatened
- Ranunculus acris* var. *aestivalis* (*R. aestivalis*, Autumn buttercup) Endangered
- Schoenocrambe argillacea* (Clay reed-mustard) Threatened
- Schoenocrambe barnebyi* (Barneby's reed-mustard) Endangered
- Schoenocrambe suffrutescens* (Shrubby reed-mustard) Endangered
- Sclerocactus whipplei* var. *glaucus* (*S. wetlandicus*, Ouray hookless cactus) Threatened
- Sclerocactus whipplei* var. *ilseae* (*S. brevispinus*, Pariette hookless cactus) Threatened
- Sclerocactus wrightiae* (Wright's fish-hook cactus) Endangered
- Spiranthes romanzoffiana* var. *diluvialis* (*S. diluvialis*, Ute ladies'-tresses)
- Townsendia aprica* (Last Chance townsendia) Threatened

Over the next several years, at least 11 of the recommended critically endangered and endangered plants from the 1980 document would become listed under the ESA.

UNPS and the Endangered Plants Committee would continue to sponsor annual meetings to revise the society's rare plant list over the next decade. Updated lists were published in the *Great Basin Naturalist* (Welsh and Chatterley 1985) or the *Sego Lily*. Rare plant meetings were also a catalyst for developing the *Utah Endangered, Threatened, and Sensitive Plant Field Guide* (the "blue book"), generating new collections in remote areas for the state's herbaria, creating sensitive species lists for federal land management agencies, and getting location data into the new Utah Natural Heritage Program's databases. By the mid 1990s rare plant conservation efforts in Utah were well established, but UNPS was no longer taking a leading role.

The last major effort to summarize and prioritize Utah's rare plant species was conducted by Doug Stone and Ben Franklin of the natural heritage program (now called the Utah Conservation Data Center or UT-CDC) in the late 1990s. This effort culminated in the publication of a 600+ page overview of the state's endemic and rare plants, prepared for the Utah Reclamation Mitigation and Conservation Commission and the US Department of Interior in 1998. The authors analyzed the status of 1643 Utah plant taxa (nearly 50% of the state's native flora). Species were divided into seven main groups depending on their degree of rarity, threat, geographic distribution within the state, data needs, and taxonomic uncertainty. This report is still available on-line through the UT-CDC and remains a valuable reference and summary.

But after 10 years, the UT-CDC work is overdue for revision. New and on-going monitoring, field surveys, floristic inventories, and taxonomic studies continue to refine our knowledge of the status of rare and endemic plant species of Utah. Many species once considered high

priorities for listing under the ESA have now been shown to be more abundant or less threatened than once thought. A number of new species have been named or discovered in the state in the past decade (at least 60 just in the last 6 years) that might warrant special attention.

In 2007 the UNPS state board voted to re-establish the rare plant committee and charged the group with developing an updated state rare plant list. The committee consisted of Ben Franklin and Robert Fitts from the Utah Conservation Data Center, Duane Atwood of Brigham Young University, and Rita Dodge of Red Butte Garden. I was tabbed to chair the committee. Based on a ranking system developed as part of my doctoral thesis at the University of Wyoming, (see sidebar at right), we divided the state's native flora into seven groups according to their conservation priority and data needs (extremely high, high, medium, and low priorities, watch, need data, and status uncertain).

The scoring system and draft lists of extremely high and high priority and watch species were presented at a break-out session during the 5th Southwestern Rare Plant Conference at the University of Utah in March, 2009. Based on oral and written comments by over 40 attendees, the draft lists were revised with new data and a number of species were shifted from one category to another. Abridged versions of the final extremely high and high priority, watch, and need data lists are presented on pages 8-17. A downloadable MS excel version will be posted on the UNPS website ([www.unps.org](http://www.unps.org)) with the lists in their entirety.

Using this ranking system, the UNPS rare plant committee identified 31 Utah species that are an extremely high priority for conservation attention. These species are all local endemics with specialized habitat requirements and few populations. Occurrences of most of these species contain few individuals and are either highly threatened or have downward population trends. Half of these species are presently listed as threatened or endangered

## The UNPS Rare Plant Ranking System

The goal of the UNPS rare plant ranking system is to assess the rarity and conservation needs of all native vascular plant taxa (including full species and varieties) in Utah. The scoring protocol is designed to be objective, transparent, and repeatable. Ideally, the system will help prioritize those species in the greatest need of conservation attention and identify species with significant data gaps that are a priority for additional field surveys, research, or monitoring.

**Ranking Methods:** All native vascular plant species from Utah (based on the 2008 edition of *A Utah Flora*, the *Intermountain Flora*, *Flora of North America*, and other pertinent literature) were assessed using 7 criteria:

1. Utah's Contribution to Global Range (local endemic, regional endemic, disjunct, peripheral, sparse, widespread)
2. Number of Populations in Utah
3. Abundance in Utah (number of individuals)
4. Habitat Specificity (edaphic endemics or restricted to particular vegetation types)
5. Intrinsic Rarity (such as unusual life history, dependence on rare or specialized pollinators, poor dispersal, low fecundity, or poor seedling survival)
6. Magnitude of Threats (significance and scale of threats to population survival)
7. Population Trend (are long term trends increasing, stable, decreasing, or oscillating around a stable mean?)

Each criterion is scored as follows based on the best available data or personal knowledge/experience:

1. Utah's Contribution to Global Range: Local endemic (global range is an area of less than 16,500 square km, or 1 degree of latitude x 2 degrees of longitude) = 2 pts  
Regional endemic (global range is an area between 16,500-250,000 square km, or about the size of the state of Wyoming) = 1 pt  
Disjunct (distribution in Utah is isolated from the main, contiguous portion of a species' range by a gap of more than 800 km or 500 miles) = 1 pt  
Peripheral (distribution in Utah is at the margin of the species' main, contiguous range and occupies less than 5% of the state's area – usually along a state boundary) = 1 pt  
Sparse (distribution in Utah is patchy and discontinuous, but not restricted to less than 5% of the state's area or along the state boundary, species otherwise widespread) = 1 pt  
Widespread (species occurs widely

across western North America [covering > 250,000 square km] and across Utah, occupying well over 5% of state's area) = 0 pts

2. Number of Populations: Low (<25 populations) = 1 pt

High (>25 populations) = 0 pts

3. Abundance in Utah: Low (depends on life history of species, but typically <30,000 individuals for a perennial [allow larger numbers for annuals] or covering an area of <3000 acres) = 1 pt

High = 0 pts

4. Habitat Specificity: High (restricted to 1-few specialized geologic substrates, soil types, or vegetation types, a specialist) = 1 pt

Low (occurs in numerous geologic substrates, soil types, or vegetation types, a generalist) = 0 pts

5. Intrinsic Rarity: High (unusual life history, dependence on rare or specialized pollinators, poor dispersal, low fecundity, poor seedling survival, etc) = 1 pt

Low = 0 pts

6. Threats: High (threats significant or broad in scale and scope) = 1 pt

Low (threats minor, or limited to small percentage of populations) = 0 pts

7. Population Trend: Decreasing = 1 pt

Increasing, stable, or oscillating around a stable mean = 0 pts.

Uncertainty: if scores cannot be readily assigned due to lack of adequate data, each criterion should be ranked "unknown".

Comments: Each assessor of a species should add brief comments to explain how they derived particular values for selected criteria. These should include the assessor's name and the date the species was scored.

**Scoring:** The numeric scores assigned for the 7 criteria for each species are summed to derive a minimum score (scores can range from 0-8). A second, potential score is calculated by adding any criteria ranked as unknown and giving each a score of 1.

**Prioritization scale:** The rarity and conservation needs of species can be summarized and compared using the following scale, based on the final minimum score or the average of the minimum and maximum score (rounded down):

Extremely High: summary score of 7-8 points

High: summary score of 6 points

Watch: summary score of 5 points

Medium: summary score of 4 points

Low: summary score of 0-3 points.

Need Data: For species with 3 or more "unknown" values

Distribution of UNPS Rare Plant Species Statewide and by County

Table includes just those species on the UNPS Extremely High and High Priority lists and Watch list.

County	Extremely High Priority List	High Priority List	Watch List	Need Data	Total
<b>Statewide</b>	<b>31</b>	<b>114</b>	<b>262</b>	<b>102</b>	<b>509</b>
Beaver	0	8	13	6	27
Box Elder	1	1	9	4	15
Cache	0	1	7	2	10
Carbon	1	1	8	5	15
Daggett	1	2	12	3	18
Davis	0	0	2	1	3
Duchesne	5	13	27	8	53
Emery	5	8	23	16	52
Garfield	1	18	46	18	83
Grand	1	11	24	15	51
Iron	0	5	16	5	26
Juab	1	6	11	7	25
Kane	3	26	47	8	84
Millard	0	6	20	15	41
Morgan	0	0	2	0	2
Piute	0	9	12	3	24
Rich	0	1	4	4	9
Salt Lake	0	5	10	1	16
San Juan	1	12	37	13	63
Sanpete	2	7	11	4	24
Sevier	3	13	17	6	39
Summit	0	0	5	2	7
Tooele	1	3	11	2	17
Uintah	7	13	34	9	63
Utah	1	7	13	11	32
Wasatch	0	3	8	3	14
Washington	6	17	77	15	115
Wayne	6	12	9	12	39
Weber	0	2	6	2	10

in Utah by the US Fish and Wildlife Service.

Another 114 species in Utah are considered a high priority for conservation. Most of these plants are local or regional endemics with few populations, low numbers of individuals, and high habitat specificity. They usually differ from the species on the extremely high priority list in having fewer or less imminent threats or stable population trends.

The UNPS Watch list is comprised of plant species that have limited geographic ranges and specialized habitat requirements, but which are either locally abundant or apparently secure at present. If current conditions were to change significantly, however, population numbers of these species could easily trend downward and they would become species of greater concern. While they are in less need of direct human intervention, land managers should be aware of watch list species

and reassess their status periodically. We recognize 262 species in the watch list category.

Perhaps the most important, but often neglected, group of plants are those in need of more data. We identify 102 Utah species that would benefit from additional surveys or taxonomic studies to resolve their conservation status. Most of the species in this category have only recently been named or newly documented in the state. Research will likely show that many of these plants should ultimately be assigned a higher priority.

The number of rare species in Utah is definitely skewed towards the southern portion of the state, particularly the Mojave desert, Colorado Plateau, and south-central high plateaus. With 115 rare species (or nearly 20% of the state total), Washington County has the highest concentration of

rare plant taxa in Utah, followed by Kane, Garfield, and San Juan counties. Uintah County, with its concentration of Uinta Basin endemics and high threats from on-going mineral exploration and development, has the highest number of rare plants of any county in northern Utah. Surprisingly few rare plant species occur in the Salt Lake City area, though this may be an artifact of under-sampling or reflect significant habitat losses over the last 150 years of settlement.

The UNPS rare plant list presented here is just the latest in a long line stretching back to the mid 1970s and the early days of the Endangered Species Act. The list will already be out of date when the ink is dry, and it will need to be updated annually to reflect new field discoveries, taxonomic insights, and the realities of an ever-changing natural and human environment. Hopefully agency botanists, land managers, researchers, consultants, and interested amateurs will find the list and the scoring system useful and will be willing to share data and recommendations with the UNPS rare plant committee and the state natural heritage program to continually make improvements.

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## 2009 Utah Native Plant Society Rare Plants of Utah List I. Extremely High Priority List

The following table lists 31 species considered extremely high priorities for conservation attention in Utah based on the UNPS ranking system. Species are listed alphabetically by family and scientific name. See page 6 for an explanation of the 7 ranking criteria and how each is weighted as well as the derivation of minimum and potential scores. Brief comments are included as appropriate. County distribution and US Fish and Wildlife Service listing status (Endangered, Threatened, or Candidate) are included after the common name. For the full scoring table, consult the excel spreadsheet posted on the UNPS website ([www.unps.org](http://www.unps.org)).

Species	Range	# Indiv	Hab Spec	# Pops	Intrins Rarity	Threat	Trend	Min Score	Pot Score	Comments
Agavaceae										
<i>Yucca sterilis</i> ( <i>Y. harrimaniae</i> var. <i>sterilis</i> , Creeping yucca) Duch?, Uint	2	1	Unk	1	1	1	Unk	6	8	Uinta Basin endemic, never found in fruit
Asteraceae (Compositae)										
<i>Townsendia aprica</i> (Last Chance townsendia) Emer, Sevi, Wayn, USFWS: T	2	1	1	1	0	1	1	7	7	Vulnerable to trampling, trend downward in recent years from drought
Brassicaceae (Cruciferae)										
<i>Lepidium barnebyanum</i> (Barneby's pepperwort) Duch, USFWS: E	2	1	1	1	Unk	1	Unk	6	8	Intrinsic rarity perhaps higher, low recruitment
<i>Schoenocrambe argillacea</i> (Clay reed-mustard) Uint, USFWS: T	2	1	1	1	Unk	1	Unk	6	8	Info needed on trends
<i>Schoenocrambe barnebyi</i> (Barneby's reed-mustard) Emer, Wayn, USFWS: E	2	1	1	1	Unk	1	Unk	6	8	Info needed on trends
<i>Schoenocrambe suffrutescens</i> (Shrubby reed-mustard) Duch, Uint, USFWS: E	2	1	1	1	Unk	1	1	7	8	Pollinator unknown, recruitment low
Cactaceae										
<i>Pediocactus despainii</i> (Despain's pin-cushion cactus) Emer, Wayn?, USFWS: E	2	1	1	1	1	1	1	8	8	Threats high from ATV recreation, over-collecting
<i>Pediocactus winkleri</i> (Winkler's pin-cushion cactus) Wayn, USFWS: T	2	1	1	1	1	1	1	8	8	Trend significantly downward in recent years
<i>Sclerocactus whipplei</i> var. <i>glaucus</i> ( <i>S. wetlandicus</i> , Uinta Basin hookless cactus) Duch, Uint, USFWS: T	2	1	1	1	0	1	1	7	7	True <i>S. glaucus</i> not in UT, threatened by mineral development, collecting
<i>Sclerocactus whipplei</i> var. <i>ilseae</i> ( <i>S. brevispinus</i> , Pariette hookless cactus) Duch, Uint, USFWS: T	2	1	1	1	1	1	Unk	7	8	Threats high, prob declining though recent counts up (incr. survey effort)
<i>Sclerocactus wrightiae</i> (Wright's fish-hook cactus) Emer, Wayn, USFWS: E	2	1	1	0	1	1	1	7	7	High threats from ATV recreation, collecting, drought, browsing
Chenopodiaceae										
<i>Atriplex canescens</i> var. <i>gigantea</i> (Giant four-wing saltbush) Juab	2	1	1	1	Unk	1	Unk	6	8	ATV recreation high at Lyndyl Dunes, threats from cheatgrass, fire
Fabaceae (Leguminosae)										
<i>Astragalus ampullarioides</i> (Shivwits milkvetch) Wash, USFWS: E	2	1	1	1	1	1	1	8	8	Decreasing over much of range except in Zion NP
<i>Astragalus anserinus</i> (Goose Creek milkvetch) BoxE, USFWS: C	2	1	1	1	0	1	1	7	7	Pops sharply declining after 2007 wildfires
<i>Astragalus holmgreniorum</i> (Holmgren's milkvetch) Wash, USFWS: E	2	1	1	1	1	1	1	8	8	Large block of habitat near St. George slated for development
<i>Astragalus iselyi</i> (Isely's milkvetch) Gran, SanJ	2	1	1	1	0	1	1	7	7	Pops small, some impacted by roads
<i>Astragalus lentiginosus</i> var. <i>pohlii</i> (Pohl's milkvetch) Tooe	2	1	1	1	1	1	Unk	7	8	Pops small & declining, impacts from ATVs

## 2009 UNPS Rare Plants of Utah List: I. Extremely High Priority List

Species	Range	# Indiv	Hab Spec	# Pops	Intrins Rarity	Threat	Trend	Min Score	Pot Score	Comments
<i>Trifolium variegatum</i> var. <i>parunuweapensis</i> (Parunuweap clover) Kane	2	1	1	1	Unk	1	Unk	6	8	Sand seep habitat impacted by ATVs, grazing
Hydrophyllaceae										
<i>Phacelia argillacea</i> (Clay phacelia) Utah, USFWS: E	2	1	1	1	0	1	1	7	7	Listed as Endangered since 1978
<i>Phacelia utahensis</i> (Utah phacelia) Sanp, Sevi	2	1	1	1	Unk	1	1	7	8	Arapien endemic, threats from mining, ATVs
Iridaceae										
<i>Iris pariensis</i> (Paria iris) Kane	2	1	Unk	1	Unk	1	1	6	8	Not relocated since 1970s, taxonomic issues
Lamiaceae (Labiatae)										
<i>Salvia columbariae</i> var. <i>argillacea</i> (Chinle chia) Kane, Wash	2	1	1	1	1	1	1	8	8	Chinle habitat being invaded by annual weeds
Loasaceae										
<i>Mentzelia argillosa</i> (Arapien stickleaf) Sanp, Sevi	2	1	1	1	0	1	1	7	7	Arapien shale endemic
Malvaceae										
<i>Sphaeralcea gierischii</i> (Gierisch's globe-mallow) Wash, USFWS: C	2	1	1	1	Unk	1	1	7	8	Edaphic endemic impacted by gypsum mining
Papaveraceae										
<i>Arctomecon humilis</i> (Dwarf bearclaw poppy) Wash, USFWS: E	2	1	1	1	1	1	1	8	8	Pollinators in decline, pops impacted by ATV recreation, weeds, urban sprawl in St. George
Polemoniaceae										
<i>Gilia caespitosa</i> ( <i>Aliciella caespitosa</i> , Rabbit Valley <i>gilia</i> ) Wayn	2	1	1	1	0	1	1	7	7	Pops hard to census, some threats from over-collection
Ranunculaceae										
<i>Ranunculus acris</i> var. <i>aestivalis</i> ( <i>R. aestivalis</i> , Autumn buttercup) Emer?, Garf, USFWS: E	2	1	1	1	1	1	1	8	8	Downward trend, reproductive issues, threats from succession, habitat loss, reported for Emery Co in FNA vol 3
Scrophulariaceae										
<i>Penstemon gibbensii</i> (Gibbens' penstemon) Dagg	2	1	1	1	Unk	1	Unk	6	8	Declining rangewide, threats from mineral dev, ATV recreation
<i>Penstemon grahamii</i> (Graham's penstemon) Carb, Uint	2	1	1	1	1	1	1	8	8	Pops small, threats high, poor pollination, trends down
<i>Penstemon scariosus</i> var. <i>albifluvis</i> (White River penstemon) Uint, USFWS: C	2	1	1	1	0	1	1	7	7	Threatened by mineral development in narrow range in Uinta Basin
Violaceae										
<i>Viola clauseniana</i> (Clausen's violet) Wash	2	1	1	1	1	Unk	1	7	8	At least one Zion population probably extirpated from competition with exotic grasses, habitat loss, or over-collection.

## 2009 Utah Native Plant Society Rare Plants of Utah List II. High Priority List

The following table lists 114 species considered high priorities for conservation attention in Utah based on the UNPS ranking system. Species are listed alphabetically by family and scientific name. County distribution and USFWS listing status are included after the common name. To save space, scores for each of the seven ranking criteria and the minimum and potential summary scores are not included here, but can be found in the excel spreadsheet posted on the UNPS website ([www.unps.org](http://www.unps.org)).

Agavaceae			
<i>Yucca shidigera</i> (Splinter yucca) Wash	<i>Draba sobolifera</i> (Creeping draba) Beav, Piut		
<i>Yucca toftiae</i> (Toft's yucca) Garf, Kane, SanJ	<i>Lepidium integrifolium</i> (Entire-leaf pepperwort) Beav, Rich, Sanp, Sevi, Uint		
Apiaceae (Umbelliferae)			
<i>Cymopterus coulteri</i> (Two-leaf spring-parsley) Juab, Sanp, Sevi, Tooe	<i>Lepidium montanum</i> var. <i>alpinum</i> (Wasatch pepperwort) Salt		
<i>Cymopterus higginsii</i> (Higgins' spring-parsley) Kane	<i>Lepidium montanum</i> var. <i>stellae</i> (Stella's pepperwort) Garf, Kane		
<i>Lomatium latilobum</i> (Canyonlands lomatium) Gran, SanJ	<i>Lepidium ostleri</i> (Ostler's pepperwort) Beav		
<i>Lomatium scabrum</i> var. <i>tripinnatum</i> (Virgin lomatium) Wash	<i>Physaria chambersii</i> var. <i>canaani</i> (Canaan Peak twinpod) Garf		
Apocynaceae			
<i>Cycladenia humilis</i> var. <i>jonesii</i> (Jones' cycladenia) Emer, Garf, Gran, Kane, USFWS: T	<i>Physaria grahamii</i> (includes <i>P. acutifolia</i> var. <i>repanda</i> & var. <i>purpurea</i> by some authors, Graham's twinpod) Duch, Gran, Uint, Utah, Wasa		
Asclepiadaceae			
<i>Asclepias welshii</i> (Welsh's milkweed) Kane, USFWS: T	<i>Physaria rubicundula</i> var. <i>tumulosa</i> ( <i>Lesquerella tumulosa</i> , Kodachrome bladderpod) Kane, USFWS: E		
Asteraceae (Compositae)			
<i>Ambrosia x sandersonii</i> ( <i>Hymenoclea sandersonii</i> , Sander-son's bursage) Wash	Cactaceae		
<i>Chrysothamnus nauseosus</i> var. <i>glareosus</i> (Marysvale rabbit-brush) Piut	<i>Pediocactus sileri</i> (Siler's pincushion cactus) Kane, Wash, USFWS: T		
<i>Cirsium virginense</i> (Virgin thistle) Wash, included in <i>C. mohavense</i> in Flora of North America (2006)	Capparaceae		
<i>Enceliopsis nudicaulis</i> var. <i>bairdii</i> (Baird's nakedstem) Wash	<i>Cleomella hillmanii</i> var. <i>goodrichii</i> ( <i>C. palmeriana</i> var. <i>goodrichii</i> , Goodrich's stinkweed) Uint		
<i>Erigeron higginsii</i> (Higgins' daisy) Wash	Chenopodiaceae		
<i>Erigeron vagus</i> var. <i>madsenii</i> (Madsen's daisy) Garf, Iron, Kane	<i>Krascheninnikovia lanata</i> var. <i>ruinina</i> (Ruin Park winterfat) Gran, SanJ		
<i>Haplopappus armerioides</i> var. <i>gramineus</i> (Grass goldenweed) Duch, Uint	Crassulaceae		
<i>Haplopappus lignumviridis</i> (Greenwood's goldenbush) Sevi	<i>Dudleya pulverulenta</i> var. <i>arizonica</i> (Arizona live-forever) Wash		
<i>Haplopappus scopulorum</i> var. <i>canonis</i> (Canyon spindly goldenbush) SanJ	Cuscutaceae		
<i>Senecio castoreus</i> (Beaver Mountain groundsel) Beav, Piut	<i>Cuscuta warneri</i> (Warner's dodder) Mill, may be extirpated in Utah		
<i>Senecio malmstenii</i> (Podunk groundsel) Garf, Iron, Kane	Cyperaceae		
<i>Senecio musiniensis</i> (Musinea groundsel) Sanp	<i>Carex specuicola</i> (Navajo sedge) SanJ, USFWS: T		
<i>Thelesperma subnudum</i> var. <i>maliterrimum</i> ( <i>T. pubescens</i> , Uinta greenthread) Duch, Uint	Fabaceae (Leguminosae)		
<i>Townsendia goodrichii</i> (Goodrich's townsendia) Duch, Uint	<i>Astragalus ampullarius</i> (Gumbo milkvetch) Kane, Wash		
<i>Townsendia jonesii</i> var. <i>lutea</i> (Sigurd townsendia) Juab, Piut, Sevi	<i>Astragalus cronquistii</i> (Cronquist's milkvetch) SanJ		
<i>Townsendia strigosa</i> var. <i>prolixa</i> (Strigose townsendia) Duch, Gran	<i>Astragalus cutleri</i> (Cutler's milkvetch) SanJ		
<i>Viguiera soliceps</i> (Tropic goldeneye) Kane	<i>Astragalus desereticus</i> (Deseret milkvetch) Utah, USFWS: T		
<i>Xylorhiza cronquistii</i> (Cronquist's woodyaster) Garf, Kane	<i>Astragalus diversifolius</i> (Meadow milkvetch) Juab, Tooe		
<i>Xylorhiza glabriuscula</i> var. <i>linearifolia</i> (Moab woodyaster) Garf, Gran, SanJ, Wayn	<i>Astragalus equisolensis</i> ( <i>A. desperatus</i> var. <i>neeseae</i> , Horse-shoe milkvetch) Uint		
Boraginaceae		<i>Astragalus hamiltonii</i> (Hamilton's milkvetch) Uint	
<i>Cryptantha grahamii</i> (Graham's cryptanth) Duch, Uint	<i>Astragalus harrisonii</i> (Harrison's milkvetch) Garf, Wayn		
<i>Cryptantha semiglabra</i> (Pipe Spring cryptanth) Wash	<i>Astragalus loanus</i> (Glenwood milkvetch) Sevi		
Brassicaceae (Cruciferae)		<i>Astragalus sabulosus</i> var. <i>sabulosus</i> (Cisco milkvetch) Gran	
<i>Arabis falcatoria</i> (Falcate rockcress) BoxE, Juab	<i>Astragalus sabulosus</i> var. <i>vehiculus</i> (Stage milkvetch) Gran		
<i>Arabis harrisonii</i> (Harrison's rockcress) Utah	<i>Astragalus serpens</i> (Plateau milkvetch) Piut, Sevi, Wayn		
<i>Draba ramulosa</i> (Belknap Peak draba) Beav, Piut	<i>Astragalus striatiflorus</i> (Escarpment milkvetch) Kane, Wash		
	<i>Astragalus welshii</i> (Welsh's milkvetch) Garf, Iron, Kane, Mill, Piut, Wayn		
	<i>Trifolium friscanum</i> ( <i>T. andersonii</i> var. <i>friscanum</i> , Frisco clover) Beav		

## 2009 UNPS Rare Plants of Utah List— II. High Priority List

### Fagaceae

*Quercus gambelii* var. *bonina* (Goodhope oak) SanJ

### Fumariaceae

*Corydalis caseana* var. *brachycarpa* (Case's corydalis) Salt, Utah, Wasa, Webe

### Hydrangeaceae

*Jamesia americana* var. *macrocalyx* (Wasatch jamesia) Juab, Salt, Utah, Wasa

### Hydrophyllaceae

*Phacelia argylensis* (Argyle Canyon phacelia) Duch  
*Phacelia cephalotes* (Chinle phacelia) Kane, SanJ, Wash  
*Phacelia cronquistiana* (Cronquist's phacelia) Kane  
*Phacelia demissa* var. *heterotricha* (Brittle phacelia) Piut, Sevi, Wayn  
*Phacelia demissa* var. *minor* (Brittle phacelia) Duch, Uint  
*Phacelia pulchella* var. *atwoodii* (Atwood's pretty phacelia) Kane  
*Phacelia pulchella* var. *gooddingii* (Goodding's pretty phacelia) Wash  
*Phacelia sabulorum* (*P. pulchella* var. *sabulorum*, Tompkins phacelia) Garf, Kane

### Loasaceae

*Mentzelia shultziorum* (Shultz's stickleaf) Gran  
*Petalonyx parryi* (Parry's sandpaper-plant) Wash

### Malvaceae

*Sphaeralcea fumariensis* (*S. grossulariifolia* var. *fumariensis*, Smoky Mountain globemallow) Kane  
*Sphaeralcea janeae* (Jane's globemallow) Gran, SanJ, Wayn  
*Sphaeralcea psoraloides* (Scurfpea globemallow) Emer, Gran, Wayn

### Onagraceae

*Camissonia exilis* (Meager camissonia) Kane  
*Oenothera caespitosa* var. *stellae* (Stella's evening-primrose) Emer, Garf, Kane, Sanp  
*Oenothera murdockii* (Murdock's evening-primrose) Kane, Wash

### Ophioglossaceae

*Botrychium lineare* (Slender moonwort) Salt

### Orchidaceae

*Spiranthes romanzoffiana* var. *diluvialis* (*S. diluvialis*, Ute ladies'-tresses) Dagg, Duch, Garf, Salt, Tooe, Uint, Utah, Wayn, Webe, USFWS: T

### Poaceae

*Elymus simplex* (Alkali wildrye) Dagg

### Polemoniaceae

*Gilia imperialis* (*G. latifolia* var. *imperialis*, Cataract gilia) Emer, Garf, Kane, SanJ, Wayn  
*Gilia tenuis* (*Aliciella tenuis*, Mussentuchit gilia) Emer, Sevi

*Ipomopsis congesta* var. *ochroleuca* (Arapien gilia) Sanp, Sevi  
*Phlox hoodii* var. *madsenii* (Madsen's carpet phlox) Wayn

### Polygonaceae

*Eriogonum brevicaulum* var. *huberi* (Huber's wild buckwheat) Duch  
*Eriogonum brevicaulum* var. *mitophyllum* (Lost Creek wild buckwheat) Sevi  
*Eriogonum brevicaulum* var. *promiscuum* (Mount Bartles wild buckwheat) Carb  
*Eriogonum corymbosum* var. *cronquistii* (Cronquist's wild buckwheat) Garf  
*Eriogonum corymbosum* var. *heilii* (Heil's wild buckwheat) Wayn  
*Eriogonum corymbosum* var. *matthewsiae* (included in var. *albiflorum* by some authors, Springdale wild buckwheat) Wash  
*Eriogonum corymbosum* var. *smithii* (Flat top wild buckwheat) Emer, Wayn  
*Eriogonum esmeraldense* var. *tayei* (Taye's wild buckwheat) Sevi  
*Eriogonum nummulare* var. *ammophilum* (Ibex wild buckwheat) Mill  
*Eriogonum racemosum* var. *nobilis* (included in var. *zionis* by some authors, Bluff wild buckwheat) Kane, SanJ  
*Eriogonum soredium* (Frisco wild buckwheat) Beav

### Portulacaceae

*Talinum thompsonii* (Thompson's talinum) Emer

### Primulaceae

*Dodecatheon dentatum* var. *utahense* (Hooker's shooting-star) Salt  
*Primula domensis* (House Range primrose) Mill  
*Primula maguirei* (Maguire's primrose) Cach, USFWS: T

### Ranunculaceae

*Aquilegia holmgrenii* (formerly included in *A. elegantula*, Holmgren's columbine) Garf  
*Aquilegia rubicunda* (Link Trail columbine) Emer, Sevi  
*Aquilegia scopulorum* var. *goodrichii* (Goodrich's columbine) Duch

### Rosaceae

*Ivesia shockleyi* var. *ostleri* (Shockley's ivesia) Beav

### Scrophulariaceae

*Castilleja aquariensis* (Aquarius paintbrush) Garf  
*Castilleja parvula* var. *revealii* (Reveal's paintbrush) Garf, Iron, Kane  
*Penstemon flowersii* (Flowers' penstemon) Duch, Uint  
*Penstemon goodrichii* (Goodrich's penstemon) Duch, Uint  
*Penstemon x jonesii* (Fuchsia penstemon) Kane, Wash  
*Penstemon pinorum* (Pinyon penstemon) Iron  
*Penstemon tidestromii* (included in *P. leptanthus* by some authors, Tidestrom's penstemon) Juab, Sanp, Utah  
*Penstemon wardii* (Ward's penstemon) Mill, Piut, Sanp, Sevi

## 2009 Utah Native Plant Society Rare Plants of Utah List III. Watch List

The following table lists 262 species on the watch list for potential conservation attention in Utah based on the UNPS ranking system. Watch list species are primarily local or regional endemics or disjuncts with relatively small ranges within Utah but which are often locally abundant or minimally threatened at present. These plants could become a higher priority if significant environmental changes occur within their habitat in the future. Species are listed alphabetically by family and scientific name. County distribution and USFWS listing status are included after the common name. To save space, scores for each of the seven ranking criteria and the minimum and potential summary scores are not included here, but can be found in the excel spreadsheet posted on the UNPS website ([www.unps.org](http://www.unps.org)).

<p style="text-align: center;">Adoxaceae</p> <p><i>Adoxa moschatellina</i> (Moschatel) SanJ</p>	<p><i>Erigeron goodrichii</i> (Goodrich's daisy) Dagg, Duch, Summ?, Uint, Utah</p> <p><i>Erigeron huberi</i> (Huber's daisy) Duch</p> <p><i>Erigeron kachinensis</i> (Kachina daisy) SanJ</p> <p><i>Erigeron maguirei</i> (Maguire's daisy) Emer, Wayn, USFWS: T</p> <p><i>Erigeron religiosus</i> (Religious daisy) Garf, Kane, SanJ, Wash</p> <p><i>Erigeron sionis</i> (includes vars. <i>sionis</i> &amp; <i>trilobatus</i>, Zion daisy) Garf, Iron, Kane, Wash</p> <p><i>Erigeron untermannii</i> (Untermann's daisy) Duch</p> <p><i>Erigeron ursinus</i> var. <i>meyeriae</i> (Meyer's daisy) Wash</p> <p><i>Erigeron zothecinus</i> (Alcove daisy) Garf, Gran, Kane, SanJ</p> <p><i>Geraea canescens</i> (Desert sunflower) Wash</p> <p><i>Gutierrezia pomariensis</i> (Orchard snakeweed) Duch, Uint</p> <p><i>Haplopappus racemosus</i> var. <i>sessiliflorus</i> (Racemose goldenweed) Mill</p> <p><i>Haplopappus zionis</i> (Cedar Breaks goldenweed) Garf, Iron, Kane</p> <p><i>Hymenoxys helenioides</i> (Sneezeweed hymenoxys) Carb, Emer, Garf, Sanp, Sevi, Wayn</p> <p><i>Hymenoxys lapidicola</i> (Rock hymenoxys) Uint</p> <p><i>Hymenoxys lemmonii</i> (Alkali hymenoxys) Uint</p> <p><i>Layia platyglossa</i> var. <i>brevisetata</i> (Coastal tidytips) SanJ</p> <p><i>Lepidospartum latisquamum</i> (Nevada broom) Mill</p> <p><i>Perityle emoryi</i> (Emory's rock-daisy) Wash</p> <p><i>Perityle specuicola</i> (Alcove rock-daisy) Gran, SanJ</p> <p><i>Peucephyllum schottii</i> (Pygmy-cedar) Wash</p> <p><i>Platyschekuhria integrifolia</i> var. <i>oblongifolia</i> (San Juan bahia) SanJ</p> <p><i>Senecio dimorphophyllus</i> var. <i>intermedius</i> (La Sal ground sel) Duch, Gran, SanJ, Sanp, Summ</p> <p><i>Senecio fremontii</i> var. <i>inexpectans</i> (Unexpected groundsel) Gran, SanJ</p> <p><i>Senecio werneriiifolius</i> var. <i>barkleyi</i> (Barkley's groundsel) Garf, Kane</p> <p><i>Solidago spectabilis</i> (Nevada goldenrod) Mill, Wash</p> <p><i>Sphaeromeria ruthiae</i> (Ruth's chickensage) Kane, Wash</p> <p><i>Stephanomeria tenuifolia</i> var. <i>myrioclada</i> (Slender wire-lettuce) BoxE</p> <p><i>Stephanomeria tenuifolia</i> var. <i>uintahensis</i> (Uinta wire-lettuce) Uint</p> <p><i>Townsendia beamanii</i> (Beaman's townsendia) SanJ</p> <p><i>Townsendia condensata</i> (Cushion townsendia) Beav, Piut</p> <p><i>Townsendia mensana</i> (Plateau townsendia) Duch, Uint</p> <p><i>Townsendia montana</i> var. <i>caelilimensis</i> (Skyline townsendia) Duch, Sanp, Wasa</p> <p><i>Townsendia montana</i> var. <i>minima</i> (Bryce Canyon townsendia) Garf, Iron, Kane, Wash</p> <p><i>Xylorhiza confertifolia</i> (<i>Machaeranthera confertifolia</i>, Henrieville woodyaster) Garf, Kane, Wayn</p>
<p style="text-align: center;">Agavaceae</p> <p><i>Agave utahensis</i> var. <i>utahensis</i> (Utah century plant) Wash</p> <p><i>Nolina microcarpa</i> (Beargrass) Wash</p> <p><i>Yucca kanabensis</i> (Kanab yucca) Kane, Wash</p>	
<p style="text-align: center;">Apiaceae (Umbelliferae)</p> <p><i>Angelica wheeleri</i> (Utah angelica) Cach, Juab, Piut, Salt, Sevi, Utah</p> <p><i>Cymopterus acaulis</i> var. <i>parvus</i> (Small spring-parsley) Mill, Tooe</p> <p><i>Cymopterus beckii</i> (Beck's spring-parsley) Kane, SanJ, Wayn</p> <p><i>Cymopterus evertii</i> (Evert's spring-parsley) Uint</p> <p><i>Cymopterus minimus</i> (Least spring-parsley) Garf, Iron, Kane</p> <p><i>Cymopterus trotteri</i> (<i>Oreoxis trotteri</i>, Trotter's spring-parsley) Gran</p> <p><i>Lomatium graveolens</i> var. <i>clarkii</i> (Clark's lomatium) Wash</p> <p><i>Lomatium junceum</i> (Rush lomatium) Emer, Garf, Sevi, Wayn</p> <p><i>Musineon lineare</i> (Utah musineon) BoxE, Cach,</p>	
<p style="text-align: center;">Asclepiadaceae</p> <p><i>Asclepias cutleri</i> (Cutler's milkweed) Gran, SanJ</p> <p><i>Cynanchum utahense</i> (Swallow-wort) Wash</p>	
<p style="text-align: center;">Asteraceae (Compositae)</p> <p><i>Artemisia campestris</i> var. <i>petiolata</i> (Petiolate wormwood) Duch, taxonomic questions</p> <p><i>Artemisia nova</i> var. <i>duschesnicola</i> (Duchesne sagebrush) Uint</p> <p><i>Aster kingii</i> var. <i>barnebyana</i> (Barneby's aster) Juab, Mill</p> <p><i>Aster kingii</i> var. <i>kingii</i> (King's aster) Salt, Utah</p> <p><i>Aster welshii</i> (Welsh's aster) Beav, Duch, Garf, Iron, Kane, Piut, Summ, Utah, Wash, Wayn</p> <p><i>Baccharis viminea</i> var. <i>atwoodii</i> (Atwood's seepwillow) Emer, Gran, SanJ</p> <p><i>Chrysopsis jonesii</i> (<i>Heterotheca jonesii</i>, Jones' golden-aster) Garf, Kane, Wash</p> <p><i>Chrysothamnus nauseosus</i> var. <i>iridis</i> (Rainbow rabbitbrush) Sanp, Sevi</p> <p><i>Chrysothamnus nauseosus</i> var. <i>psilocarpus</i> (Huntington rabbitbrush) Carb, Duch, Emer, Sevi, Wasa</p> <p><i>Cirsium eatonii</i> var. <i>harrisonii</i> (Harrison's thistle) Beav, Piut</p> <p><i>Cirsium joannae</i> (Joanna's thistle) Kane, Wash</p> <p><i>Cirsium murdockii</i> (Murdock's thistle) Dagg, Duch, Uint</p> <p><i>Cirsium ownbeyi</i> (Ownbey's thistle) Dagg, Uint</p> <p><i>Enceliopsis argophylla</i> (Silverleaf enceliopsis) Wash</p> <p><i>Erigeron arenarioides</i> (Wasatch daisy) BoxE, Salt, Tooe, Utah, Webe</p> <p><i>Erigeron canaani</i> (Canaan daisy) Kane, Wash</p> <p><i>Erigeron carringtoniae</i> (Carrington's daisy) Emer, Sanp</p> <p><i>Erigeron cronquistii</i> (Cronquist's daisy) Cach</p> <p><i>Erigeron garrettii</i> (Garrett's daisy) Salt, Utah, Wasa</p>	
	<p style="text-align: center;">Boraginaceae</p> <p><i>Cryptantha barnebyi</i> (Barneby's cryptantha) Uint</p>

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*Cryptantha compacta* (Mound cryptanth) Beav, Mill, Tooe  
*Cryptantha creutzfeldtii* (Creutzfeldt's cryptanth) Carb,  
 Emer

*Cryptantha elata* (Tall cryptanth) Gran  
*Cryptantha johnstonii* (Johnston's cryptanth) Emer  
*Cryptantha jonesiana* (San Rafael cryptanth) Emer  
*Cryptantha ochroleuca* (Yellowish cryptanth) Garf  
*Hackelia ibapensis* (Deep Creek stickseed) Juab

### Brassicaceae (Cruciferae)

*Arabis shockleyi* (Shockley's rockcress) Beav, Juab, Mill,  
 Tooe  
*Arabis vivariensis* (included in *A. fernaldiana* by some  
 authors, Park rockcress) Uint  
*Descurainia pinnata* var. *paysonii* (Payson's tansymustard)  
 Gran, SanJ, Uint  
*Draba kassii* (Kass' draba) Tooe  
*Draba maguirei* var. *burkei* (Burke's draba) BoxE, Morg,  
 Webe  
*Draba maguirei* var. *maguirei* (Maguire's draba) BoxE, Cach,  
 Webe  
*Lepidium huberi* (Huber's pepperwort) Uint  
*Lepidium montanum* var. *claronense* (Claron pepperwort)  
 Garf, Kane, Piut  
*Lepidium montanum* var. *heterophyllum* (Cedar Canyon  
 pepperwort) Iron, Mill, Piut, Sevi  
*Lepidium montanum* var. *neeseae* (Neese's pepperwort) Garf  
*Lepidium nanum* (Low pepperwort) Tooe  
*Physaria acutifolia* var. *purpurea* (included in *P. grahamii*  
 by some authors, Purple twinpod) Emer, Gran, Sevi, Wayn  
*Physaria arizonica* (*Lesquerella arizonica*, Arizona bladder-  
 pod) Garf, Kane, Wash  
*Physaria chambersii* var. *sobolifera* (Claron twinpod) Garf  
*Physaria floribunda* (Mesa twinpod) Gran  
*Physaria garrettii* (*Lesquerella garrettii*, Garrett's twinpod)  
 Davi, Salt, Utah, Wasa  
*Thelypodopsis ambigua* var. *erecta* (Kanab thelypody) Kane,  
 Wash?  
*Thelypodopsis sagittata* var. *ovalifolia* (Palmer's thelypody)  
 Garf, Iron, Juab, Kane, Mill  
*Thelypodium flexuosum* (Zigzag thelypody) Beav, Tooe

### Buddlejaceae

*Buddleja utahensis* (Utah butterflybush) Wash

### Cactaceae

*Echinocactus polycephalus* var. *xeranthemoides* (Kaibab  
 barrel cactus) Kane?  
*Echinocereus triglochidiatus* var. *mojavensis* (Mohave claret-  
 cup) Beav, Mill, Wash  
*Ferocactus acanthodes* (Desert barrel cactus) Wash  
*Mamillaria tetrancistra* (Pincushion cactus) Wash  
*Neolloydia johnsonii* (Johnson's neolloydia) Wash  
*Opuntia echinocarpa* (Pale cholla) Beav?, Wash  
*Opuntia phaeacantha* var. *castorea* (Beaver Dam pricklypear)  
 Wash  
*Opuntia pulchella* (Sand cholla) BoxE, Juab, Mill, Tooe,  
 Wash?

### Caryophyllaceae

*Silene nachlingerae* (Jan's catchfly) Beav

### Chenopodiaceae

*Atriplex gardneri* var. *bonnevilleensis* (Bonneville saltbush)  
 Juab, Mill  
*Atriplex obovata* (New Mexico saltbush) SanJ  
*Atriplex pleiantha* (Four Corners orach) SanJ

*Atriplex wolfii* var. *tenuissima* (Slender orach)  
*Corispermum welshii* (Welsh's bugseed) Garf, Kane, Mill,  
 SanJ?

### Cuscutaceae

*Cuscuta applanata* (Winged dodder) Wash  
*Cuscuta cuspidata* (Toothed dodder) Salt, Utah, Webe

### Cyperaceae

*Carex crawei* (Crawe's sedge) Kane  
*Carex curatorum* (Canyonlands sedge) Kane, SanJ, Uint  
*Carex diandra* (Lesser panicled sedge) Duch, Garf?  
*Carex haysii* (Hays' sedge) Wash  
*Carex lasiocarpa* (Slender sedge) Dagg, Sevi?, Uint  
*Carex leptalea* (Bristly—stalk sedge) Dagg, Duch, Uint  
*Carex livida* (Pale sedge) Duch, Uint  
*Carex microglochis* (Subulate sedge) Dagg, Duch, Emer  
*Cladium californicum* (Saw-grass) Kane, SanJ  
*Lipocarpus aristulata* (Slender-rush) Kane  
*Scirpus nevadensis* (Nevada bulrush) Juab, Rich

### Euphorbiaceae

*Euphorbia nephradenia* (Utah spurge) Emer, Garf, Kane,  
 Wayn

### Fabaceae (Leguminosae)

*Astragalus calycosus* var. *monophyllidus* (One-leaf milk-  
 vetch) Sevi  
*Astragalus chloodes* (Grass milkvetch) Uint  
*Astragalus concordius* (formerly included in *A. piutensis*,  
 Hairy-pod milkvetch) Iron, Wash  
*Astragalus detritalis* (Debris milkvetch) Duch, Uint  
*Astragalus henrimontanensis* (Dana's milkvetch) Garf  
*Astragalus jejunos* (Starveling milkvetch) Rich  
*Astragalus lentiginosus* var. *mokiaccensis* (includes var.  
*ursinus*, Mokiak milkvetch) Wash  
*Astragalus limnocharis* var. *limnocharis* (Navajo Lake milk-  
 vetch) Iron, Kane  
*Astragalus limnocharis* var. *tabulaeus* (Table Cliff milkvetch)  
 Garf  
*Astragalus lutosus* (Dragon milkvetch) Duch, Uint, Utah,  
 Wasa  
*Astragalus malacoides* (Kaiparowits milkvetch) Garf, Kane  
*Astragalus montii* (Heliotrope milkvetch) Sanp, Sevi,  
 USFWS: T  
*Astragalus monumentalis* (Monument milkvetch) Garf, SanJ  
*Astragalus naturitensis* (Naturita milkvetch) SanJ  
*Astragalus piscator* (Fisher milkvetch) Gran, SanJ, Wayn  
*Astragalus saurinus* (Dinosaur milkvetch) Uint  
*Astragalus uncialis* (Currant milkvetch) Mill  
*Astragalus wetherillii* (Wetherill's milkvetch) Gran  
*Astragalus zionis* var. *vigulus* (Guard milkvetch) Wash  
*Hedysarum boreale* var. *gremiale* (Rollins' sweetvetch) Uint  
*Hedysarum occidentale* var. *canone* (Coal Cliffs sweetvetch)  
 Carb, Duch, Emer  
*Oxytropis besseyi* var. *obnapiformis* (Maybell locoweed) Dagg  
*Oxytropis oreophila* var. *jonesii* (Jones' locoweed) Emer,  
 Garf, Gran, Iron, Sanp, Uint  
*Pediomelum aromaticum* var. *aromaticum* (Aromatic bread-  
 root) Emer?, Gran  
*Pediomelum aromaticum* var. *barnebyi* (Barneby's bread-  
 root) Kane, Wash  
*Pediomelum aromaticum* var. *tuhyi* (Tuhy's breadroot) SanJ  
*Pediomelum epipsilum* (Kane breadroot) Kane  
*Pediomelum mephiticum* (Skunk breadroot) Wash  
*Pediomelum pariense* (Paria breadroot) Garf, Kane  
*Pediomelum retrorsum* (Peach Springs breadroot) Wash

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*Psoralidium lanceolatum* var. *stenostachys* (Rydberg's scurf-pea) Davi, Juab, Mill, Salt, Tooe, Webe

*Psorothamnus arborescens* var. *pubescens* (Beauty indigo-bush) Kane

*Psorothamnus nummularius* (Jones' indigo-bush) Emer

*Psorothamnus polydenius* (Glandular indigo-bush) Wash

*Trifolium beckwithii* (Beckwith's clover) Piut?, Sevi

## Gentianaceae

*Swertia gypsicola* (*Frasera gypsicola*, White River swertia) Mill

## Hydrangeaceae

*Jamesia americana* var. *zionis* (Zion jamesia) Kane, Wash

*Jamesia tetrapetala* (Basin jamesia) Mill

## Hydrophyllaceae

*Phacelia austromontana* (Southern phacelia) Wash

*Phacelia cottamii* (Cottam's phacelia) Carb, Emer, Sevi

*Phacelia glandulosa* (Glandular scorpion-weed) Gran, Uint

*Phacelia indecora* (Bluff phacelia) SanJ

*Phacelia mammillarensis* (Nipple Bench phacelia) Garf, Kane

*Phacelia palmeri* (Palmer's phacelia) Wash

*Phacelia perityloides* var. *laxiflora* (Crevice phacelia)

*Phacelia salina* (Bitter Creek scorpion-weed) Sanp, Tooe

*Phacelia splendens* (Eastwood's phacelia) Gran

*Phacelia tetramera* (Four-parted phacelia) Webe

*Tricardia watsonii* (Three hearts) Wash

## Juncaceae

*Juncus tweedyi* (Tweedy's rush) BoxE

## Lamiaceae (Labiatae)

*Stachys rothrockii* (Rothrock's hedge-nettle) Kane

## Liliaceae

*Allium geyeri* var. *chatterleyi* (Chatterley's onion) SanJ

*Allium passeyi* (Passey's onion) BoxE

## Loasaceae

*Eucnide urens* (Desert rock-nettle) Wash

*Mentzelia goodrichii* (Goodrich's stickleaf) Duch

*Mentzelia multicaulis* var. *flumensevera* (Sevier Canyon stickleaf) Piut, Sevi

*Mentzelia multicaulis* var. *uintahensis* (Uinta Basin stickleaf) Duch, Uint

## Malvaceae

*Sphaeralcea caespitosa* var. *caespitosa* (Jones' globemallow) Beav, Mill

## Najadaceae

*Najas flexilis* (includes *N. caespitosa*, Fish Lake naiad) Sevi

## Oleaceae

*Menodora spinescens* (Spiny menodora) Wash

## Onagraceae

*Camissonia atwoodii* (Atwood's camissonia) Kane

*Camissonia bairdii* (Baird's camissonia) Wash

*Camissonia claviformis* var. *aurantiaca* (Clubpod camissonia) Wash

*Camissonia claviformis* var. *claviformis* (Clubpod camissonia) Wash

*Camissonia claviformis* var. *cruciformis* (Clubpod camissonia) Wash

*Camissonia gouldii* (Gould's camissonia) Mill, Wash

*Epilobium nevadense* (Nevada willow-herb) Iron, Mill, Wash

*Oenothera deltoides* var. *decumbens* (St. George evening-primrose) Wash

## Ophioglossaceae

*Botrychium multifidum* (Leathery grape fern) Duch

## Orchidaceae

*Habenaria zothecina* (Alcove bog-orchid) Emer, Garf, Gran, SanJ, Uint

## Papaveraceae

*Eschscholzia mexicana* (Mexican golden-poppy) Wash

*Papaver uintaense* (includes *P. kluanense*, Arctic poppy) Dagg, Duch, Summ

*Platystemon californicus* (Creamcups) Wash

## Poaceae (Gramineae)

*Andropogon glomeratus* (Bushy bluestem) Garf, Kane, SanJ, Wayn

*Festuca dasyclada* (Utah fescue) Emer, Garf, Sanp

*Imperata brevifolia* (Satintail) Kane, SanJ

*Panicum hallii* (Hall's panicgrass) Beav

*Stipa arnowiae* (Arnow's ricegrass) Garf, Gran, Iron, Juab, Kane, Uint, Wash

## Polemoniaceae

*Ipomopsis spicata* var. *spicata* (Spike gilia) Dagg

*Ipomopsis tridactyla* (Cedar Breaks gilia) Iron, Piut

*Phlox lutescens* (Yellowish phlox)

*Phlox opalensis* (Opal phlox) Dagg

## Polygonaceae

*Eriogonum acaule* (Stemless wild buckwheat) Rich

*Eriogonum aretioides* (Widtsoe wild buckwheat) Emer, Garf

*Eriogonum brevicaulis* var. *loganum* (Logan wild buckwheat) Cach, Morg, Rich

*Eriogonum cernuum* var. *psammophilum* (Sand Dune nodding wild buckwheat) Garf, Kane, SanJ

*Eriogonum corymbosum* var. *albiflorum* (*E. thompsoniae* var. *albiflorum*, Virgin wild buckwheat) Wash

*Eriogonum ephedroides* (*E. brevicaulis* var. *ephedroides*, Ephedra wild buckwheat) Uint

*Eriogonum heermannii* var. *subspinosum* (Tabeau Peak wild buckwheat) Wash

*Eriogonum insigne* (Ladder wild buckwheat) Iron, Kane, Wash

*Eriogonum scabrellum* (Westwater wild buckwheat) Emer, Garf, Gran, Kane, SanJ

*Eriogonum wrightii* (Wright's wild buckwheat) Wash

*Koenigia islandica* (Koenigia) Duch

*Pterostegia drymarioides* (Pterostegia) Wash

## Polypodiaceae

*Adiantum pedatum* var. *aleuticum* (Northern maidenhair fern) Garf, Salt, Wash

*Cheilanthes wootonii* (Wooton's lip-fern) Wash

*Cystopteris bulbifera* (Bulblet bladder fern) Salt, SanJ, Wash

*Gymnocarpium dryopteris* (Oak fern) Piut

## Primulaceae

*Dodecatheon pulchellum* var. *zionense* (Zion shooting-star) Carb, Gran, Kane, SanJ?, Wash

## Ranunculaceae

*Aquilegia atwoodii* (Atwood's columbine) Uint

*Aquilegia barnebyi* (Shale columbine) Duch, Uint

*Aquilegia desolaticola* (Desolation Canyon columbine) Gran

*Aquilegia fosteri* (Foster's columbine) Wash

*Aquilegia grahamii* (Graham's columbine) Uint

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*Aquilegia loriae* (Lori's columbine) Kane  
*Trautvetteria caroliniensis* (Carolina tassel-rue) SanJ

### Rhamnaceae

*Ceanothus greggii* var. *franklinii* (Franklin's desert-lilac)  
 Garf?, Gran, SanJ

### Rosaceae

*Crataegus douglasii* var. *duchesnensis* (Duchesne hawthorn)  
 Duch, Uint, Wasa  
*Ivesia utahensis* (Utah ivesia) Salt, Summ, Utah, Wasa  
*Potentilla angelliae* (Angell's cinquefoil) Wayn  
*Rubus neomexicanus* (New Mexico thimbleberry) Garf, SanJ

### Rutaceae

*Ptelea trifoliata* var. *lutescens* (Hoptree) Garf?, Kane, Wash

### Salicaceae

*Salix arizonica* (Arizona willow) Garf, Iron, Sanp, Sevi

### Saururaceae

*Anemopsis californica* (Yerba mansa) Utah, Wash

### Scrophulariaceae

*Castilleja parvula* var. *parvula* (Tushar paintbrush) Beav,  
 Garf, Piut  
*Maurandya antirrhiniflora* (Maurandya) Wash  
*Mimulus bigelovii* var. *cuspidatus* (Bigelow's monkeyflower)  
 Wash  
*Mohavea breviflora* (Desert snapdragon) Wash  
*Penstemon abietinus* (Firleaf penstemon) Sevi, Utah

*Penstemon acaulis* var. *acaulis* (Stemless penstemon) Dagg  
*Penstemon ammophilus* (Sandloving penstemon) Garf, Kane,  
 Wash

*Penstemon angustifolius* var. *vernalensis* (Vernal penstemon)  
 Dagg, Uint

*Penstemon atwoodii* (Atwood's penstemon) Garf, Kane  
*Penstemon barbatus* var. *trichander* (Scarlet penstemon)  
 SanJ

*Penstemon bracteatus* (Red Canyon penstemon) Garf

*Penstemon compactus* (Bear River penstemon) Cach

*Penstemon duchesnensis* (Duchesne penstemon) Duch

*Penstemon franklinii* (Franklin's penstemon) Iron

*Penstemon idahoensis* (Idaho penstemon) BoxE

*Penstemon marcusii* (Marcus Jones' penstemon) Carb, Emer

*Penstemon petiolatus* (Crevice penstemon) Wash

*Penstemon scariosus* var. *cyanomontanus* (Blue Mountain  
 penstemon) Uint

*Penstemon sepalulus* (Littlecup penstemon) Juab, Utah,  
 Wash?

### Selaginellaceae

*Selaginella utahensis* (Utah spike-moss) Kane, Wash

### Violaceae

*Viola frank-smithii* (Bear River Range violet) Cach

*Viola purpurea* var. *charlestonensis* (*V. charlestonensis*,  
 Charleston Mountain violet) Kane, Wash

### Zygophyllaceae

*Fagonia laevis* (Fagonia) Wash

## 2009 Utah Native Plant Society Rare Plants of Utah List IV. Need Data List

Species on this list have three or more ranking criteria scored as “unknown”. A large number of these species have only recently been named or discovered within Utah, and additional field surveys are needed to confirm their abundance, distribution, habitat needs, life history patterns, potential threats, and trends. Some species on the list have taxonomic questions that still need to be resolved. All of the plants included here have the potential to be ranked as extremely high or high priority, or as watch species, once needed studies are completed. Species are arranged alphabetically by family and species. Additional information is provided on their county-level distribution and data needs.

### Apiaceae (Umbelliferae)

*Cymopterus basalticus* (Shadscale spring-parsley) Beav, Mill,  
 info needed on abundance, threats, & trends  
*Cymopterus crawfordensis* (Crawford Mountain spring-  
 parsley) Rich, newly described, general info needed

### Asteraceae (Compositae)

*Artemisia biennis* var. *diffusa* (Mystery wormwood) Garf,  
 taxonomic questions  
*Artemisia parryi* (Parry's wormwood) Gran, SanJ, need info  
 on abundance, threats, & trends  
*Artemisia tridentata* var. *parishii* (Parish's big sagebrush) SW  
 UT, info needed on distribution, abundance, threats, trends  
*Chrysothamnus nauseosus* var. *uintahensis* (Uinta rabbit-  
 brush) Dagg, Uint, info needed on abundance, life history  
*Crepis runcinata* var. *aculeolata* (Utah hawksbeard) Kane,  
 taxonomic questions, info needed on abundance, threats

*Erigeron katieae* (Katie's daisy) Rich, newly described, general  
 info needed

*Erigeron mancus* (La Sal daisy) Gran, SanJ, info needed on  
 abundance, threats, & trends

*Erigeron watsonii* (Watson's daisy) reported for UT, general  
 info needed

*Haplopappus acaulis* var. *atwoodii* (Atwood's goldenweed),  
 Juab, taxonomic questions—may be a good entity, general  
 info needed

*Haplopappus crispus* (Pine Valley goldenbush) Mill?, Wash,  
 info needed on abundance, threats, & trends

*Haplopappus leverichii* (Canyon goldenweed) Wash, taxon-  
 omic questions, not seen since 1971

*Haplopappus racemosus* var. *paniculatus* (Racemose golden-  
 weed) Mill, info needed on abundance, threats, & trends

*Haplopappus racemosus* var. *prionophyllus* (Racemose  
 goldenweed) Cach, Duch, Utah, general info needed

## 2009 UNPS Rare Plants of Utah List—IV. Need Data List

*Hofmeisteria pluriseta* (Arrowleaf) Wash?, single historical report for UT may be from AZ

*Lygodesmia grandiflora* var. *doloresensis* (Dolores River skeletonplant) reported Gran, confirmation needed whether this species is in UT

*Senecio bairdii* (Baird's groundsel) BoxE, newly described, general info needed

*Senecio streptanthifolius* var. *platylobus* (Wasatch groundsel) Utah, Webe, newly described, general info needed

*Senecio werneriiifolius* var. *malmstenoides* (Mt. Nebo groundsel) Juab, Utah, newly described, general info needed

## Brassicaceae (Cruciferae)

*Arabis goodrichii* (Goodrich's rockcress) Mill, newly described, general info needed

*Arabis holboellii* var. *derensis* (included in *A. beckwithii* by some authors, Desert Experimental Range rockcress) Mill, taxonomic problems, general info needed

*Arabis lasiocarpa* (Wasatch rockcress) BoxE, Cach, Rich, Salt, Utah, info needed on habitat, threats, trends

*Arabis perennans* var. *thorneae* (Thorne's rockcress) Uint, newly described, general info needed

*Arabis thompsonii* (Thompson's rockcress) SanJ, newly described, general info needed

*Boechera glareosa* ("Arabis glareosa", Dorn's rockcress), Uint, recently described narrow endemic of CO & UT (holotype from S side of Blue Mountain), general info needed

*Draba santaquinensis* (Santaquin draba), recently described narrow endemic from Utah Co and southern Wasatch Range, more info needed

*Lepidium moabense* (Moab pepperplant) Garf, Gran, Kane, SanJ, taxonomic questions, general info needed

*Physaria acutifolia* var. *repanda* (Indian Canyon twinpod) Carb, Duch, Emer, Sevi, Uint, Utah, Wasa, info needed on abundance, threats, & trends

*Physaria hemiphysaria* var. *hemiphysaria* (Skyline bladderpod) Duch, Emer, Sanp, Utah, Wasa, info needed on abundance, threats, & trends

*Physaria hemiphysaria* var. *lucens* (Tavaputs bladderpod) Carb, info needed on abundance, threats, & trends

*Physaria navajoensis* (*Lesquerella navajoensis*, Navajo bladderpod), reported Kane, taxonomic questions

*Physaria neeseae* (Neese's twinpod) Garf, Wash?, newly described, general info needed

*Thelypodopsis aurea* (Golden thelypod) SanJ, info needed on abundance, threats, & trends

*Thelypodopsis vermicularis* (Wormwood thelypod) BoxE, Iron, Juab, Mill, Sanp, Sevi, Tooe, Utah, info needed on abundance, threats, & trends

*Thelypodium rollinsii* (Rollins' thelypod) Beav, Carb, Juab, Mill, Piut, Sanp, Sevi, general info needed

## Cactaceae

*Echinocactus polycephalus* var. *polycephalus* (Manyhead barrel cactus) Wash?, reports from UT need confirmation

*Sclerocactus blainei* (Blaine's fishhook cactus) Iron, recently reported for UT by Heil and Woodruff, info needed on abundance, trends

## Chenopodiaceae

*Atriplex gardneri* var. *welshii* (Welsh's saltbush) Gran, taxonomic questions

*Atriplex powellii* var. *minuticarpa* (Green River orach) Emer, Gran, Wayn, info needed on abundance, threats, & trends

## Fabaceae (Leguminosae)

*Astragalus brandegei* (Brandegee's milkvetch) Emer, Garf, Iron, Piut, Sevi, Wayn, need info on abundance, threats

*Astragalus callithrix* (Callaway milkvetch) Mill, need info on abundance, threats, & trends

*Astragalus desperatus* var. *petrophilus* (Rock-loving milkvetch) Emer, need info on abundance, threats, & trends

*Astragalus eastwoodiae* (Eastwood's milkvetch) Emer, Garf, Gran, SanJ, Wayn, need info on abundance, threats, trends

*Astragalus hornii* (Horn's milkvetch) Wash?, reports for UT need confirmation

*Astragalus laccoliticus* (*A. chamaeleuce* var. *laccoliticus*, Laccolite milkvetch) Garf, Wayn, need info on abundance, threats, & trends

*Astragalus lentiginosus* var. *negundo* (Box Elder freckled milkvetch) BoxE, newly described, general info needed

*Astragalus lentiginosus* var. *stramineus* (Straw milkvetch) Wash?, reports from UT need confirmation

*Astragalus pardalinus* (Panther milkvetch) Emer, Garf, Gran, Wayn, info needed on abundance, threats, & trends

*Astragalus pattersonii* (Patterson's milkvetch) Carb, Emer, Garf, SanJ, Sevi, Uint, Wayn, general info needed

*Astragalus pinonis* (Pinyon milkvetch) Beav, Juab, info needed on habitat, threats, trends

*Astragalus preussii* var. *laxiflorus* (Littlefield milkvetch) Wash?, reports for UT need confirmation

*Astragalus pubentissimus* var. *peabodianus* (Peabody's milkvetch) Emer, Gran, info needed on abundance, threats

*Astragalus rafaelensis* (San Rafael milkvetch) Emer, Gran, info needed on abundance, threats, trends

*Astragalus woodruffii* (Woodruff's milkvetch) Emer, Garf, Wayn, info needed on abundance, threats, trends

*Dalea flavescens* var. *epica* (Hole-in-the-Rock prairie-clover) Garf, SanJ, taxonomic questions

*Lupinus flavoculatus* (Yellow-eye lupine) Wash, info needed on abundance, threats, & trends

*Pediomelum castoreum* (Beaver Dam breadroot) Wash?, reports for UT need confirmation

*Trifolium andinum* var. *canone* (Canyon Mountains clover) Mill, newly described, general info needed

*Trifolium andinum* var. *navajoense* (Navajo clover) SanJ, newly described, general info needed

*Trifolium andinum* var. *wahwahense* (Wah Wah clover) Beav, newly described, general info needed

*Vicia americana* var. *lathyroides* (Pavant vetch) Mill, newly described, general info needed

## Gentianaceae

*Lomatogonium rotatum* (Marsh felwort) Dagg, info needed on abundance, threats, & trends

## Hydrangeaceae

*Jamesia americana* var. *rosea* (Rosy cliff jamesia) Iron, taxonomic questions, general info needed

## Hydrophyllaceae

*Phacelia crenulata* var. *orbicularis* (Henry Mountains phacelia) Garf, Wayn, newly described, general info needed

*Phacelia petrosa* (Forgotten phacelia) Garf, SanJ, info needed on abundance, threats, & trends

## Liliaceae

*Calochortus ciscoensis* (Cisco mariposa) Duch, Gran, Uint, newly described, general info needed

## 2009 UNPS Rare Plants of Utah List—IV. Need Data List

### Loasaceae

- Mentzelia multicaulis* var. *librina* (Horse Canyon stickleaf) Carb, Emer, info needed on abundance, threats, & trends  
*Mentzelia thompsonii* (Thompson's stickleaf) Gran, Uint, info needed on abundance, threats, & trends  
*Petalonyx nitidus* (Shiny-leaf sandpaper-plant) Wash?, reports from UT need confirmation

### Nyctaginaceae

- Abronia fragrans* var. *harrisii* (Harris' fragrant sand-verbena) Emer, Garf, Uint, taxonomic questions

### Onagraceae

- Camissonia bolanderi* (Bolander's camissonia) Emer, Wayn?, newly described, general info needed

### Ophioglossaceae

- Botrychium boreale* (Northern grapefern) Summ, taxonomic questions (UT material may be *B. pinnatum*), general info needed  
*Botrychium crenulatum* (Dainty moonwort) Wasa, confirmation needed, info needed on abundance, threats, & trends  
*Botrychium hesperium* (Western moonwort) Juab, Summ, confirmation needed, info needed on abundance, threats, & trends  
*Botrychium lanceolatum* (Lance-leaf grapefern) Juab, info needed on abundance, intrinsic rarity, threats, trends  
*Botrychium paradoxum* (Paradox moonwort) Garf, confirmation needed, info needed on abundance, threats, & trends

### Papaveraceae

- Argemone corymbosa* var. *parva* (San Rafael prickly-poppy) Garf, Gran, SanJ, newly described, general info needed

### Poaceae (Gramineae)

- Bouteloua uniflora* (One-flower grama), reported Zion NP, confirmation needed  
*Leersia oryzoides* (Rice cutgrass) Davi, Utah, Webe, info needed on abundance, threats, & trends  
*Stipa scribneri* (Scribner needlegrass), Wayn, documented from Capitol Reef NP, info needed on abundance, threats

### Polemoniaceae

- Ipomopsis congesta* var. *goodrichii* (Goodrich gilia), info needed on abundance, threats, & trends  
*Langloisia schottii* (Schott's langloisia) Wash, general info needed

- Phlox albomarginata* (White-margined phlox) Rich, general info needed  
*Phlox austromontana* var. *jonesii* (Jones' phlox) Kane, Wash, taxonomic questions  
*Phlox austromontana* var. *prostrata* (Silver Reef phlox) Kane, Wash, taxonomic questions

### Polygonaceae

- Eriogonum brevicaulum* var. *viridulum* (Duchesne wild buckwheat) Duch, Uint, info needed on abundance, threats  
*Eriogonum contortum* (Grand Valley wild buckwheat) Gran, info needed on abundance, threats, & trends  
*Eriogonum corymbosum* var. *hylophilum* (Gate Canyon wild buckwheat) Duch, info needed on abundance, threats  
*Eriogonum corymbosum* var. *revealianum* (Reveal's wild buckwheat) Garf, Kane, Piut, Wayn, var. *heilii* recently pulled out, updated status info needed on remaining pops  
*Eriogonum howellianum* (Howell's wild buckwheat) Juab, Mill, Tooe, info needed on abundance, threats, & trends  
*Eriogonum jamesii* var. *higginsii* (Higgins' wild buckwheat) SanJ, info needed on abundance, threats, & trends  
*Eriogonum lonchophyllum* var. *lonchophyllum* (Longleaf wild buckwheat) Emer, Gran, SanJ, Uint, info needed on abundance, threats, & trends  
*Eriogonum microthecum* var. *tegetiforme* (Slender buckwheat) Mill, Wash, newly described, general info needed  
*Eriogonum panguicense* var. *alpestre* (Cedar Breaks wild buckwheat) Iron, taxonomic questions  
*Eriogonum spathulatum* var. *kayeae* (Kaye's wild buckwheat) Beav, info needed on abundance, threats, & trends  
*Eriogonum spathulatum* var. *natum* (Son's wild buckwheat) Mill, info needed on abundance, threats, & trends

### Rosaceae

- Potentilla diversifolia* var. *madsenii* (Madsen's cinquefoil) Kane, newly described, general info needed

### Scrophulariaceae

- Penstemon acaulis* var. *yampaensis* (Yampa penstemon) Dagg, info needed on abundance, threats, & trends  
*Penstemon cyananthus* var. *judyae* (Judy's penstemon) Utah, newly described, general info needed  
*Penstemon moffatii* (Mofatt penstemon) Duch, Emer, Garf, Gran, SanJ, Utah, Wayn, info needed on abundance, threats, & trends  
*Penstemon nanus* (Dwarf penstemon) Beav, Iron?, Mill, info needed on abundance, threats, & trends

### Acknowledgments

These lists were developed by the Utah Native Plant Society Rare Plant Committee: Walter Fertig (chair), Duane Atwood (BYU herbarium), Rita Dodge (Red Butte Garden), Robert Fitts (UT Conservation Data Center), and Ben Franklin (UT Conservation Data Center). We would like to thank the 40 botanists who participated in the Utah rare plant ranking session of the 5th Southwestern Rare Plant Conference in March 2009 for their helpful comments on developing the scoring system and applying it to specific plant species. Session attendees included a cross section of amateur and professional botanists representing government agencies (BLM, US Forest Service, National Park Service, US Fish and Wildlife Service), universities, botanical gardens, and consulting firms. In particular, we would like to acknowledge the additional comments provided on the draft list by Jason Alexander (Utah Valley University), Debi Clark (Canyon De Chelley NM), Cheryl Decker (Zion NP), and Kezia Nielson (Zion NP). —W. Fertig

## US Fish and Wildlife Service Updating Utah's Endangered and Candidate Plant List

By Walter Fertig

Far from being a static document, the government's official list of endangered and threatened plants and animals is frequently revised as new and better information becomes available. Several changes in Utah's roster of listed and candidate plant species have occurred in recent months or are being proposed in the near future. Some of these changes are summarized below:

**Maguire's daisy proposed for de-listing:** When it was first listed as endangered in 1984, *Erigeron maguirei* was known from a single population containing 7 individuals and was thought to be highly threatened by mining, energy exploration, and grazing activities in the San Rafael Swell of Emery County, Utah. Subsequent surveys and taxonomic revisions resulted in an increase in the number of known populations and expanded the species' range to include the Waterpocket Fold area of Wayne and Garfield counties. As a result, the Service changed the status of Maguire's daisy to threatened in 1996\*.

In May 2008, USFWS published a notice in the *Federal Register* proposing to drop the species from the Endangered Species list altogether based on its successful recovery. Field surveys conducted by Debi Clark and the interagency botany team based out of Capitol Reef National Park since 1999 have greatly increased the number of individual plants (now believed to exceed 164,000) and documented that threats to its slickrock and slot canyon habitat are minimal. Additional long-term monitoring studies by Renee Van Buren and Kim Harper have found populations to be stable. The Service now believes that the intended goals of the Maguire daisy

\*Endangered plants are legally defined as those in danger of extinction throughout all of their range, while threatened species are those that are likely to become endangered in the foreseeable future. Protective measures are comparable for endangered and threatened species under the ESA.



Above: Maguire's daisy (*Erigeron maguirei*), a Navajo sandstone endemic of central Utah being proposed for de-listing due to recovery. Photo by Tom and Debi Clark, NPS.

recovery plan have been met and de-listing is warranted.

A final decision on de-listing is still pending. If dropped, *E. maguirei* would continue to be monitored for at least 5 years to ensure that populations remain viable.

**Goose Creek milkvetch added to Candidate List:** In September 2009, the USFWS added *Astragalus anserinus* to its official roster of candidate species being considered for listing under the ESA in Utah. The ruling came in response to a petition by Red Willow Research Inc. and a

Right: Goose Creek milkvetch (*Astragalus anserinus*), a local endemic of the Goose Creek drainage in NW Utah and adjacent Nevada and Idaho, and an "Extremely High" priority species in the UNPS ranking system. Illustration by Kaye Thorne.

group of environmental organizations and concerned citizens to list the plant as threatened. Goose Creek milkvetch is endemic to the Goose Creek drainage in extreme northwest Utah (Box Elder County) and adjacent portions of Cassia County, Idaho and Elko County, Nevada. The entire range of the species fits within an area that is 20 miles long x 4 miles wide. *Astragalus anserinus* is a mat-forming perennial legume with pinkish-purple flowers and gray-hairy leaves and occurs only on ashy-tuffaceous soils within sparsely vegetated sagebrush communities. Extensive areas of its native habitat burned in a wildfire in 2007, resulting in population losses of up to 98% at some sites. Histor-



ically, this habitat burned infrequently (only every 60-110 years), but with increased cover of cheatgrass and other annuals, fires now may occur every 10 years. Past monitoring studies have shown that populations fluctuate widely from year to year, suggesting mature plants are either short-lived or exhibit periods of prolonged dormancy below ground. So far, recovery after the wildfires has been slow due to the apparent loss of a seed bank and direct mortality of mature plants.

In its finding, the service agreed with the data supplied by petitioners and its own research that listing under the ESA is warranted for Goose Creek milkvetch. Actual listing is precluded at this time, as the agency has other listing and recovery actions that are more pressing given their budget and man-power restrictions. As a candidate, *A. anserinus* does not receive full protection under the ESA, but partner agencies (such as the BLM which manages most of the plant's habitat) are encouraged to take greater actions on the species' behalf.

One threatened cactus becomes three: In September 2009, the Service officially recognized that the federally threatened Uinta Basin hookless cactus (*Sclerocactus glaucus*) is really comprised of three distinct taxonomic entities. *Sclerocactus glaucus*, in the strict sense, is now known only from northwestern Colorado and has been given the new common name of Colorado hookless cactus. The two new species are each endemic to the Uinta Basin of northeastern Utah and are now each afforded threatened status of their own. Ouray cactus, or as the Service continues to call Uinta Basin hookless cactus (*S. wetlandicus* or *S. whipplei* var. *glaucus* in Welsh's *A Utah Flora*) is the more widespread of the two and can be recognized by its larger stems, bigger flowers, and hookless central spines. Pariette cactus (*S. brevispinus* or *S. whipplei* var. *ilseae*) differs in having very short, spherical stems and short (often absent) hooked central spines. Both of the Utah species are highly threatened from over-collection and loss of habitat from mineral exploration and develop-



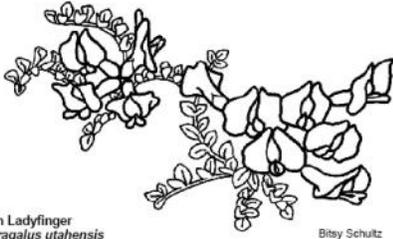
Above: Frisco wild buckwheat (*Eriogonum soredium*), an endemic of limestone outcrops in the vicinity of the old mining area of Frisco in western Beaver County. It co-occurs on whitish, barren stony slopes with *Lepidium ostleri* and *Trifolium franciscanum*, two other San Francisco Mountain endemics also being considered by USFWS as potential candidates for ESA protection. Photo by Douglas N. Reynolds.

ment. With the recognition of these taxa, the total number of listed threatened or endangered plant species in Utah has increased to 25 (full list on page 5).

Ten Utah plants being considered for candidate status following petition: In 2007 USFWS was petitioned by WildEarth Guardians to list 206 plant and animal species from the western United States under the ESA. On August 18, the Service responded to the petition by initiating a status review of 29 species for which the petitioners submitted sufficient information to substantiate an action. Of these 29, 10 are native plants found in Utah (see sidebar at right). USFWS will now develop a status review document for each species to determine if any warrant potential listing based on the Service's 5 main listing factors (present or threatened destruction, modification or curtailment of habitat or range; over-utilization; disease, or predation; inadequacy of existing regulatory mechanisms; or other man-made or natural factors affecting continued existence). Any of these species that meet the criteria of listing will be recommended for candidate status by USFWS and published in the *Federal Register* for public comment. The Service is currently seeking information on the distribution, abundance, and biology of these species relevant to the five listing factors.

#### Ten Utah Plant Species Being Considered for Candidate Status by USFWS

- Astragalus hamiltonii* (Hamilton's milkvetch), Uinta Basin endemic
- Astragalus iselyi* (Isely's milkvetch), restricted to the foothills of the La Sals
- Astragalus sabulosus* (Cisco milkvetch)
- Cryptantha semiglabra* (Pipe Spring cryptantha), Arizona Strip in vicinity of Fredonia and Pipe Spring and historically in adjacent southern Utah)
- Eriogonum soredium* (Frisco wild buckwheat), endemic to the San Francisco Mountains, Beaver County, UT
- Lepidium ostleri* (Ostler's pepperwort), endemic to the San Francisco Mountains, Beaver County, UT
- Lesquerella navajoensis* (Navajo bladderpod), reported in Utah from the White Cliffs in Kane County, but may be a hybrid or a new population of *Physaria* (*Lesquerella*) *rubicundula* var. *tumulosa*.
- Penstemon flowersii* (Flowers' penstemon), Uinta Basin
- Penstemon gibbensii* (Gibbens' penstemon), Browns Park, northeast UT
- Trifolium franciscanum* (Frisco clover), endemic to the San Francisco Mountains, Beaver County, UT



Utah Ladyfinger  
*Astragalus utahensis*

Betsy Schultz

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