



Sego Lily



Newsletter of the Utah Native Plant Society

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WASATCH FITWEED JOINS RARE PLANT GUIDE

Words and Photos by Tony Frates - Illustration (P2) April Jensen

This past summer when Wasatch Fitweed, *Corydalis caseana* subsp. *brachycarpa*, was found by Bruce Glisson for the first time in Summit County (it was previously known only from Utah, Salt Lake, Wasatch and Weber counties and nowhere else) and thanks to a query initiated by Ben Franklin (botanist/Utah Natural Heritage Program), it was realized that this beautiful plant should be considered for inclusion in the Utah Rare Plant Guide (www.utahrareplants.org).

While the species itself is not in peril, the intraspecific taxonomic rank (subrank) of Wasatch Fitweed is T2 meaning that it is globally rare, with relatively few occurrences and total individuals and it is accordingly treated as a sensitive species by the Forest Service.

Taxa included in the Utah Rare Plant Guide contain certain basic information, drawings and photos.

Information was gathered and photos were provided by Wayne Padgett, Wasatch-Cache National Forest ecologist. But, no drawing of the Wasatch Fitweed had ever been published. Through funding and support provided by the Wasatch-Cache National Forest (with thanks to Teresa Prendusi and Wayne Padgett) and technical guidance by Dr. Duane Atwood (Stanley L. Welsh Herbarium), an excellent botanical illustration was prepared by April Jensen (see page 2). Inclusion in the Utah Rare Plant Guide as of November 2005 represents the first ever publication of an illustration for this unique subspecies.

Wasatch Fitweed is found in a very limited range on mainly the Wasatch-Cache National



Corydalis caseana subsp. *brachycarpa* in flower (above) and fruiting (below)



Forest but also the Uinta National Forest and on some private lands.

It grows at relatively high elevations, usually in a relatively narrow band between about 7,000-9,000 feet and is usually only found growing in or along streams or nearby drainages. This erect perennial with typically numerous hollow stems was found growing as tall as 16 dm (64") in what may have been an exceptional water year in 2005; more typically it is half that size. While rare, it currently does not seem to face any known threats.

There are five subspecies of *Corydalis caseana* (Case's Fitweed) occurring in California, Colorado, New Mexico, Oregon, Idaho and Utah. Subspecies *brachycarpa* only occurs in Utah. The swollen capsules for which our subspecies may have been named appear to be caused by insect larvae.

The capsules are reflexed and have elastic walls which when mature eject the seeds when touched as if shot from a rubber band.

The usually white or pinkish petals are 17-25 mm long and barely more than 4 mm thick, the inner ones often purplish-tipped, and flowers from June to August.

The species is known to be toxic to livestock.



Illustration by April Jensen



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The Common Pincushion Cactus – *Coryphantha vivipara*

Words & Photos by Jeff Mitchell

A rose by any other name may still be a rose, but a common pincushion cactus in Utah can be one of several different plants. The problem is really that of common names. They can represent several different species. If I say pincushion, a lot may depend on where I am. In Utah it could be *Pediocactus simpsonii*, *despainii*, or *winkleri*. It could be *Neolloydia johnsonii* or *Coryphantha missouriensis*. These are all considered pincushions because their spines resemble pins in a round cloth pincushion. Scientific names allow us to precisely identify which unique species we are dealing with.

According to my internet cactus forum, the genus *Coryphantha* has had part of it split off into *Escobaria*. But every time I use *Escobaria* in Utah, everybody goes huh? Taxonomists love to argue over names, but it is the same plant, and I will stick with *Coryphantha* since that name confuses no one. This short treatise is about *Coryphantha vivipara* var *arizonica*.

In Utah, we have three varieties, Variety *desertii* is found down in Washington County, and variety *vivipara* is found in the Uinta basin. Variety *arizonica* is the one most people will run into. My first exposure to this cactus was in the wash that leads up to Marjum Pass from the west in the House Range, west of Delta. It was on a wash bank about to collapse and get washed away, so I dug it up and took it home.

I planted it in a little corner where my garage meets the house facing southeast. It gets around 5 to 7 hours of sun a day during the summer and appears to do very well. It started with 12 stems which indicates an old plant, probably around 10-15 years old. I've had it for eight years now, and it has added a couple more stems. I have a bias in favor of this plant on the account that it was the cactus that got me started. And just because it is common does not make it any less beautiful.

The common pincushion is probably the second easiest cactus to grow in northern Utah after *Opuntia polyacantha*, the plains prickly pear. There is some dispute about that, as I have found at least one website that claims it is very susceptible to root rot. I'm not sure what their problem is, but they grow great in Utah in mineral soil mix. It takes four years to mature enough to flower when watered once a week during the spring and summer.

The genus name *Coryphantha* is from the Greek for "top flowering". So much for Latin names eh? The flowers are pink magenta about an inch across, with some showing two tones a very light pink at the bottom of the flower changing to light magenta halfway to the top. Each stem will have two to six flowers opening over a period of two or three weeks beginning in May. This looks outstanding on a large cluster.



Coryphantha vivipara in Flower

By August, pollinated flowers develop large pods which slowly turn from green to reddish. In cultivation, pods can be as much as five times larger than pods in the wild. The pods are on the fleshy side i.e. they don't dry out when the seeds are ripe like *Scleroacti* (fishhook cacti) or several kinds of *Opuntias* (prickly pears and chollas). As long as they are on the plant they stay juicy for several months.

There is regional variation in spine color. The pincushions in Cedar City have dark brown spines, and the ones on the south side of the Aquarius Plateau and those in the west desert are whiter. There is one very similar looking species in *Pediocactus simpsonii*. The *Pediocactus simpsonii* has slightly curved central spines (the ones sticking out away from the plant) and the pincushion has straight spines and each areole on a pincushion has a groove on the upper part which extends from the tip of the areole all the way to the areole base in very mature plants. In the spring, the flower comes out of this groove in the new season's areoles.

As the plant gets older, and if it is getting enough water, it will start to cluster by putting out offshoots called pups. I have seen clusters with as many as 20 stems. The cultivation of this plant is rather simple. You can propagate by seed or by cuttings. The seeds germinate readily and grow well in normal top soil. I germinate mine indoors under cool white fluorescent lights that are on 24/7, and water once every three or four days. They mostly sprout in three to seven days, with a few laggards sprouting over the next month.

I've grown them from cuttings on two occasions. The first was when a young relative brought me an almost dead specimen which was hollow and had been completely eaten out on the inside. It had one tiny scraggly root coming down from one side of this hollow plant. I packed the inside with sand (to keep well drained), and planted it in a pot.

The growing point was damaged and had died, so when it started growing again, it put out lots of pups. The pups being too crowded, I thinned them out by cutting half of them off. I then set them out to dry for a couple days while the cut calloused over. The callous is important because it provides a seal against fungus when you place it in the soil to root. Then these pups were set barely into the soil, with the cut barely stuck into the soil. They then sent out roots and they grew rather well.

The second instance was from a crested pincushion I found in the Confusion Range of the west desert. A crest is when the plant grows from a line rather than the normal growing point. As it gets bigger and bigger, it grows into a 'U' shape, then starts trying to look like a little spiny brain. I cut the crested plant into nine pieces, allowed them to callous over, and planted them. Now I have around eight plants that look like the original. One rotted out and died. For some reason the crested plant has never bloomed, the growing line has never produced flowers buds.



Coryphantha vivipara growing vigorously alongside Indian rice grass

Those grown from seed have a juvenile form. There are no centrals sticking straight out. All the spines lay flat on the plant and you can touch the plant without getting poked. When children ask if they can touch the cacti, we let them do so on the juvenile pincushions since those won't hurt them. Around the third year one or two centrals start sticking out and by year five all the centrals are in their maximum defensive posture.

The common pincushion is a great starter plant to get experience with cactus. It is pretty hard to kill unless you over water it, has great flowers and will last a long, long time. This is a great plant for any xeriscape and will offer many years of enjoyment.

**Intermountain Flora, Vascular Plants of the Intermountain West, U.S.A. Volume Two, Part B,
Subclass
Dilleniidae.**

By Noel H. Holmgren, Patricia K. Holmgren, and Arthur Cronquist. 2005.
The New York Botanical Garden, Bronx, NY. 488 pp. \$100.00

Review by Walter Fertig

Over four decades in the making, the *Intermountain Flora* moved one step closer to completion with the publication of the seventh volume in the eight part series in June 2005. The newest edition (Volume 2 Part B) covers 17 families and 9 orders in the dicot subclass Dilleniidae of Arthur Cronquist's integrated system of vascular plant classification. Members of the Dilleniidae are united by a suite of somewhat arcane morphological traits (such as the presence of numerous stamens with those at the center of the flower maturing first and syncarpous ovules with parietal placentation), but were considered by Cronquist to represent a natural group that evolved independently of other major dicot subclasses (Rosidae, Caryophyllidae, and Hamamelidae) from the ancestral *Magnoliidae* (magnolia-buttercup group). The Dilleniidae include several of the more notoriously difficult vascular plant families in the western US, such as the mustards (*Brassicaceae* or *Cruciferae*), willows (*Salicaceae*), and blazing-stars/stickleafs (*Loasaceae*).

The Intermountain Flora project was originally conceived in the 1940s by Bassett Maguire, Arthur Holmgren, and Arthur Cronquist of Utah State University and The New York Botanical Garden. Their goal was to produce a multi-volume, illustrated treatment of the flora of the Great Basin and northern Colorado Plateau (covering all of Utah, most of Nevada, and portions of SE Oregon, S Idaho, E California, N Arizona, and SW Wyoming) comparable in scope to the 5 volume *Vascular Plants of the Pacific Northwest* and 3 volume *New Britton and Brown Illustrated Flora of the Northeastern United States*. Work on the flora began in earnest in the 1960s, leading to publication of the first volume (describing the physiography, plant geography, and botanical history of the region, as well as ferns and gymnosperms) in 1972. Subsequent volumes covering monocots, *Asteridae*, *Fabaceae*, *Asteraceae*, and *Rosidae* have appeared approximately every 3-7 years. Over much of the last three decades the work has been spearheaded by Noel and Patricia Holmgren of the New York Botanical Garden, along with their collaborators James Reveal and the now deceased Arthur Holmgren, Arthur Cronquist, and Rupert Barneby.

As with the previous 6 volumes in the series, Volume 2B contains detailed taxonomic keys, full species descriptions, and faithfully rendered black-and-white drawings that highlight the most significant diagnostic features of each species. Several talented botanical illustrators have contributed to the series, including Jeanne Janish (famous for her illustrations in *Vascular Plants of the Pacific Northwest* and numerous books on southwestern wildflowers), Bobbi Angell, Robin Jess, and Laura Vogel. The availability of quality technical illustrations is invaluable, particularly for workers in the field or without ready access to herbarium material.

The drawings in Volume 2B are especially helpful in differentiating tricky species pairs in *Mentzelia* and for a number of the mustard genera. In addition, the illustrations are often objects of great beauty, and the *Flora* could just as easily be marketed to aficionados of fine botanical art as to taxonomists. The latest volume of the *Intermountain Flora* is, in my opinion, the most handsome yet in terms of quality of illustrations, layout, and design.

Although loyal to Cronquist's vision of the Dilleniidae group, the authors of Volume 2B do a good job of discussing and referencing recent research in plant systematics that is reshaping long-held taxonomic concepts. Taxonomy is currently in a period of flux in which numerous (and often contradictory) alternative treatments of traditional groups are being proposed based on genetic and cladistic studies. While it may be decades before all the smoke clears and a new consensus is reached, the Holmgrens have made a number of changes at the genus and family level that may cause some consternation to those who prefer their taxonomy to remain static.

The most noteworthy changes have occurred in the mustard family, with the dismemberment of *Arabis* (with all species except *Arabis hirsuta* and *A. nuttallii* moving to *Boechera* and *Turritis*), the merger of *Lesquerella* and *Physaria*, and transfer of selected species to the new or resurrected genera *Cusickiella*, *Dimorphocarpa*, *Hornungia*, *Noccaea*, *Sinapis*, and *Transberingia*. At the family level, the Caper family (Capparaceae) has been split in two, with all the intermountain species moving to the newly elevated Cleomaceae. Many other minor changes have occurred at the species and variety levels, mostly involving reshuffling of taxa within *Boechera*, *Descurainia*, *Draba*, *Mentzelia*, *Populus*, *Primula*, *Salix*, *Stanleya*, and *Viola*.

Several new species have been reported for Utah in Volume 2B of the *Intermountain Flora*. Several represent new weed species for the state (*Alyssum murale* and *Hypericum perforatum*), while others are range extensions (*Draba paysonii* var. *treleasii*, *Lepidium ramosissimum*, *Mentzelia decapetala*, *Phoenicaulis cheiranthoides*, *Salix eastwoodiae*, *Salix melanopsis*, and *Subularia aquatica*). At least two taxa have been newly described or resurrected: *Boechera glareosa*, endemic to the Uinta Basin near Jensen, Utah and Dinosaur, Colorado and *Erysimum capitatum* var. *nivale* endemic to the Uinta, Wasatch, and La Sal mountains of Utah and adjacent Colorado. In all, this volume covers 315 Utah species, or about 11% of the entire state flora.

Volume 2B is a necessary addition to the library of all serious professional and amateur botanists in Utah. A large percentage of the species covered in this volume are not well illustrated or described in other regional floras (especially the *Brassicaceae* and *Loasaceae*). Likewise, the keys and species descriptions provide a nice complement to other floras that cover Utah, especially Welsh, Atwood, Goodrich, and Higgins' definitive state reference *A Utah Flora, third edition* (2003). Purchase of this volume will only whet ones appetite for the appearance of the final book in the series (Volume 2A covering the *Magnoliidae*, *Hamamelidae*, and *Caryophyllidae*), hopefully within a few short years.

Events and Chapter News

Manzanita

January 2006 Meeting: Monday, January 9: Adding Color to Garden Design.

The January speaker will be Allysia Angus, Landscape Architect/Planner at the Escalante office of the Grand Staircase-Escalante National Monument. The meeting will be held on a Monday instead of the normal Tuesday evening to accommodate those members who are participating in the Master Gardener's course this winter (see below). Allysia will discuss designing landscaping and gardens with an eye towards the color of flowers and foliage at different seasons of the year.

2006 Master Gardener's Class: A new session of the Master's Gardener's course will begin in January 2006, meeting on Tuesdays and Thursday nights.

For more information, contact Kathy Walls (jwalls@kanab.net) or Larry Baer (Baersden@kanab.net).

Salt Lake

The Salt Lake Chapter elected Kipp Lee as President at the November monthly meeting. Kipp is also a UNPS board member. Bill Gray will serve as activity chair and assist in getting the chapter active.

The December 6th meeting was cancelled due to icy conditions in Salt Lake City. Kipp was to have unveiled his goals and plans for the chapter in the upcoming year, which include social activities, conservation projects, field trips, workshops, fund-raising, and better member involvement. He will now do this at our **January 3rd** meeting. **Therese Meyer**, long-term UNPS board member, will also speak about her ongoing project with the Utah DWR to select varieties of native plant seeds, and produce them in bulk for rangelands restoration. Meetings are held at the Sweet Library (9th Ave and 'F' St, SLC) at 7:00 pm, first Tuesday of each month.

Sandra Bray's "**Mystery Plant**" website now has over 50 photos posted <<http://www.rootcellar.us/unps>>. Submit photos of UFOs (unidentified flowering objects) to glbray@comcast.net or browse the photos to test your plant i.d. skills. Sandra or Bill Gray will post comments, then the answer (if possible) after a few days.

Utah Valley

On Friday, November 18th the Utah County Chapter of the Utah Native Plant Society met for a potluck and lecture. The food was delicious. After eating, Robert Fitts of the Utah Natural Heritage Program gave a presentation on the Utah Natural Heritage Program (UNHP) for plants. Plants are given a local and global ranking based on their rareness. This rareness is determined from plant data obtained from herbarium records and site surveys. Maps are created from this data with differing buffers depending on the accuracy of the data. For example an historical record might be mapped to a section or canyon, but current occurrences are GPS points. Large scale maps of plant locations are available to the public on the Utah Division of Wildlife webpage at <http://dwr.cdc.nr.utah.gov/ucdc/>.

The next potluck and lecture will be on Friday, February 17th. The potluck begins at 6:00 pm, and the lecture is at 7:00 pm. No speaker has been chosen yet, so watch the website <http://www.unps.org> under Chapters, Utah Valley for more details.

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Many thanks to Xmission for
sponsoring the Utah Native
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Please direct all suggestions,
articles and events for the
newsletter to Paula Longhurst
at plonghur@xmission.com.
**The deadline for next issue
is 8th February 2006**

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Invasive Species: Susan Garvin
Communications:



VOLUME 29 , ISSUE 2

March/April 2006

Native Plant Propagation Workshops 2006

UNPS has partnered with USU extension once again to bring you these native plant propagation workshops which are taking place throughout Utah during February March and April. Learn to plant and grow Utah native plants. Participants will plant a selection of Utah native seeds to take home. Space is limited so register now!

Salt Lake County

Workshop includes media-filled container, seeds, pot labels, and reference booklet. Price is \$25

This year Salt Lake County will be offering the following seeds: Showy Sandwort (*Arenaria macradenia*), Indian Ricegrass (*Stipa hymenoides*), Green Mormon Tea (*Ephedra viridis*), Apache Plume (*Fallugia paradoxa*), Gooseberryleaf Globemallow (*Sphaeralcea grossularifolia*), Palmer Penstemon (*Penstemon palmeri*), Rocky Mountain Penstemon (*Penstemon strictus*), Blue Flax (*Linum lewisii*).

March 21st (Tue), 22nd (Wed), 23rd (Thurs), each 6 to 9pm at USU Extension Salt Lake, 2100 S State St., Rm S-1007/8 Register through USU Extension, 801-468-3179.

March 25th (Sat) 10am to 1pm, at Red Butte Garden Greenhouses. For more information and to register call Red Butte Garden at 801-581-8454.

March 28th (Tue), 30th (Thurs), each 6 to 9pm SU Extension Salt Lake, 2100 S State St., Rm S-1007/8 (Register through USU Extension, 801-468-3179.)

April 1st (Sat) 9am to 12pm, at Liberty Park Greenhouses For more information and to register call USU Extension, 801-468-3179.

Cache County

Mar. 5th, 9 to 11 am or 1 to 3 pm or Mar. 9th, 6 to 8 pm
USU Teaching Greenhouse, 1389 North 800 East, Logan, UT
Cost \$20 for non-members \$15 for UNPS members and Master Gardeners
Pre-register by calling (435) 752-6263

Propagation Workshops continued..

Davis County

March 18th (Sat). For more information and to register call Davis Co USU Extension office (801-451-3403) .

Utah County

March 16th beginning at 2.30pm at Utah Country Extension Office, 100 E. Center Street, Lower Level, Room 600. Cost \$20 for non-members \$15 for UNPS members and Master Gardeners Pre-register by calling Julia Tuck 377-8084.

Southern Utah

February 25th (Sat). Washington County extension agent Rick Heflebower will be filling in for Susan Meyer this year. The workshop will be at Zion NP, with materials provided by the park to keep costs to a very economical \$15.

Space is limited, so Contact Zion Canyon Field Institute for additional details. www.zionpark.org or call the Zion Canyon Field Institute at 435-772-3264 or 1-800-635-3959).

Lifetime Member Update

By Tony Frates

Robert Fitts became our 24th lifetime member in December, 2005. Thank you Robert!
 And in January, Karen Creswick became our 25th lifetime member. Thanks much Karen!



Mar/Apr 2006

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The Claret Cup Cactus – *Echinocereus triglochidiatus*

Words & Photos by Jeff Mitchell

Echinocereus triglochidiatus is a low clustering cactus ranging from a couple stems to clusters of hundreds several feet in diameter. It is also commonly called a hedgehog cactus. This cactus is a relatively common cactus and is found all over Utah in rocky situations where it likes to take hold in the cracks between rocks.

As always, common names can cause confusion. The name “Claret Cup” also applies to *Echinocereus coccineus* which looks almost identical in shape and flowers. “Hedgehog” applies to those two and a number of the members of genus *Echinocereus* like our own native *Echinocereus engelmannii*. It is also sometimes referred to as “hummingbird cactus”.

In some places, as in Utah County, it is very common in spots. In others it is only occasionally seen. In Emery County on the north plateau overlooking the San Rafael River, you might only see three in two miles of hiking, being outnumbered 100 to 1 by *Pediocacti despainii*, or *Sclerocactus parviflorus* (fishhook) cactus at a ratio of 20 to 1. In areas in the west desert you can see it in equal quantities with *Coryphantha vivipara* or *Echinocereus engelmannii*. Populations vary widely from spot to spot.

In eastern Utah there is a spineless form in the La Sal Mountains which used to be classified as an Endangered species until they figured it was just an odd form of the Claret Cup.

The Claret Cup flowers in late April and early May, and blooms last for three to four days over a period of two to three weeks. During wet years, the blossoms are especially abundant and spectacular. With bright red flowers these cacti attract hummingbirds and sphinx moths which are major pollinators. For some reason, I’ve never seen very many seed pods in the wild. When I was first getting started raising cacti, I went out looking for seeds in an area in southwest Utah County, and found eight pods after examining around 200 plants. Over the intervening years, I’ve not seen much difference. Most flowers drop off without being pollinated. Whether this is due to early spring (before the hummingbirds arrive) or to drought or some other factor, I cannot tell.



Claret Cup in Bloom

The fleshy fruits are green turning to reddish when ripe. The seeds are very small relative to *Pediocacti* or *Sclerocacti* and are about the size of a small grain of sand. The seeds germinate over a period of time from a few days to several months. I did a flat of seeds during the winter 04/05 with a couple thousand seeds and got several hundred seedlings over the whole winter, several with every watering. Propagation may also be done with cuttings. Cut a branch off and allow the cut to callous over for a few days, apply rooting hormone to the cut and plant an inch deep.

This cactus is one of the few on which I’ve seen insects that feed on it. Shield bugs like to suck the juices out of them, and on occasion, will kill a plant. Handling insects on cacti should be done with care as oil based insecticides will remove the waxy waterproof coating that allow cacti to keep their water from evaporating. Orthene wettable powder is said to work well, but I’ve never used it.



For xeriscapes, this cactus works well because it grows larger than *Pediocacti*, *Sclerocacti* and *Coryphanthas* and is more visible to passersby. Its flowers are such a striking blood red they are really hard to miss. In it's tight clustering habit, the Claret Cup chokes weeds out as the cluster spreads.



If a large cluster is dug up from the desert, it doesn't look as good as one grown in place. The stems tend to splay out and it loses the nice symmetry and compactness of one that has never been moved. Grown from an already rooted plant this cactus will provide years of enjoyment.

Natives in the News

These articles are re-produced with permission from the authors, thank you to UNPS member and Salt Lake Tribune columnist Maggie Wolf and Joe Baird also of the Salt Lake Tribune,
Research by Kelly McNulty

Catalyze your wildflower memories. UNPS website offers tools for plant identification and appreciation

By Maggie Wolf, USU Extension Horticulture Agent
Salt Lake Tribune

Learning wildflower names is one of life's simple pleasures; like finding a penny and putting it in your pocket. Unfortunately, some of us have holey pockets, and next summer as you greet your old friend "purple flowers on a stalk", the name may be beyond your reach. Try a couple of new tools provided by the Utah Native Plant Society to review or learn wildflower names. Plant identification CDs published by Bill Gray plus a new "Mystery Plants" feature at the UNPS website (www.unps.org) help even the most inexperienced botanist match plant names to plant faces.

As a retired biochemist and biology professor, UNPS member Bill Gray (pictured right) relates the steep learning curve of plant taxonomy to a chemical reaction's high energy barrier. Intimidated by the awe-inspiring diversity of Utah's native plants, novice botanists may soon give up trying to learn names. But Gray has faith that if people become familiar with Utah's wildflowers and plants, they will come to love and protect them. And so, ten years ago, Gray set out to break down the energy barrier, smooth out the learning curve, and create a way to identify native plants more easily.



Realizing that beginning botanists understand pictures better than written descriptions, Gray began photographing wildflowers and storing the images in a database. As of now, he has published two CDs on plant identification. "Plants of the Central Wasatch Front" is based on the book Flora of the Central Wasatch Front by Lois Arnow et al. Considered the quintessential key for Wasatch Front wildflowers, Arnow's book is now out of print and in process of revision. Gray's CD contains all the text from Arnow's book, as well as a technical key, a library of 2600 color photographs, and several other features.

Rather than trying to relate botanical terminology to an unidentified flower at your feet, Gray's CD allows you to select for flower shape, petal number, color, plant type, elevation, and flowering time. Returning with a list of possible matches, you can then click through photos until you see a similar flower, and your UFO (unidentified flowering object) is identified. Should you wish to learn botanical terms (bravo for you), click to see the text version as written in Arnow's book. Gray's other published CD is "Penstemons: an interactive guide with photos". Both are available from the UNPS website.



Ten-plus years of gathering photos and identifying native plants make Gray a good man to ask, "What's this flower?" Ever the teacher, he'd rather you figure it out yourself (because you'll remember it better that way). UNPS now offers an interesting photographic bulletin board, authored by UNPS member Sandra Bray. Anyone can send in good quality digital photos of UFO's, Sandra posts them to the website, and Gray will (after allowing visitors to post speculations) identify them. A quiz site for experts and a learning tool for beginners, www.rootcellar.us/unps is the place to catalyze your wildflower journey.

Settlement buys time for rare wildflower.

In Utah County: The U.S. Fish and Wildlife Service must develop a recovery plan for the Deseret milkvetch

By Joe Baird

The Salt Lake Tribune

The Deseret milkvetch grows on a 300-acre patch of ground between the towns of Thistle and Birdseye - and no place else on Earth.

An endangered wildflower and its tiny habitat in southern Utah County are getting a second chance. As part of a lawsuit settlement, the U.S. Fish and Wildlife Service has agreed to further review the status of the Deseret milkvetch.



Deseret Milkvetch

The suit was filed by a pair of environmental groups last summer because the initial six-year review period for the plant was about to expire without the federal agency having a recovery plan in place. Under the terms of the settlement, finalized last month, the Fish and Wildlife Service has agreed to a follow-up study of the milkvetch to determine if it qualifies for critical habitat designation.

Such a finding could lead to prohibition on development around where the wildflower grows, just off an increasingly busy stretch of U.S. Highway 89.

Also implicit in the deal : that the Fish and Wildlife Service will create a recovery plan for the species, which has been delayed by what one agency official called financial constraints.

“This isn’t a parade-like victory, but everyone agrees it ought to be looked at again. And because of the lawsuit, the Fish and Wildlife Service will now do that,” said Tony Frates, conservation co-chair of the Utah Native Plant Society, one of the plaintiffs in the lawsuit.

The plight of the milkvetch has been complicated. The plant grows on three parcels of land, two of which are privately owned; the other is owned by the state’s Division of Wildlife Resources.

Also creating challenges is the tiny size of the plant’s habitat, which is just off the highway in a location neither the Fish and Wildlife Service, nor conservation groups will disclose.

“The plant’s whole habitat is on this one little hillside near the Utah-Sanpete county line,” said Fish and Wildlife botanist Larry England.

Frates says the Native Plant Society and the Center for Native Ecosystems pursued legal action against the Fish and Wildlife Service because the six-year review period for several endangered southern Utah plants, including the Bearclaw poppy, elapsed without review.

Growth and development there now preclude any type of critical habitat designation, which is central to the survival of a plant species.

“Hindsight has taught us that if we don’t get critical habitat, as development occurs, it becomes impossible to attain it,” said Frates. “This [milkvetch] issue didn’t come up because of the bulldozer, but because the deadline was coming up. If we let it pass, we wouldn’t be able to take this action again. And things in that area could really change in the next decade or two.”

Influencing the Fish and Wildlife Service, England said, was previous litigation that dictated the agency follow through on recovery plans and critical habitat designations once a plant or animal species has been listed.

The milkvetch, he noted, was listed in 1999.

“We determined it was not prudent then to do critical habitat. But the situation has changed. The thing we need now is to develop a recovery plan,”

Calendar of Events

Please note that some of the events listed *may have already taken place*. For the most up-to-date events lists go to our website www.unps.org and click on the “calendar” link.

February

- February 17 (Fri) : The Utah Valley Chapter will hold its first meeting of the year, at the Federal Building, 88 W. 100 North in downtown Provo. We will have a potluck meal at 6pm. The program will be presented at 7 pm by Bill King, president of the North American Rock Garden Society. It is entitled *Alpines in All Directions* and is a primer of alpine native plants in Utah and surrounding areas.
- February 23 : Salt Lake Chapter are hosting a tour of Garrett Hebarium at 6pm. For more information go to the Salt Lake Chapter Page at www.unps.org
- March 25 : Join members of the Utah Valley Chapter on a field trip to look at *Viola beckwithii*. Meet at 9 am at the parking area across from the gravel pit at Moark Junction. All are welcome. It is an easy hike across the old gravel pit to see Viola. Those wishing to stay and look for more *Viola* plants on State Land should bring your outdoor gear, cameras, a packed lunch and water. Moark Junction is the intersection of Hwy 89 (The main road south through Springville), and Hwy 6 (the road through Spanish Fork Canyon to Price). Landmarks are the red buildings of the explosives plant east of the junction, and the power substation in the old gravel pits just to the north of the junction. Those coming from the north can take the I-15 Price exit, go east through Spanish Fork, and turn left toward Mapleton and Springville. Contact Robert Fitts at 796-8631 for further information.

For March and April events please see next page.

March

- March 7: Salt Lake Chapter meeting, Bill King, longtime member of UNPS, a former president, and now president of the North American Rock Garden Society. Bill has organized an international conference for NARGS at Snowbird next year, titled Alpines in All Directions. Bill's talk of the same name deals with our amazing range of wonderfully tough little perennials, found not only up high, but everywhere the conditions are extreme. (This talk was postponed from December) Meetings are held at the Sweet Library (9th Ave and 'F' St, SLC) at 7:00 pm, first Tuesday of each month. Reports and Meeting run from 7-7.30pm, featured speaker from 7.30 onwards. SL Chapter will also be hunting *Viola beckwithii* at Red Butte Gardens this month - go to www.unps.org for more details.
- March 7 - 9 : The 17th biennial HAR (High Altitude REvegetation Conference) will be held in Fort Collins Colorado - for more information and to sign up go to http://www.highaltitudereveg.com/schedule_of_events.htm
- March 9 : The Escalante Chapter will host a presentation by Angie Evenden (Vegetation Program Manager for the NPS-No. Colorado Plateau Inventory and Monitoring Network) entitled "Vegetation Research in the National Parks of Utah" the event starts at 7 pm, contact Kathy Munthe jandkcool@yahoo.com or (435) 826-4755 for location details.
- March 9, 10 & 11 : The Xeriscape Council of New Mexico, Inc presents the 11th Xeriscape Conference and Expo. Conference will be held March 9 and 10 (cost \$150) the 11th is a free "open day" with 15 free seminars and nearly 200 exhibits. The conference will be held at the Albuquerque Convention Center, Albuquerque, NM. For more information and to register go to www.xeriscapenm.com or e-mail scott@xeriscapenm.com or call (505) 468-1021 (24hrs)
- March 18 : Zion Canyon Field Institute Class "Basic botany for gardeners". This course will be taught by Dr Doug Reynolds. For more information and to sign up go to www.zionpark.org

April

- April 4th: From 7pm Salt Lake Chapter Meeting. At 7.30pm Robert Fitts, will talk about "Tracking Utah's Rare Plants." His talk will show how the Utah Natural Heritage Program makes maps of rare flora. Many kinds of plants live only in our state, and knowing where they make their home is important to their survival. Information about rare species is the role of Nature Serve in Washington D.C., and Utah is part of this program. Learn how to contribute rare plant sightings to the Utah Heritage database.
- April 14 : Zion Canyon Field Institute Class "Life zones I, Mojave to Zion,". This course will also be taught by Dr Doug Reynolds. For more information and to sign up go to www.zionpark.org

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call:

Bill King: 582-0432
Susan Garvin: 356-5108
Or write to: unps@unps.org

Many thanks to Xmission for
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Plant Society website.

Please direct all suggestions,
articles and events for the
newsletter to Paula Longhurst
at plonghur@xmission.com.
**The deadline for next issue
is 8th April, 2006**

For latest UNPS and
Utah native plant
news go to:

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and click on News

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Sego Lily

Newsletter of the Utah Native Plant Society

VOLUME 29 , ISSUE 3

May/June 2006

UNPS Forms Native Cactus Interest Group

Words and photos By Dorde W. Woodruff



The first flowers were just opening on these clumps of prickly pears on July 9, 2005.

All UNPS members are invited to join this new Yahoo email discussion group, devoted to everything and anything on the subject of Utah cacti.

Collectors' passion for Cactaceae waxes and wanes a bit with fashion, but is always there. Especially overseas in places like Germany and Japan, collectors are avid. All the pressure to provide cacti for the trade, even though extensive growing from seed is done these days, makes conservation important. Some taxa are known from only a few locations, and may be sparse even where they are found. Utah is especially rich in Threatened and Endangered cactus species.

Although we're careful with locations for any species that are rare at all, still we must limit participation in this group to currently active UNPS members, checking those that apply against the membership list.

We ask that after acceptance new members post a short background, telling us about their interest in cacti. With the above caveat, all are welcome, botanists and non-botanists, lookers and growers, beginners and experts.

In addition to the email discussion group, we're planning field trips, the first ones during one day to locations in or near the Wasatch Front.

To join, go to <http://groups.yahoo.com/group/UNPSNativeCacti/>



May/June 2006

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<i>Prop Shop Update : P3</i>	<i>A Weed Wary Word to Gardeners : P4</i>
<i>Botany 101 - Scrophulariaceae : P5</i>	<i>Calendar of Events : P6</i>
<i>Warning to Native Plants in Foothills! : P8</i>	

Lifetime Member Update

By Tony Frates

UNPS would like to say thank you to Elaine York of The Nature Conservancy who became our latest lifetime member in March.

Thanks for your support Elaine!

Pediocactus simpsonii

Words & Photo by Jeff Mitchell

Pediocactus simpsonii is one of Utah's highest elevation cacti. It goes as high as 11,000 feet. In Utah it has been found as low as 5500 feet in the rolling hills of Dog Valley west of Nephi and in the hills east of Joseph. I've usually found them above 6500 feet.

This is another of the pincushion cactus species. We could also call it Simpson's footcactus. But I'm told that is not helpful either because the name footcactus was a misnomer. The prefix *pedio* comes from the Greek *pedion* which means plains or open country. The footcactus was an attribution to the latin *pedis* which meant foot. Somebody apparently took a look at the 'ped' in *Pediocactus* and said 'foot' which is an understandable mistake. Just another reason we have to be careful with common names.



Pediocactus simpsonii in bloom

P. simpsonii has two varieties in Utah: *minor* and *simpsonii*. The flowers may be pink or yellow and are the first

of the cacti each year. They've been spotted in bloom with their little crown of flowers poking out of the snow. I have under cultivation specimens from the Mineral Mountains in Beaver County, Dog Valley in Juab County, East Tintic Mountains in Utah county (all yellow flowers) and from Highway 72 in Sevier County (pink flowers). The flowers are prolific with around 10 to 20 blooms per stem.

Seeds are in small dehiscent (they break open when ripe) pods which are well protected by the heavy spination. Collecting the seeds requires a different method than pulling the pod off which can be done with most of the other *Pediocactus*. One knocks the seeds out of the pods by poking between the spines with tweezers and they fall to the ground where one can either pick them up with the tweezers or fill up the pot with water and float them out. Some people collect them with vacuum cleaners. When I first started out with cacti, I was told that I should practice growing *Pediocactus* seeds using this species before I tried the 'harder' species. It turns out that most of the *Pediocacti* are fairly easy to grow from seed and only *P. bradyi* turns out to be difficult.

Unlike *Pediocacti despainii*, *winkleri*, *bradyi*, *paradinei* and *knowltonii*, *P. simpsonii* has stiff hard centrals which are brown to whitish (mostly brown). The Garfield County specimens have the white centrals, and those in the Sevier valley near Joseph do too. But the ones from Beaver County, Sevier County north of Loa, Mineral Mountains, Juab and Utah Counties all have the brown centrals. The specimens from the East Tintic Mountains are the most globular and are the largest--around the size of a cantaloupe, all the others are smaller and flatter.

P. simpsonii is a common cactus and there are no environment concerns related to them that I am aware of. They tend to be in mountainous areas unlikely to be developed, mined or drilled. If you try to drive over them with an ORV you will likely find yourself in the hospital because the terrain is really too rough to do that in. These plants have denser populations than *Opuntias* (prickly pear/chollas) in a number areas, and I've even found them with flashlight at night.

They are very cold hardy of course, and make a good addition to pretty much any xeric landscape or rock garden. These can be bought from Mesa Garden in New Mexico and you can see the selection available at mesagarden.com. You can find seeds for almost every species of cactus known to man at this place as well. If you want to experiment with growing cactus, its hard to go wrong with *P. simpsonii*.

Prop Shop Round-Up

Our propagation workshops had a great turnout this year! Over 70 people attended the various workshops in Salt Lake County, a big thank you to Maggie Wolf who has put a tremendous amount of work into making these prop shops happen. We had good feedback from the prop shops in Cache with over 40 attendees and Southern Utah who despite heavy snow had an interesting workshop led by Rick Heflebower with seed provided by Zion National Park. Utah County held its prop shop in Provo and had 8 participants, the workshop was led by Julia Tuck.

Both Cache and Southern Utah Chapters have concluded that in order to be able to guarantee a variety of seeds for next year's prop shops, they will have to do some field collection themselves. Both chapters have decided to organize member field trips specifically to collect a good supply of seed for next year.

A Weed-Wary Word to Gardeners

Reproduced with permission of Wyoming Native Plant Society please note original article is 2002 but information is still relevant.

The seed packets may have labels with romantic-sounding names such as meadow mixture and wedding wildflowers, while others tout backyard biodiversity and make reference to Earth Day. When growing nineteen such packets of wildflower mixes, however, University of Washington researchers found that each contained from three to thirteen invasive species and eight had seeds for plants considered *noxious weeds* in at least one U.S. state or Canadian province.

And what makes it nearly impossible for gardeners who want to be conscientious is that a third of the packets listed no contents and a little more than another third had inaccurate lists. Only five of the nineteen correctly itemized everything.

"I can't recommend using any wildflower seed mixes," says Lorraine Brooks, who did the work at the UW's Center for Urban Horticulture while earning her bachelor's degree.

The seed mixes in this experiment were produced at or distributed from a variety of U.S and Canadian locations. Brooks and Sarah Reichard, UW assistant professor of forest resources, say gardeners are better off using their favorite plants, or seeds for their favorites, to control what's grown in their yards.

Gardeners might be surprised at the flowers and seeds on the market that are considered invasive or noxious. Yellow toadflax (*Linaria vulgaris*) is listed as a noxious weed in Washington, Oregon, Idaho and eleven other states and provinces [including Wasatch County]. With yellow flowers tinged with orange that resemble snapdragon blossoms, toadflax was found in four of the wildflower mixes. *One listed it.*

Even labels that refer to wildflowers as native should be avoided because everything is native to someplace, but that place may not be where you live, Reichard says.

In closing, here are a couple of the key questions to be considered by consumers:

- Should a consumer buy wildflower seed mixes that don't list their contents?
- How can consumers know that wildflower seed mixtures shouldn't be spread near or in natural woodlands, meadows or fields when they are labeled with words such as "native," "biodiversity" and the term "wildflower" itself?
- Should any consideration be given before species that have proved invasive in one part of the country are included in mixes sold in other parts of the country?

For more information, check the following websites.

Nature Conservancy's Wildland Invasive Species Team explains what happens when invasives get into wildlands at: <http://tncweeds.ucdavis.edu/common.html>

For some listed invasive species go to the "Invasive & Noxious" section of: http://plants.usda.gov/cgi_bin/topics.cgi?earl+noxious.cgi

Find state noxious weed sites and lists at : <http://www.ars-grin.gov/npgs/tax/taxweed.html>

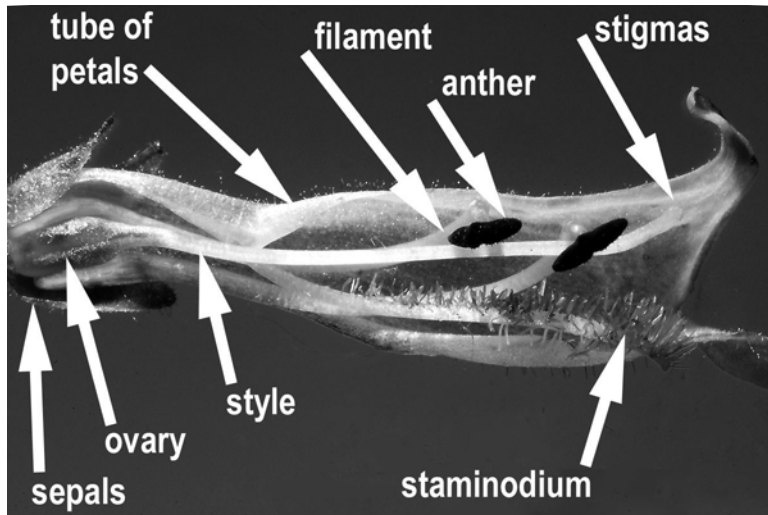
The original article can be found at: <http://www.washington.edu/newsroom/news/2002archive/04-02archive/k041802a.html>

Botany 101 - Scrophulariaceae

By Rebecca Dolan, Ph.D, Friesner Herbarium, Butler University
Photo courtesy of Kenneth R Robertson, Illinois Natural History Survey

Scrophulariaceae=Snapdragon Family=Foxglove Family.

The snapdragon and foxglove family comprises about 220 genera and 3000 species worldwide. Indiana has about 24 genera and 59 species.



Characteristics

Mostly annual and perennial herbs, although there are some woody members, such as Princess tree.

Flowers irregular with parts in 5s (sepals and petals sometimes fused and 4-lobed), usually showy. Corolla two-lipped. Stamens 4, sometimes with a 5th staminoid (modified stamen, such as the hairy, sterile staminoid that is the bearded tongue of beard-tongues).

Stem can be square, easily confused with mints, although leaves are usually alternative. Fruit a capsule.

Economic Importance

Some garden ornamentals, including snapdragon, turtlehead, beard-tongue and foxglove. Heart drug digitalis is from foxglove. Some are semi-parasitic on the roots of other plants.

Scrophs to look for in Utah

Native

Beard-tongues, *Penstemon* spp.

Blue-eyed Mary, *Collinsia parviflora*

Indian paintbrush, *Castilleja angustifolia*

Non-native

Butter-and-eggs, (aka yellow toadflax) *Linaria vulgaris*

Dalmation Toadflax, *Linaria dalmatica* – both species are invasives but are listed as noxious weeds only in Wasatch County <http://www.utahweed.org/weeds.htm>

For more general information on Scrophulariaceae

<http://montana-plant-life.org/families/Scrophulariaceae.htm>

<http://www.csd.tamu.edu/FLORA/301Manhart/Dicots/Asteridae/Scr/Scr.html>

<http://www.csd.tamu.edu/FLORA/Wilson/ftp/ast/scrpage2.htm>

Reprinted from INPAWS Journal, Vol.12, No. 4, with permission from the Indiana Native Plant and Wildflower Society.

Calendar of Events

Please note that some of the events listed *may have already taken place*. For the most up-to-date events lists go to our website www.unps.org and click on the “calendar” link.

April

- April 20th : Manzanita Chapter Meeting (postponed from April 1). Guest speaker will be Peter Lesica, a famous botanist / ecologist from Missoula Montana, will be giving a program on the flora and ecology of Glacier National Park, where he has conducted research on the native flora and rare plants for several decades. Peter is also working on a photographic guide to the wildflowers of Southern Utah.
- April 21st : Cache Chapter Earth Day Celebration 9am to 3pm USU Campus, Taggart Student Center Courtyard - Volunteers and Visitors needed. Contact Steve Ripple steveripple@comcast.net or call 435-752 2732
- April 22nd : The UNPS board will be meeting at the new Escalante visitor center at 1 pm. At 10 am there will be a field trip in Escalante to see the town’s Main Street landscaping with native plants. We will be camping in the Escalante State Park campground on Friday night, with potluck dinner at 6 pm. See http://www.stateparks.utah.gov/park_pages/parkpage.php?id=esp. Interested members may attend potluck, fieldtrip and meeting. Walt Fertig will lead us to a campsite on Saturday night for those who wish to stay.
- Late April - Early May: Cache Chapter has plans to visit populations of *Primula cusickiana* var *maguirei* in Logan Canyon. Participants will help to fill out a monitoring report for the Forest Service Recovery Plan, trip is dependant on weather and schedules. Interested? Contact Steve Ripple as above.
- For recent and upcoming Utah Valley events please go to <http://www.unps.org/> and click on the “chapters” “Utah Valley” links

May

- May 5th-6th : Utah Valley Chapter invites members on a field trip to the Book Cliffs. If you would like to participate please notify Robert Fitts by phone, 801-796-8631 or e-mail fitts_r_d@yahoo.com (underscores after fitts and r) and we will inform you of the details.
- May 11th : 7pm at Monument Visitors’ Center. Escalante Chapter will hold its next regular meeting. The speaker will be BLM botanist Amber Hughes who will address everyone’s favourite topic, “Weeds, Noxious and Invasive Species and Their Impacts On Our Landscape ”
- May 13th : Salt Lake Chapter is planning a trip to Beaver Dam Mountains to be led by Kipp Lee. The Beaver Dam area, in extreme South Western Utah is where the Mojave Desert just makes it into the state. Plants and birds found here occur nowhere else in Utah. Contact Bill Gray, 801-532-3486; cyberflora@xmission.com or Kipp Lee, 801-759-6204; kipp_lee@comcast.net for all field trip information pertaining to the Salt Lake Chapter or check the chapter page on www.unps.org
- May 17th : Utah Valley Chapter is planning a field trip, led by Paul Ames, to see the biggest pinon pine tree. Meet in Provo at the Uinta Forest Office on 88 W 100 N at 6 pm and carpool to meet Paul at the High School parking lot, in Eureka, the east side of town. Wear good hiking boots and long pants and bring plenty of water. The hike is *not* on an established trail. Hopefully, we’ll be lucky enough to see a display of *Lupinus polyphilus* on the same trip. Please let Robert Fitts know if you are planning to join us.

- May 18th : 7 pm Green Canyon Parking Lot - 1900 North East to parking lot. Cache Chapter Spring Wildflower Hike. Local botanists will lead hike to explore foothills and point out wildflowers. Contact Steve Ripple for more information.
- May 19th : Federal building at 88 W 100 N in Provo, Utah County Chapter will have a potluck and lecture, speaker tba. The potluck will begin at 6 pm with the lecture at 7pm.
- Mid May : The Cottonwood Canyons Foundation need your help pulling invasive weeds in Big and Little Cottonwood Canyons. They are looking for groups, schools, organizations and individuals to assist them.

The Foundation are looking for groups of 15-30 people from Mid-May to August. Training, tools and supervision will be provided by Cottonwood Canyons staff, interns and volunteers. These weed pulls are easy, educational and fun.

Call Patrick Nelson at (801) 947-8263 or e-mail him at pn@cottonwoodcanyons.org and schedule your weed pull this summer.

June

- June 6th-8th : The Wildland Shrub Symposium - Shrublands Under Fire : Disturbance and Recovery in a Changing World to be held in Cedar City, Utah. Go to <http://www.suu.edu/scps/confer/wildland/> for more information and to register.
- June 8th : before its summer hiatus, the Escalante Chapter will meet for a potluck BBQ and meeting featuring a "grab bag" of plant and gardening questions and the presentation of a second annual "Silver Trowel Award" For more information, contact Kathy Munthe at jandkcool@yahoo.com
- June 10th : Salt Lake & Utah Valley Chapters are planning a trip to Painters Spring in the West Desert to be led by Maggie Wolf. This trip will find quite a few plants that do not occur locally. Contact Bill or Kipp -details as before.
- June 15th : The Subtleties of Sagebrush taught by Dr Leila Shultz to be held at the Jackson Campus, cost \$70. Western Wyoming offers one of the highest diversities of sagebrush subspecies in all of North America: taxa critical in defining wildlife habitat. Join a specialist in sagebrush classification for a day in the field. Examine how the various types of sagebrush define ecological site conditions, including soil texture and precipitation, and consider the evolutionary forces that have led to species diversification.
- June 20th - 23rd : Field Botany : Flora of the Tetons taught by Dr Leila Shultz to be held at the Kelly Campus, cost \$290 (includes tuition and credit) plus \$30 registration fee. More than one thousand species, or approximately 5% of the flora of temperate North America, can be found within a few miles of the Teton Science Schools' Kelly Campus. Sharp ecological gradients on the Teton slopes and surrounding ranges provide an ideal setting for observing this bounty. Learn about common plant families and develop enough technical language to use scientific guides. Includes study of floral structure and major evolutionary groups of plants. (Undergraduate and graduate credit available through Utah State University - pass/fail, 2 semester hours)

For more information about Teton Science Schools' Summer Sojourns, contact Kathy Haskin at kathy.haskin@tetonscience.org or call 307 733-1313

Submitted by Mindy Wheeler and Bill Gray:

Our Hometurf Security surveillance received this alert from one of our underground operatives. We expect her to come out into the open some time in May or June.

Warning to native plants in foothills!!

To all native plants of the Central Wasatch Front: a message from your fearless leader – **Sego Lily**.

As part of your Neighborhood Watch duties, it is your responsibility to recognize the following invader, as it threatens our very existence! This fellow's real name is *Euphorbia myrsinites*, but he also goes by **Myrtle Spurge** or **Donkey-tail Spurge**. Distinguishing marks are fleshy blue-green leaves and yellow flower clusters. He has a habit of creeping from yard to yard, under oak, and all over slopes. Approach cautiously, as he has a *very* nasty sap that irritates people's skin and can cause blisters or an allergic reaction. Help may be coming from our friends at Utah Native Plant Society.



Beautiful, but Badly Behaved

Our mission at UNPS is to foster appreciation of our native plants. It's a many-pronged effort: research and education about them in their own right, encouraging their responsible use in horticulture (e.g. through the Utah's Choice program), and protecting their habitats.

Recent years have seen an explosive increase of several seriously invasive weeds along the Wasatch Front,

and doubtless in other areas too. We are looking for ways to help fight them, which will include working with other groups such as governmental agencies and sometimes plant nurseries. For some of these weeds are quite beautiful, and were originally introduced as ornamental plants. Most ornamentals are well-behaved, grow where you want them to, and don't go rampaging over the countryside. However, a very few find local conditions ideal and take off without restraint.

Myrtle Spurge (*Euphorbia myrsinites*, aka Donkey-tail Spurge) is one of those. It is a popular rock garden plant with misty-blue spirally arranged leaves and intricate yellow flowers. Like many spurges it has a toxic milky sap which causes skin irritation (sometimes severe), or nausea if ingested. Its preference for sloping well-drained soils makes our local foothills ideal. The long spell of dry years saw it increase its range dramatically along the benches and foothills in at least the Ogden area and the Salt Lake and Utah Valleys.

Because of this behavior we feel the use of Myrtle Spurge should be strongly discouraged, and we urge nurseries to voluntarily refrain from selling it — there are excellent native plants that fill the same niche in rock gardens (e.g. Sulphur Buckwheat). Ideally, we would like to see it declared a Noxious Weed in those counties where it has become a pest. This term has mostly been used to describe weeds that pose a threat to agriculture (e.g. Cheat Grass destroying rangelands), but is sometimes used more broadly. A plant that is a Noxious Weed one place may be irrelevant elsewhere (e.g. Kudzu Vine and Water Hyacinth are major pests in the southern US, but not here). Myrtle Spurge is not yet listed as a Noxious Weed anywhere in Utah, but it is in several other western states: in Colorado it is given the 'highest priority' status, which basically means destroy on sight.

We shall be cooperating with local agencies to help track and pull weeds such as this. If you are interested in helping with this contact:

Salt Lake County:	Kipp Lee (801-759-6204, kipp_lee@comcast.net) Bill Gray (801-532-3486, cyberflora@xmission.com)
Utah County:	Susan Garvin (801-756-6177, sgarvin@xmission.com)
Summit County:	Mindy Wheeler (801-699-5459, wheelermindy@yahoo.com)
Cache County	Steve Ripple (435-752-2732, steveripple@comcast.net) Dave Wallace (435-750-5913, dwallace@biology.usu.edu)

In May the Salt Lake chapter is hosting Sage Fitch of the Bonneville Cooperative Weed Management Area, who will talk about this specific problem, and about the more general one of fighting weeds along the Wasatch Front. See chapter schedules for details.

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Utah Ladyfinger
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Bitsy Schultz

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- Please send a complimentary copy of the Sego Lily to the above individual.

Please enclose a check, payable to Utah Native Plant Society and send it to:

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Utah 84152-0041

UTAH NATIVE PLANT SOCIETY

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**The deadline for next issue
is 12th June, 2006**

CHAPTER PRESIDENTS

Cache: Steve Ripple
Mountain (Summit): Mindy Wheeler
Price (Carbon): Mike Hubbard
Salt Lake: Kipp Lee
Southern (Washington): Margaret Malm
Utah Valley (Utah): Celeste Kennard
Escalante (Garfield) : Kathy Munthe
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VOLUME 29 , ISSUE 4

July/August 2006

Sweet Scent of Native Cactus to be Analyzed

By Dorde W. Woodruff

This spring Herr Dr. Roman Kaiser of the fragrance and flavor firm Givaudan will look for *Coryphantha vivipara* and perhaps some *Sclerocactus* species in his local Dübendorf, Switzerland, botanical collection, or elsewhere.

In order to find out what chemical constituents produce any given floral fragrance, for some years now Dr. Kaiser has been able to capture the quite small amount of molecules (by our normal scale of things) required for sensitive machine analysis, and systematically analyzes flower fragrances, often trekking to rain forests worldwide with their enormous numbers of plant species.

Before modern organic chemistry, all that was available for fragrances and flavors were about 500 natural extracts. Now as a result of this sort of work by Givaudan and others, over a thousand synthetic compounds can also be used.

To do this work, Dr. Kaiser uses an apparatus that sucks in about an hour's worth of a flower's fragrance by pumping it into an adsorption trap, by funneling it from a flower placed within a glass vessel. Up to 200 μg is captured, then a solvent removes the captured microsample from the adsorbent, and this is placed in an ampoule and kept cool. On returning to the lab, it is run through a capillary gas chromatograph, a mass spectrometer, and other tests for distinguishing not only less volatile fractions, but also the quantities of the various constituents. Others can use his collecting apparatus, but Dr. Kaiser says they need to be trained in person.

Dr. Kaiser has studied cactus scents before, but mostly in tender tropical species, kinds that Utahns if they grow them will have indoors, at least in winter. Of the four types of pollinators found for cactus flowers, moth, bat, bee or other insect, and bird, our native species are mostly bee pollinated, except for the striking orange-red, sturdy flowers of *Echinocereus triglochidiatus*, a taxon split by some into various species or varieties, which is mostly hummingbird-pollinated. The name translates to Three-spined hedgehog cactus, but not all are three-spined. It's most often called Claret Cup Hedgehog but I like to call it Hummingbird Hedgehog.

Dr. Kaiser has his own personal reason for worrying over the fate of the rain forests. Although he's checked out about 9000 species of plants and investigated the fragrance of about a sixth of these, all those strange and unknown scents are out there and he hasn't had a chance to sample them yet.

While some of the compounds are familiar to chemists, or even herbalists or foodies who like to look at herb or flavoring constituents, familiar substances like linalol, neral, geraniol, limonene, vanillin, estragole, citronellol,

humulene, jasmone, and cubebene, others may be rare or even new, or encountered in surprising context. For instance, Dr. Kaiser didn't expect to find geosmin, a musty-earth odor most typical of soil microbes, emitted by some cactus flowers

It's unknown, as far as I can find out, why *Coryphantha vivipara* has such a strong, sweet fragrance, unusual and perhaps unique amongst hardy cacti. Floral scent is correlated with pollinator attraction—even to favoring certain species of bees over others— but much study needs to be done on connecting pollinators with cactus species. To this end, Utah State University has a very active bee lab, which would be happy to look at pollinators captured on cacti— contact Olivia Messinger, USDA Bee Lab, Utah State University, BNR 244, Logan UT 84322-5310.

Fragrance in cacti is a neglected study, not often noted in keys. It could be another key character for differentiating or delineating species. Cactus nomenclature seems to be a peskier problem than in many other families, though contemporary DNA analysis is quite helpful, often bringing new insights.

Separating *Coryphantha vivipara* from the taxa farther south and west has been done differently over the years. The most current treatment is that of *Flora of North America*. The finished parts of this major work are online, which is so helpful, rather than having to buy a series of hundred-dollar books. You can find *Coryphantha* at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=108121. The treatment of this genus was written by Allan D. Zimmerman and Bruce D. Parfitt. Zimmerman did his PhD dissertation research “Systematics of the Genus *Coryphantha* (Cactaceae)” at the University of Texas.

Zimmermann and Parfitt subsume the genus *Escobaria* into *Coryphantha* entirely, a controversial move, although Stan Welsh, the author of the Cactaceae treatment in *A Flora of Utah*, agrees.

Coryphantha vivipara opens its flowers at noon, or 1 p.m. daylight saving time. The next time you're in Southern Utah some afternoon at the appropriate sort of place, and you see a starry pink flower on a ball cactus (see photos in Jeff Mitchell's article in *Sego Lily* Jan/Feb 2006, pp 3-4), get down and smell it, for a whiff of the sweetest scent imaginable. With any luck, in the future we will know what other scents that of *C. vivipara* may be like, but in my experience it's unique.

In Memoriam – Dr William Reid

By Editor and Margaret Malm

UNPS is sad to hear of the passing of Bill Reid. Bill was an ecologist and taught at UTEP (University of Texas-El Paso) for some years.

After he retired, he moved to Southern Utah, doing some work for Zion National Park, helping to define some ecosystem limits up on the Kolob Terrace. On one such trip with Margaret Malm, they found some really interesting things – as Margaret recalls.

“big clone rings of gambel oak, and large fairly regular rounded rocky mounds (not really big enough to be called hills maybe 40-60 feet high) rising up from the flats, that had, for instance, a ring of gambel oak around the base, and a little higher up a ring of some other shrub; still higher yet a ring of another different species. Sort of like the tiers in a wedding cake, each being different. It really awakened my interest in such things.”

Bill also worked on a project for the Grand Canyon Trust on some of their properties to, west and south of Zion. He also worked on the early stages of the search for the – at that time – elusive Shivwits Milkvetch. Bill was a real expert and a genuinely nice person, and will be badly missed by all who knew him.



July/August 2006

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Natives in the News

These articles are re-produced with permission from the authors, thank you to Mark Havnes of the Salt Lake Tribune and Heidi Toth of the Daily Herald. Research by Kelly McNulty

Working through thick and thin. Biologists try to restore plant balance in Southern Utah.

By Mark Havnes
The Salt Lake Tribune

Melissa Siders likes to watch the grass grow. The wildlife biologist for the Bureau of Land Management is monitoring a project designed to restore areas on the Grand Staircase-Escalante National Monument to a state of healthy vegetation beneficial to grazing livestock and wildlife.

"The deer herd on the Paunsagaunt Plateau is declining and could be because of loss of winter habitat," Siders said. "One of the problems is the understory, where shrubs, grasses and flowering plants are not growing under thick tree cover."

To allow the sunlight onto the ground, Siders is thinning stands of pinyon and juniper trees and planting the area with native grass seeds.

Her efforts are part of a larger program that has brought together federal and state government agencies and private groups to restore wildlife habitat in several projects spread across southern Utah.

The Southern Region Partnership for Restoration and Development is raising funds and helping with four of the projects on the 1.9 million-acre national monument.

For a 1,000-acre project near the Buckskin Wash in Kane County, the BLM contracted with crews to thin trees then plant the area with native species that will be studied to assess how they grow back.

The Buckskin project is one of three such test sites using similar methods. The other two will have different tree-thinning densities and will be planted with different seed mixtures of native and nonnative species.

Once the project gets to a certain point, the deer and other animals will be able to browse on bitterbrush, sagebrush, cliffrose, service berry and other plants that have been denied sunlight by the heavy tree canopy.

The native grasses to be planted in the experimental are intended to prevent invasive species like cheat grass and Russian thistle from taking over the land and choking out native plants. The results of the program should start bearing fruit in about three years.

Riddle campaign aims to increase awareness of weeds.

By Heidi Toth
Daily Herald

Southbound commuters on Interstate 15 have a riddle to solve: What's free but costs millions?

The question is posed on a billboard near Lehi, but the answer, say the sign originators, actually lies in Utah's state parks, canyons, river banks and hiking trails in the form of noxious and invasive weeds. The invasion is one everyone should be concerned about, weed experts say.

"Traditionally, the problem has been, at least the perception has been, that it's an agricultural problem," said Steve Dewey, a professor of weed science at Utah State University who works with the U.S. forest Service, the Bureau of Land Management and state and local governments to identify and control noxious weeds. "Essentially the truth is, weeds are impacting everybody, one way or another."

A noxious weed is a plant that's been legally determined to pose a threat to land management and public health, and landowners are required to make efforts to control it. Invasive plants share similar characteristics but are not classified as noxious. They fall more into the obnoxious category, said Lisa Bryant, soil scientist and weed program leader with Utah division of the Bureau of Land Management. Often, a weed species is so widespread that any effort to control it would be a waste of resources.

"You can dump millions of dollars into controlling cheat grass, and you still won't get a handle on it," she said.

Instead that money is being funneled into controlling other weeds in a concerted effort by the state Department of Agriculture, the Utah Weed Control Association, the Utah Weed Supervisors and the U.S. Forest Service. Infested areas are sprayed with pesticides and weeds are removed manually by workers and volunteers, but they're looking for some help in the effort, hence the awareness campaign.

"If we can prevent the weeds from getting there in the first place, we can really reduce a lot of the other things that we're having to resort to, to control weeds," Bryant said.

They are also trying to recruit hundreds of extra eyes to watch out for weeds and ways to reduce spreading the seeds. "The trick was finding a way to get the average Utahn to pay attention to weeds; people don't generally think of weeds in terms of that," said campaign coordinator Sage Fitch.

"They think of obnoxious, but not noxious, and we wanted to use that to try and grab people's attention," she said.

The group needs the help of every Utahn because in most cases, people are responsible for spreading the

weeds. Dewey said that with the disproportionate amount of available outdoor recreation, people are coming from all over the place, and oftentimes they bring seeds into the state that have clung to hiking boots, tents and gear. The seeds then take root in Utah, displacing native plants and using up water.

"By not understanding noxious and invasive species, we city dwellers inadvertently spread them onto our public lands where we like to recreate," Fitch said.

Some noxious weeds are ornamental garden plants gone wild. She cited the Myrtle spurge craze in Salt Lake County; people were purchasing it for its hardiness in the desert. It's since spread into the foothills and trails in the area and is likely to keep going.

Bryant said because weeds don't hold soil as well as native plants do, infested areas experience more erosion, rangeland is degraded, soil nutrients are lost, wildlife can be affected and in some cases, the plants can pose a public health risk. Fitch said the spurge has a milky white sap that causes blistering and dermatitis.

In a nutshell, all three said the weed issue is one of which everyone should take note. So they asked the question. Fitch said in a few weeks, after giving people enough time to become sufficiently curious, the billboards will have the answer. Then, she said she hopes, awareness will increase and the problem will decrease.

"It's really just about being aware which plants are problems and which ones are not," she said.

For more information go to www.ob-noxious.org

UNPS Seed Grant Program

By Bill Gray

For many years we have had a program of making small grants towards projects that further the goals of UNPS. One of the earliest, and most significant, was to help fund studies of the Dwarf Bearclaw Poppy in Southern Utah – this has now become a showpiece conservation project with the Nature Conservancy playing the primary role.

Given our limited resources we have become increasingly "picky" in recent years, accepting only proposals that we feel will add real scientific knowledge about rare plant species in Utah. Time and again, when trying to get formal protection for such plants we come up against a Catch 22: the federal government requires strong scientific grounds for declaring a species to be threatened or endangered (which is not the same as rare), but they have rarely been forthcoming with the money to do the research!

This Spring we received a proposal from Ashley Egan, a grad student at BYU, who is starting her research on Pariah Breadroot (*Pediomelum pariense*). It is a very rare plant found only in a few restricted locations in Southern Utah. One critical factor for a rare plant is how the different parts of its population interact. Ashley's work will use modern genetic methods to look into this question, to try and get an idea of its vulnerability.

We were uniformly enthusiastic about the proposal, and awarded her a grant of \$1000 to help with the research. Partly on the strength of this award she was given a matching amount by BLM — that's what a seed grant is all about.

Congratulations to Ashley, and we look forward to hearing more as the research progresses. A short outline of her research is printed on the following page.

**The Conservation Genetics of the Paria Breadroot,
(*Pediomelum pariense*: Leguminosae), a rare Utah endemic.**

Ashley N. Egan and Keith A. Crandall

Endemic plants, those restricted in geographic range, are often rare and susceptible to extinction. Utah boasts many rare, endemic plants which add to our unique natural heritage and biodiversity. One such species, *Pediomelum pariense*, commonly known as the Paria Breadroot, is found in Kane and Garfield counties alone. This species is listed as imperiled by NatureServe due to its endemic status and low population numbers. It is not, however, listed as sensitive or threatened by any state or federal agency while its demographics suggest it may need to be. To understand the conservation needs of the Paria Breadroot, we have proposed a conservation genetic study of *P. pariense*.

While studies on population numbers and density are vastly important to conservation management, these statistics alone do not provide all the information we need for a thorough conservation-level survey. Determining the underlying genetic diversity within and between populations of a species is essential to understanding the species' contribution to biodiversity and its aptitude for continued survival. The greater the genetic variation a species has, the more likely it is to adapt and survive and the less likely it will move towards extinction. Thus, quantifying and qualifying the genetic diversity within the Paria Breadroot is paramount to defining its conservation status and risk of extinction. As populations of a species are established, genetic races may arise due to segregation of populations and a reduction of cross pollination or the sharing of genes. This segregation can increase genetic diversity by allowing separate genetic lineages to form. Uncovering the existence of genetic races between populations will help us better choose those areas to place under management, should it be required, enabling the conservation of the greatest genetic diversity possible. Because the Paria Breadroot exists in three different watersheds, the sharing of genes may be somewhat limited, making the existence of differing genetic races a possibility.

To thoroughly assess the Paria Breadroot's conservation status, we will nondestructively sample known populations by removing a single leaf from each of 20 plants per population for DNA extraction and analysis. This will enable us to estimate genetic diversity both within and among populations. Microsatellite markers, which are indicators of a change in the length of a plant's genome, will be used to estimate genetic variation. Analysis of this data will enable us to determine how much genetic variation exists in the species and how that variation is distributed throughout its range. We will be able to estimate the levels of cross pollination occurring between populations and whether populations are in growth or decline. In addition, we will be able to take a look at how historical events have shaped the Paria Breadroot's current distribution. This knowledge base will enable us to determine the conservation status of the Paria Breadroot and make educated suggestions for management procedures should they be required.



Paria Breadroot in flower - photo by Walt Fertig

WHITE DOME BEARCLAW POPPY HABITAT UPDATE

The Nature Conservancy will purchase the North West Corner of White Dome this year and hopefully the rest of the habitat at some point in the future.

TNC's acquisition costs are likely to be around \$2 million. They will also have to meet substantial management costs for fencing, fence repair, site monitoring, education, enforcement etc. They are continuing efforts to raise the necessary funds to keep the project going.

If you would like to make a donation to protect this rare habitat please go to www.unps.org and click on the "news" page for further details.



Events and Chapter News

Salt Lake Chapter

Our last monthly meeting for the year was held May 9th, with Sage Fitch talking about the weed problems that are besetting the county, and about the Cooperative Weed Management Areas that have been set up to coordinate efforts of agencies and volunteer groups in fighting some of the worst ones. We kept her so busy with questions during the talk that we had to cut things short as the library needed to close!

At the same meeting (the closest we could get to May 11th, "National Endangered Species Day") Jeff Mitchell displayed some of his unique collection of Utah's endangered cacti, all grown from seed. Jeff enlightened us about what it takes to be in legal possession of endangered plants.

Chapter members have served as volunteers in various projects, including the "Woadrunner" (pulling Dyer's Woad in City Creek canyon); surveying for rare plants in the Uinta Basin, including *Sclerocactus brevispinus* and *Penstemon grahamii*; and teaching a workshop on penstemons at Cactus and Tropicals. In July we shall be providing guides for a National Wildlife Federation "Family Summit" up at Snowbird. Paul Zuckerman has created a CD with about 50 wonderful close-up photos of local plants, proceeds from which he is generously donating to the Salt Lake Chapter. We shall have more details on this later.

We just got back from a wonderful field trip out to Painter Spring in the House Range. Organized by Maggie Wolf, a group of 8 of us met at the remote spring on the west side of the range, with huge sculpted granite cliffs. The area gets about 6 inches of rain a year, but here was a flowing spring with hundreds and hundreds of orchids in bloom. It was truly a wonderful experience. We'll

make a write-up of this for a later Segó Lily.

Events for Calendar

July 18th (Tuesday) **Picnic in City Creek Canyon.** We have reserved Area 29 (Weeping Rock) for a potluck/hike. Dinner at 6:30pm. Come earlier (somebody will be around by 4:00) to look for flowers. Please bring a potluck item and dress appropriately for a flower hike. It can get quite cool in the evening. Contact Kipp (759-6204) or Bill (532-3486).

Date tba. Flower hike on Bald Mountain.

Date will be announced, depending on snow conditions.

Manzanita (Kane) Chapter

Manzanita has another field trip in Cedar Breaks on Saturday July 1 from 10-12 AM, meeting in the VC parking lot. This is in conjunction with the Cedar Breaks Wildflower Festival going on that weekend and through July 4 (UNPS member Doug Reynolds of Cedar City is coordinating the event).

Utah Valley Chapter

On Friday, May 19th, the Utah Valley Chapter met for its quarterly potluck and lecture. The lecture was given by Bernadette Barthelenghi the Uinta National Forest Landscape Architect. She showed slides and discussed the restoration of Brush Creek in Snow Mass Village in Colorado. It was an excellent presentation.

The Utah Valley Chapter will meet on August 18th for our next lecture. Details will be posted on the website.

In addition the Utah Valley Chapter is hosting hiking for small children every Wednesday morning at 10:00 am. Come and see native plants along the Bonneville Shoreline Trail at a toddler's pace. For details and weekly locations contact Celeste Kennard at (801) 377-5918 or e-mail celeste@byu.edu.

The Utah Native Plant Society is planning on hosting a native plant sale on September 30th. We would like any donations of plants (seeds, cutting, or actual plants) for the sale. We also plan on having a sale on April 28th, 2007. If anyone has available greenhouse space for growing plants, or know where we could find some we would appreciate it.

Miscellaneous events for June

- The Intermountain Herbarium (USU) and The Garrett Herbarium (U of U) are pleased to announce a 1 day working field trip to the beautiful Ogden Valley of Northern Utah. Come get your hands dirty with working botanists from both schools as well as invited botanists from BYU, as we explore the botanical wonders of the area. For those with a side interest in insects Christy Bills, collection manager and entomologist at the Utah Museum of Natural History will be joining us.

Date: Saturday June 24, 2006

Time: 8:30 A.M. (return approx. 6:30 P.M.)

Cost: \$20.00 (will include transportation from the University and a light snack)

Please bring water, a lunch, and insect repellent. Vans will be departing from USU and the U promptly at 8:30.

For more information contact Michael fungi@biology.usu.edu or Mary mary@biology.usu.edu at the Intermountain Herbarium or Ann Kelsey Kelsey@umnh.utah.edu at the Garrett Herbarium or visit the Intermountain Herbarium's website at <http://herbarium.usu.edu/>

Miscellaneous events for July

- July 21 - 26 : International Interim Rock Garden Plant Conference, sponsored by the Wasatch Chapter of the North America Rock Garden Society. The Conference is titled, "Plants of the Western Cordilleras : Alpines in All Directions," and will be based at the Snowbird Ski and Summer Resort in Snowbird, Utah.

The double-barreled format consists of a lecture series, followed by a three-day fieldtrip. The lecture series will be held at Snowbird, where the knowledgeable and entertaining speakers will cover the geology, the plants and the ecosystems to be seen in the field.

The three-day fieldtrips will roam far afield, to:

Ruby Mountains, eastern Nevada

Cedar Breaks, southern Utah

Teton Mountains, western Wyoming and Bear River Range, northern Utah. And the three-day trip around the Wasatch Mountains (based at Snowbird) has been specifically designed so that members whose hiking abilities may have decreased, but whose enthusiasm remains undiminished, can still enjoy the alpine flora.

For more information, go to <http://www.narqs.org/IIRGPC.html>

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Sego Lily

Newsletter of the Utah Native Plant Society

VOLUME 29 , ISSUE 5

September/October 2006

Flora, Fauna and Fun with Small Friends

Words and photos by Celeste Kennard

The Utah County Chapter has started a fun new series of hikes geared towards children. We have been exploring the plants, geology, birds and insects all over Utah County. We started off the hikes with a shoreline trail hike just above the water tower at about 1600 N in Orem. Tamara Bahr, April Jensen and Celeste Kennard led the hike and realized we all had worked for the State Wildlife Division doing Range Trend at some point. As we hiked different moms would point out different shrubs flowers and trees. This particular hike involved some exploring inside the stands of Gamble Oak. We searched for last year's acorns and the possibility of some flowers that might be hiding. Two of the older children were interested in trying to discover what was wrapped up inside of so many leaves on all the hackberry trees.



April Jensen and small friends at Cascade Springs

Gardening

The next outing was in Rock Canyon where we helped weed the Rock Canyon Heritage Garden and plant a few plants. This is a well know area to my children and they took some of the others that were newer to the area on a short hike on the trails near the garden. My son who is now 11, used to really enjoy walking to a small cave that is to the south of the canyon along the shoreline trail. The trail is a great place to look for rocks with colorful veins running through quartzite.

Flexibility Equals Fun

The following week we met just above the State Hospital in Provo at Castle Park. We had planned to access the shoreline trail from this park where there is a paved trail up to the shoreline trail. The kids were having so much fun playing on the castle steps and near the pond that we changed our plans and just enjoyed the summer day in the cool shade of this oasis of a park. If you want to visit this park you have to make reservations.

Flowers Galore

Mid-June we headed up for a look at the riparian flowers that were in full bloom at Cascade Springs just off the Alpine Loop. Monkey flowers were everywhere, along with wild geraniums. We also saw some Maple Mallow, *Iliamna rivularis*, Monks Hood, *Aconitum columbianum*, White Virgins Bower *Clematis ligustifolia*, and more. This was really a wildflower lovers treat and the children were excited every time they spotted fish swimming in the spring fed pools. The trail crosses many of the pools along well-built crosswalks that can be traversed with a stroller, although there are some steps along some of the loops.



Sara Jensen, Donna Gilchrist and youngsters crossing a bridge on the grotto trail

Caves and Water falls, and Grandparents

Payson Canyon has a great hike to a cave, The Grotto. You drive up Payson Canyon past Maple Dell and look carefully for a sign that says "The Grotto trail" This trail is about 13 miles up the canyon. Easy at under a half mile long and the children loved crossing the stable logs that served as bridges over the small streams. This area was wooded and shady and everyone from the babies in backpack carriers to the moms, dads and grandmas enjoyed this winding trip past many shrubs and flowers like Kinnikinnick, *Cornus sericea*, Mt. Lover, *Pachystima myrsinites*, Utah Serviceberry *Amelanchier utahensis*, Mountain Snowberry *Symphoricarpos oreophilus* and Sticky Geranium, *Geranium viscosissimum* and at least 3 different Penstemons. The trail ends at a waterfall that cascades off a cliff and down in front of a cave where everyone that wanted to cool their feet could walk in the shallow pools.

Insects and Geology

In Battle Creek Canyon we hiked to the waterfall that can be reached by following a gravel road up the mountain just to the south of the Kiwanis Park in Pleasant Grove. We discovered a small pond below some small waterfalls/rapids that refrigerated the whole area to a nice comfortable temperature on a hot July day. This spot is a great place to learn about geology, on the other side of the small pond right at eye and touching level for youngsters is a Paleozoic layer cake of sea bottom mud faulted to create a great viewing and teaching experience. Plus all the small shale rocks that had broken off the exposed rock were great fun for the 2 year olds to hurl into the water. For the more sure footed you can reach the larger falls further up the trail.

On this particular trip the dragonflies were very lazily buzzing around and let us get a long detailed look at their segmented abdomens, compound eyes and delicate wings. We did not find many things in bloom but there sure were lots of spider webs decorating the branches of the Gamble Oak. It can be fun to ask children to describe what they think happened to the branches of a Choke Cherry tree that has been attacked by Black Knot fungus. My 11 year old thinks the disease reminds him of when he lights a charcoal snake pellet. Its almost like the branches burned and bubbled from the inside out.

Let's Find a Swimming Hole

Our last adventure took us to a man-made swimming and fishing hole in Spanish Fork Canyon. You can get directions to this reservoir by going to the Spanish Fork City website and looking up the details about Spanish Oaks Campground. A future trip when it is not so hot has been planned so we can explore the trails around the campground.

If you want to join us or get more specific directions send Celeste Kennard an email at celeste@byu.edu or give her a call at (801) 377-5918. We will continue these hikes every Wednesday morning until it gets too cold or the snow flies.

Lifetime Member Update

Teresa Mareck of Salt Lake City, Utah became our 26th lifetime member in July of 2006.
Thank you Teresa!

Notice of UNPS Annual Meeting

Date: October 21, 2006

Place: Cache Valley Learning Center, 75 South 400 west, Logan, UT 84321

Time: 2 PM

Happenings: Talk tba. Annual New World Potluck Dinner. Bring a New World dish to share. BYOB.
Short business meeting. More info to follow via mailings and via Internet.

For Website - Map: [Cache Valley Learning Center](#)

RSVP to - Steveripple@comcast.net or Davewallace@xmission.com



Sept/Oct 2006

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The Sand Cholla – *Opuntia pulchella*

Words and Photos by Jeff Mitchell



This is perhaps one of Utah's most unique cacti. It is a small branching cactus with a large tuber root. I've not seen one in the wild over three inches tall or over four inches wide. It grows a bit larger in cultivation, but not much. It flowers in mid May and occasionally has late blooms throughout the summer. The flowers are a pretty pink/magenta color (see left). The seed pod is light and bristly and rolls easily in the wind, one of the more odd ways of seed dispersal. It lives in the Utah west desert and is known from records as far north as the Promontory Point area to possibly as far south as Enterprise and west from Utah to the very eastern edge of California.

The common name I first heard was the sand cholla, its common name is listed as sand club-cholla on the Flora of North America website. This name is misleading. I've never found it in sandy areas which resulted in my first couple trips resulting in failure. My wife found one on a hillside at Cowboy Pass next to the south end of the Chevron Ridges. My wife had found some prickly pear seedlings and they have round stems at that point in life, but upon digging them up there was no tuber. We continued our search and we explored some rocky outcrops that had bivalve fossils in them. Then my wife called out and said she'd found something odd and would I take a look at it. I went over and looked at it and it didn't look like prickly pear seedlings. We dug it up and sure enough, there was a tuber. No sand. None. California agencies call it the sagebrush cholla which at least fits with the second and third specimens I found. However, most of the plants I've found didn't have sagebrush anywhere close to them either. This makes another example of why common names can be troublesome. Scientific names would be just a tad less troublesome if the taxonomists could quit making name changes. The genus is now technically *Grusonia*, but I found I confused people if I used that name, similar to my first efforts at using *Escobaria* instead of *Coryphantha* on the common pincushion cactus. At least Flora of North America recognizes *Grusonia* where it doesn't recognize *Escobaria*. So I stick with *Opuntia* because people I talk to know that name and because it is hard to switch when the plant behaves like an *Opuntia*. The seeds look almost identical to *Opuntia polycantha* and it has glochids and the spines are slightly barbed. I'm told there are good arguments for *Grusonia*, and I guess I'll just leave it there.

When the sand cholla was first discovered, it was classified as three different species. As people got to know the plant better, I think they realized that the different types were really the same plant at different points in its growth. As a new seedling (first year) it grows a single thin stem with areoles covered with white fluff and short spines flattened against the body. The second year, the white fluff is less pronounced, the stem gets darker green and fatter and doesn't quite look like it is the same plant. It also may put out two to four branches and looks like a miniature saguaro. It doesn't yet look like an adult either as the tubercles have not become pronounced yet and the white fluff is almost non-existent. The adults are different still, and if that wasn't enough, some plants have smooth round branches and others have prominent tubercles, and some have both. So the early confusion was understandable. At this stage, first or second year, the plant has a droopy behavior. Some days it will be standing upright. Some days it will be drooped all the way over and touch the ground. Not all plants droop like this. I still haven't figured what causes that, but did try experimenting with whether it needed water or not. I couldn't get any consistent responses, so that is still a mystery. As a plant gets older the stems become woody and stiff. The branches still droop during winter, but most *Opuntias* do that.

In cultivation, they are very easy to grow. Seed germination is high, greater than 90 percent from my experience. Sprouting occurs in three to five days. For some reason most of my hundreds of two year old seedlings tilt to the west. They are on the west side of my house, but far enough away from the house that I don't think the house shadow in the morning accounts for it. Again, the bigger the pot they are in, the faster they grow. On my front porch on the east side of my house, I planted some extra seeds next to one of my pincushion (*Coryphantha vivipara*) cacti in a 20 gallon pot. This pot is close to the house and gets seven or eight hours of sunlight rather than twelve to fifteen during the summer. Yet these plants are twice as large at two years old as those planted in gallon pots that were sown two or so weeks earlier. The larger pot allows roots to go deeper as well as retain more moisture at the deeper levels giving greater growing resources.

As the plant gets older, the tuber becomes larger and larger. It has an ancient woody look to it, and the glochids are large and bushy at the top, the rest of the tuber being bare. The tuber grows below ground level, but since I find it an attractive and interesting feature, when I replot my plants, I have about an inch worth of the tuber sticking out for aesthetic effect.

The sand cholla can also be grown from cuttings. I usually do the cutting when a branch is two years old, right after the seed pods come off. At three or four years, the branch dies anyway, so I figure I can plant it instead of it going to waste. A cutting develops a thick tap root, and I'm watching to see if a tuber develops. I also did an experiment on seeing how they grow back when deer, antelope or cattle eat them. I cut all the branches off, and replacements will grow back within eight to eleven weeks. I'm also trying some experiments on sculpting the growth by various pruning techniques.

I'll offer a disclaimer here that the observations above are based mostly on personal experience, and I haven't observed them long enough to know how all the observations will play out over time or whether or not my preliminary conclusions will hold up. All in all, I consider this one of the most intriguing cacti in Utah and a real fun one to grow.



Tuber of *Opuntia pulchella*

New Editor for Segó Lily

As some of you may know, this is my last issue of the Segó Lily. I will be leaving my posts as Editor and Membership Co-ordinator at the end of August. I have enjoyed my two year tenure as Editor and I hope that the issues I have produced have both educated and informed. Don't worry though, your new Editor will be Walt Fertig, president of Manzanita Chapter, so the Segó Lily will be in very capable hands indeed.

I hope you will join me in welcoming Walt and if you have any articles you would like to see in upcoming editions please get in touch with him (contact details on the back page). Thanks everyone, it's been fun!

Paula Longhurst, Editor

Natives in the News

This article from 2005 is re-produced with permission from the authors, thank you to the Salt Lake Tribune
Research by Kelly McNulty

Natural Landscaping Benefits Our Community

By Emily Aagaard

At Wasatch Community Gardens our mission is to help people grow and share fresh produce, to teach urban youth responsibility, cooperation and ecological awareness and to be an active resource for sustainable organic gardening. I have the opportunity to witness the connection children can make with nature when exposed to gardens. I often sit in on the youth classes we provide for groups of children from downtown after-school programs. Children arrive at our gardens weekly to tend to their own plot while learning about everything from composting and recycling to responsibility and cooperation. The development of the children from their first visit to the end of the season is phenomenal.

Often, they start out complaining about how yucky vegetables are. By the end, they are eagerly waiting for their tomatoes to ripen so they can make and eat salsa and salads from the garden. They understand the importance of bugs instead of fearing them. Most of all, they have fun and learn without even knowing it. There is no better classroom than nature.

Wasatch Community Gardens is frequently called upon to provide guidance to people and groups who want to start their own gardens. As a small non-profit, our resources are limited, so we self-published a Community Garden Start-Up Handbook. (It and all our other free materials are available on our Web site, <http://www.wasatchgardens.org>.)

But when we were invited recently to take a look at an innovative new garden in a public space, the newly rebuilt Indian Hills Elementary, I couldn't resist going. As a former student at Indian Hills, I jumped at the chance. It was there that I gave a report on whales, bought an acre of rainforest with my classmates, and planted a tree on Arbor Day. Now, as a grown-up, I've maintained the interest that my elementary school fostered in me, and it has become my career. I was excited to go back and see how they're approaching kids and nature now.

The most innovative feature at the new Indian Hills Elementary is a hill currently covered in dirt. Previously unusable lawn space in the front of the school will soon become natural gardens. The school, located above Foothill Drive in Salt Lake City, reopened to students this week. I applaud the thoughtful efforts of the community design committee, architect and district officials.

Indian Hills has a uniquely large and sloping lot, complete with the challenge of an underground spring flowing throughout the property. Parents on the community-based design committee, facilitated by the district's facility design supervisor, Claudia Seely, envisioned the enjoyment that trails through natural gardens would bring to the neighborhood.

Instead of seeing the spring as an obstacle, architect Gerald R. Nichols, president of NJRA Architects, and

the district's grounds supervisor, Karen Perry, found a way to integrate the spring into the natural gardens, reusing the water for the sprinkling system. The project presented a larger upfront cost in landscaping, but the long-term benefits of lower water bills and decreased grounds maintenance should more than compensate.

Although I was not involved in the process or decisions to create the natural gardens at Indian Hills Elementary, the benefit to the students is as evident to me as it was to those who promoted the project. While these elementary students still have their grassy soccer fields and expansive playgrounds, they have also been given a new classroom for learning.

Creating a natural classroom at an elementary school was an uphill challenge overcoming tradition, but the project earned the support of Superintendent McKell Withers. This innovation may even become a trend at the Salt Lake School District; Escalante Elementary, west of I-15, was also built with interactive garden space and natural landscaping by the same district employees and architects.

The importance of connecting with the environment, understanding nature and being good stewards of the land is ever-increasing. While we may feel we have the luxury of lush lawns and lawns, the choice diminishes with each coming generation.

Emily Aagaard is executive director of Wasatch Community Gardens, Salt Lake City.

Date: September 4, 2005 Page: AA3 Section: Opinion Salt Lake Tribune



Salt Lake Chapter News - By Bill Gray

Painter Spring Field Trip On a beautiful weekend in June Maggie Wolf led a group of us out into the West Desert to visit Painter Spring. This is a remarkable place on the west side of the formidable House Range, dominated by Notch Peak. A narrow canyon between immense pinkish granite towers is home to a free-flowing spring. It was the site of a CCC camp in the 1930s, when water was piped down for cattle in the valley below. Despite this there is a wonderful riparian area, well shaded, where everybody was overwhelmed by a display of thousands of Giant Helleborine Orchids (*Epipactis gigantea*). Another highlight was the Long-flowered Snowberry (*Symphoricarpos longiflorus*), a small shrub related to our common Mountain Snowberry.

After camping on the eastern side of the range in totally different surroundings of limestone cliffs we hiked along a canyon to see if we could locate the endemic House Range Primula (*Primula domensis*). Although it eluded us we did find the rare Utah Fendlerella

(*Fendlerella utahensis*), and enjoyed the unique habitat.

Kipp Lee organized a plant sale at REI on July 15th. Despite blistering weather, we had a good turn out and raised some money. Several UNPS members graciously donated plants for the sale, including penstemons, datura, showy goldeneye, cacti, and several other species. All were grown from seed or cuttings by our members.

Visiting Conferences Two major conferences were held in July at Snowbird, with UNPS members participating as field guides. July 4th weekend was the National Wildlife Federation's "Family Summit" for which Ann Kelsey, Kipp Lee, Ty Harrison, and Bill and Sylvia Gray led walks. The visitors, mostly from the Eastern US, were rather shocked to find more snow than flowers in Albion Basin, but were equally amazed at what was in bloom along the gravel road. Three weeks later the North American Rock Garden Society held an international conference, organized by Bill King and the local chapter of NARGS, including several UNPS members. By this time the flowers were in full swing and we logged over 130 species blooming between Albion and Brighton. My highlight was *Anemone parviflora* by Lake Catherine, which I had never seen. This was found and identified by somebody from Oregon! It's quite amazing to walk with a group from around the world, some of whom seem to know our plants as well as we do.

Bald Mountain August 12th we are visiting Bald Mountain in the Uinta Mountains. At almost 12,000 feet elevation this is real alpine terrain, and has a host of neat plants. Since the trailhead is at almost 11,000 feet it is a relatively short walk. Afterwards we shall be camping at Mirror lake.

Monthly Meetings These will resume on Tuesday October 3rd, meeting at the Sweet Library (9th Avenue and 'F' Street) Salt Lake City, at 7 p.m.

Utah County Chapter News

The Utah County Chapter of the Utah Native Plant Society will hold their quarterly meeting on Friday, August 18th with a potluck at 6:00 pm and a tour of the Utah Valley State College Herbarium at 7:00 pm. The potluck will be held in the botany lab adjacent to the herbarium. Donna Barnes, the Herbarium Curator will tell us the herbarium's history and show us the herbarium. The herbarium is located in room PS 109. For a map to the herbarium visit <http://herbarium.uvsc.edu/location.shtml>.

The Utah Native Plant Society is planning on hosting a native plant sale on September 30th. We would like any donations of plants (seeds, cutting, or actual plants) for the sale. We also plan on having a sale on April 28th, 2007. If anyone has available greenhouse space for growing plants, or know where we could find some we would appreciate it.

Bristlecone Pine Hike

Kim Despain is going to hike to the Bristlecone Pine grove at the Price Canyon Recreation Area Saturday September 16. The hike will start from the Price Canyon Recreation Area camp ground parking lot around 10:00 AM.

The turn off to the Price Canyon Recreation area is about 3-4 miles south of the top of Price Canyon on Highway 6. The road from highway 6 to the camp ground is paved but narrow and windy. The trip can be made in a regular automobile. The hike to the bristlecones is about a 3 mile round trip. The hike is not strenuous but will take 2 - 4 hours. Kim takes it slow because he takes photographs.

Information will be presented on the pines of Utah. If there is enough interest after the hike, a side trip to the radio towers at the summit of Price canyon will be made to see more bristlecones and a grand view of the Wasatch Plateau.

Seed Collection Trip and Propagation Workshop

The Utah Valley Chapter is sponsoring an activity in conjunction with Kim Despain's trip to visit the Bristlecone Pine Forest at Price Recreation area on September 16 (see above). We will collect seed of several native species during and after the hike with Kim. We will provide paper bags for seed collection. All members of any chapter are invited. Those who are interested may spend the night at the campground. If enough people register in advance, we can reserve a group campground.

Then we will hold a propagation workshop at Rock Canyon Trailhead Park, 2300 North in Provo, on October 28 at 10 am and clean seeds and plant them so members can grow them outside at home through the winter. The plants can be donated back to the chapter for the plant sale or planted at members' homes. The chapter will donate book planters and potting medium to those who donate plants back to the chapter. Those who keep their plants need to pay \$5.00/rack for supplies.

The workshop will be by reservation only. Please contact Robert Fitts at 801-796-8631 or Susan Garvin at sgarvin@xmission.com for more information or to reserve campsites or spots at the workshop

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For more information about
the Utah Native Plant Society
call:

Bill King: 582-0432
Susan Garvin: 356-5108
Or write to: unps@unps.org

Many thanks to Xmission for
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Plant Society website.

Please direct all suggestions,
articles and events for the
newsletter to Walt Fertig at
walt@xpressweb.com.
**The deadline for next issue
is 12th October 2006**



Sego Lily

Newsletter of the Utah Native Plant Society

November 2006 Volume 29 No. 6

The Badlands at Factory Butte (page 5)



Top: Factory Butte in 1978, photo by Dave Wallace. Above: Wright's fish hook cactus (*Sclerocactus wrightiae*), photo by Dorde Woodruff

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Utah Native Plant Society

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Escalante (Garfield Co): Allysia Angus
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Mountain (Summit Co): Mindy Wheeler
Price (Carbon Co): Mike Hubbard
Salt Lake: Kipp Lee
Southern (Washington Co): Margaret Malm
Utah Valley (Utah Co): Celeste Kennard

Sego Lily Editor: Walter Fertig (walt@kanab.net).
Articles, photos, and illustrations from members are welcome and encouraged. The deadline for the January 2007 Sego Lily is 15 December 2006.

Website: For late-breaking news, the UNPS store, the Sego Lily archives, Chapter events, links to other websites (including sources of native plants and the digital Utah Rare Plant Field Guide), and more, go to unps.org. **Many thanks to Xmission for sponsoring our website.**

For more information on UNPS:
Contact Bill King (582-0432) or Susan Garvin (356-5108), or write to UNPS, PO Box 520041, Salt Lake City, UT, 84152-0041 or email unps@unps.org

Chapter News & Events

Escalante (Garfield County): In September 2006 the Escalante Chapter hosted a talk by Dustin Rooks, range specialist for Grand Staircase-Escalante NM, on the topic of "The Birds and Bees of Penstemon Evolution". The talk was well received and much appreciated by the chapter.

In early October the chapter set up a table at the Escalante Canyons Arts Festival-Everett Ruess Days to provide native plant references and seek new

members. This event also helped with chapter fundraising as members donated time, baked goods and canned goods for sale. By all accounts the event was a great success.

The October 2006 meeting featured a talk entitled "Planting Design 101" by Allysia Angus, landscape architect for Grand Staircase-Escalante NM and chapter chair. The presentation concluded with hands-on exercises where members produced a small scaled planting plan of their own to take home. – *Allysia Angus*

Manzanita (Kane County): The Chapter's fall plant sale on 23 September generated a large turnout for the Kanab Farmer's market. Special thanks to Janett Warner of Wildland Nursery and Merrill Johnson of Great Basin Natives for bringing a selection of trees, shrubs, and wildflowers for sale and for donating a percentage of their proceeds to the Kanab chapter. – *Walter Fertig*

Mountain (Summit County): The location of Park City heritage garden has changed from its original site in Park City to the Summit County Library at Kimball's Junction, located just off Kilby Road. Take the Park City exit at Kimball's Junction, turn right on Kilby Road, and then take the first left (across from McDonald's). The library is the first building on the left. Areas have been planted at the northeast and southeast entrances.

Overzealous "weed" pulling by Park City Municipal Garden crews and water control problems at the former location led to the move. The garden has not yet been relabeled until it has a chance to improve and recover. If you would like to help, contact Dave Gardner (davewgardner70@msn.com). – *Tony Frates*

Salt Lake: During the Utah State Fair, Dr. Paul Zuckerman held a wildflower photography exhibit in the horticulture building at the UT State Fair Park. The exhibit was well-received by hundreds of people and featured native wildflowers of the Wasatch Front—*Kipp Lee*

Southern (Washington County): Thanks to UNPS member Barbara Farnsworth, Springdale's new Community Center is a shining example of using natives for landscaping. At last springs Earth Day celebration, Springdale had the proposed landscape plans for the Community Center available for public review. Barbara look. She discovered that the contractor's landscaper (in Salt Lake City) had planned to fill the "landscape" with Pampas Grass, Red-hot Pokers, and non-native trees that were definitely not her favorites. So, being a Springdale resident, she suggested that native plants would be much more appropriate in Springdale than water-intensive non-native plants. She spoke so eloquently that they appointed her to plan and eventually to accomplish the landscaping.

So she got busy with her books and checked into what was available and appropriate for the area and came up with HER plan, which was readily accepted. After the contractor had things ready (including a watering system), a number of Velvet ash trees were planted, along with native shrubs. In front of the building, where a flagpole had been planned (but was not needed, as there was already another one on the property) went a lovely Redbud. Barbara even planted a few other things on her own.

Then she called on her fellow "Vipers" (Volunteers in Parks - a group of native plant enthusiasts who help with the revegetation work in Zion NP - most of whom are members of the Manzanita and Southern Chapters) to help plant about 750 native grasses, wildflowers, and shrubs in front of and beside the building. These plants were all propagated in Zion's greenhouse.

The Springdale Community Center houses a new library, as well as meeting rooms, and promises to be a very busy place. This winter Barbara will be labeling individual species in the landscape. Good "advertising" for natives! - *Margaret Malm*

Utah Valley: The Utah Valley Chapter has two ongoing weekly activities while the weather permits. Weeding and working on the Wasatch Heritage garden (1040 N 900 E in Provo) takes place every Tuesday afternoon around 3:30 PM. Our "Plants and Preschoolers" hikes are still going on each Thursday at 10 AM. Contact Celeste Kennard (801 377-5918 or celeste@byu.edu) for more details if a hike at a leisurely pace and lots of exploring sounds fun to you.

We will hold a propagation workshop at Rock Canyon Trailhead Park in Provo on October 28, 10 AM until noon. Please bring your seed collections of Utah native plants. Seeds for some plants are also available from UNPS. We will clean seeds and plant them so members can grow them outside at home through the winter. The plants can be donated back to the chapter for the plant sale in May or planted at member's homes. The chapter will donate book planters and potting medium to those who donate seeds and plants back to the chapter. Those who keep all their plants need to pay \$5.00/tray (72 cell rootrainer) for supplies on the day of the workshop.

The workshop will be by reservation only. Please contact Robert Fitts (fitts_r_d@yahoo.com or 801-796-8631) or Susan Garvin (sgarvin@xmission.com or 801-756-6177) for more information. If you can come to Pleasant Grove to help us prepare for the workshop on any evening that week, please call ASAP. - *Celeste Kennard & Susan Garvin*

Attention UNPS Members: We are updating our database so members will get timely delivery of the Seago Lily and other notices of UNPS events. Has your phone, street address, or e-mail address changed in the last year or so? If it has, please drop us a note (PO Box 520041, Salt Lake City, UT 84052) or e-mail (cyberflora@xmission.com). - *Bill Gray*



Astragalus equisolensis
by Kaye Thorne

USFWS Revises Candidate Plant List

On 12 September, 2006, the US Fish and Wildlife Service (USFWS) published a revised list of animal and plant species being considered as candidates for potential listing under the Endangered Species Act. Since the list was last updated in 2004, the USFWS has added 7 new species as candidates, removed 10, and elevated the status of 24 others (either as proposed or officially listed as Threatened or Endangered). Currently 279 plant, vertebrate, insect, mollusk, crustacean, and other invertebrate species from the US and abroad have candidate status (of which 140 are vascular plants). USFWS considers species to be candidates if sufficient information is available for proposing them as Threatened or Endangered, but such an action has not yet been taken in light of higher priorities for listing. Candidate species do not receive formal legal protection under the Endangered Species Act, but are frequently afforded extra attention by state and federal land management agencies.

Three Utah plant species have been dropped from the Candidate list, largely because they do not meet some or all of the USFWS's 5 criteria for listing (threatened destruction or modification of habitat/range, overutilization, disease/predation, inadequacy of protection, or other). These include the Horseshoe milkvetch (*Astragalus equisolensis*) endemic to the Duchesne River Formation in Uintah County Utah and adjacent Colorado, Aquarius paintbrush (*Castilleja aquariensis*) from Boulder Mountain and vicinity in SC Utah, and Rabbit Valley gilia (*Gilia* or *Aliciella caespitosa*), known only from Navajo Sandstone cliffs in the vicinity of Capitol Reef. Graham's beardtongue (*Penstemon grahamii*) of the Uintah Basin remains on the list, though it was recently proposed for listing as Threatened. White River beardtongue (*P. scariosus* var. *albifluvis*) also remains as a Candidate, but its status is unchanged. - *Walter Fertig*

Noteworthy Discoveries

New to Utah: *Cypripedium montanum* in Summit County

by Mindy Wheeler



Above: *Cypripedium montanum* by M. Wheeler.

Is it simple chance that a rare orchid shows up in the yard of a Utah Native Plant Society member? In the midst of doing the regular yard work in early June – trying to make the yard look somewhat wild and native, yet placating the neighbors with some form of order- I found this little gem hiding underneath a spruce tree. Very interesting, particularly since the suburban street is a mere 15 feet away and the neighbor's well manicured lawn about 10 feet away! Native populations of this orchid are considered critically imperiled in the state of Wyoming and rare in many other western states. A truly native population has not yet been recorded in Utah.

The running theory regarding the presence of this plant is that it was embedded in the root ball of the spruce tree when it was brought in for landscaping about 10 years ago. This plant can have long dormancy and requires a mycorrhizal fungal associate. Why this year? It is possible that it may have flowered in previous years, but it is not often that I get that deep into yardwork! It may also be possible that my relatively new drip irrigation system provided just the right conditions for this plant to feel that this was the year. Apparently, many nurseries or plant distributors sell laboratory propagated specimens of this plant.

Whatever the reason, it has been a complete surprise and joy to regularly visit this plant in the front yard!

A New Umbel in Bernie's Garden

by Bill Gray

The Salt Lake Chapter was planning a picnic in City Creek Canyon, so a few of us decided to check out one of the rare plants known from the canyon, *Angelica wheeleri*. This is a close relative of the common *Angelica pinnata*, but about twice the size and very localized and rare. After obtaining GPS coordinates from Ben Franklin's database at the Utah Heritage Program, we took off looking for the population known from near the top of the canyon. We didn't locate it first time around, but one of the group said he had noticed a tall parsley-type plant much farther down, so we decided to look for that on our way back. We found it, exactly where the database said one of the populations of *Angelica wheeleri* should be.

Trouble was, we started having doubts about it as we looked at photographs and compared them with pictures of authentic Wheeler's *Angelica*. The more we looked the less they resembled each other. It was more like celery than *Angelica*. Then Robert Fitts suggested Lovage (*Ligusticum officinale*), a European pot herb – that fitted in every way that we could check. Next day I went back up the canyon to look more closely, and to see if I could find more. There was only the one small patch about (6 feet wide by six feet long, but ten feet tall), sandwiched between the road and the stream. Genuine *Angelica wheeleri* was later found at the higher location, so there was no doubt about their being different. To our knowledge, this is the first documented occurrence of the plant naturalized in Utah.

So how did lovage get there? Presumably somebody planted it; but City Creek Canyon was owned by Brigham Young from the earliest days, and not opened to settlers. Young deeded it to the City shortly before his death. This particular little stretch of canyon is called "Bernie's Hollow", so we are trying to locate information on him and other possible sources. Over the years I have encountered many other stray plants that might be from early settlers' gardens where there is nothing else to suggest that anybody lived there. In City Creek alone there are lovage, privet, lilac, apple trees and a non-native hawthorn tucked away in odd places. While walking the foothills and canyons it is always worthwhile to note these little signs of earlier times, and to try and imagine life a hundred years ago.

Have you made a notable botanical discovery in Utah? This could be a new species for the state, a county distribution record, or a significant range extension. Attain fleeting botanical fame by submitting your noteworthy discovery to the Segó Lily (walt@kanab.net).

The Badlands at Factory Butte

By Dorde Woodruff

Recently Utahn Cindi Everitt was having dinner at a restaurant in the Rhineland. An Icelandic woman came over to her.

“I don’t usually do this,” she said, “but I heard you say you’re from Utah, and I’ve really wanted to know—is Factory Butte real?”

When assured that it was, she said it was so other-worldly, she really thought it had to be something made in Hollywood.

Cindi also tells of a striking, huge mural of Factory Butte; no attribution, just the mural, placed high up on a wall of the Amsterdam airport.

To those from elsewhere, our exotic Utah scenery is even more strange and unusual than it is to us. On googling Factory Butte images, over 300 come up from all over the world, some from travelers but a surprising number from art-oriented professionals.

In the last decade or two a noisome conflict has developed between the OHV riders that enjoy the Factory Butte area and those who enjoy a subtler appreciation of it. As we know, many more people are recreating in the desert than ever before. But with marketing of successful small four-wheeled off-highway vehicles, (ATVs), has come an explosion of riders.

Anyone who’s tried riding a dirt bike cross-country knows it takes a certain amount of strength and courage. It’s not easy. Four wheelers are do-able for a much greater spectrum of folks. Riders claim that the Mancos Shale in the Factory Butte area, also known as the Caineville Badlands, is especially fun to ride.

In their 1982 Henry Mountains Planning Area Management Framework Plan (MFP), a precursor to the upcoming and long-delayed draft of the Richfield District Resource Management Plan (RMP), the BLM designated all 640 acres of Section 14, T28S, R9E, east of Factory Butte, as a riding area (see www.ut.blm.gov/planning/HENRYMFP.PDF for the whole 615–page document, or www.factorybutte.org/documents.html for selected excerpts). But while asking riders to be conservative, they closed or restricted only a few special areas, such as the Bull Creek Archeological District, South and North Caineville Mesa, and No Man’s Mesa. The riders expanded everywhere.

Now the badlands scenery viewed by thousands of people traveling highway 24 each year is marred by tracks most of the way between Hanksville and Capitol Reef. Take a ride nine miles up the Factory Butte Mine Road to a wide, barren, and austere Tununk Shale basin south of the San Rafael Reef, and tracks descend off the steep hillside and cross the basin, right past the sign that says “Designated Route; motorcycle use restricted to designated routes ONLY; cross country travel prohibited.”



Knife-edge ridges SW of North Caineville Mesa near Factory Butte. John Dohrenwend photo.

When I was the most active in motorcycling (in the 1970s and 80s, starting with the gas crisis when a vehicle getting 60 miles per gallon had much allure) you couldn’t get riders to be political. But now the leaders of Utah’s politically active OHV organization the Utah Shared Access Alliance (USA-ALL) have by their own testimony gone to the Sierra Club school of political activism, sending out press releases, urging their members to write officials, and originating lawsuits.

Why is this place so special to tourists, photographers, geologists, and so forth? It’s the largest and best developed badlands on the Colorado Plateau, by far. A happenstance of geologic history made it so—a thin deposit of shale (Blue Gate member of the Mancos), recent uplift (geologically speaking), resistant sandstone on top of the shale (Emery member of the Mancos), and a large, new, active drainage system, with erosional stability followed by rapid downcutting.

Badlands like this are fragile. The very same rapid erosion that forms these dramatic steep hill, dendritic drainages, and striking sandstone-capped mesas also



*In a good spring the cracked clay is carpeted with flowers such as *Cleomella palmeriana* (upper left) and *Phacelia demissa*. Andy Godfrey photo.*

leads to relatively rapid loss of these features, finally cutting them down to a featureless plain. Natural erosion here is 10 times as fast as along the Fremont River west of Capitol Reef NP, and 100 times as fast as in Utah's West Desert.

So what does this mean to plant lovers? If you've ever seen these badlands in a good spring, you won't forget the awesome sight. 2005 was one of the great springs. Drifts of Palmer's cleomella, *Cleomella palmeriana* covered acres of basins. Natural bouquets of posies emerged amongst the polygonal cracks of the crust. In some places *Eriogonum inflatum*, Bottle Stopper, proliferated, or the large yellow flowers of that tough pioneer Common Sunflower, *Helianthus annuus*, made a contrasting statement to the blue-gray shale. Yellow-flowering clumps of Broom Snake-weed, *Gutierrezia sarothrae* and pink-flowered Fremont Buckwheat shrubs, *Eriogonum corymbosum*, bordered roads in the fall.

The most important plant items politically are the threatened *Pediocactus winkleri*, Winkler's Plains Cactus, and endangered *Sclerocactus wrightiae*, Wright's Fish Hook Cactus, which grow scattered throughout the area in favorable places.

Physical properties of the clay are more important than the chemical ones of abundant salts and high pH in making this a difficult environment for plants. The clay when wetted by rain swells up and seals quickly, preventing deeper penetration of moisture. Thus plants are successful in flatter areas where rain can stand longer, in drainages, and at the edges of roads. Cacti, with their shallow, wide-ranging roots and grab-water-quick-and-store-it strategy, are one of the better-adapted kinds of plants. The Mancos in its different locations supports more endemic plants than any other stratum on the Colorado Plateau.

On roads and trails in the Mancos, experienced drivers know that since water doesn't penetrate well, if

you wait a while after a rainstorm until the sun comes out and dries that thin wet layer, you may be able to continue on. Or maybe not. The BLM's Tim Finger got stuck 14 miles from the highway on the west branch of the Factory Butte Mine Road, and had to walk out.

OHVs always cause some degree of erosion. It's critical to know how much. But there are only two studies of OHV-caused erosion in the Factory Butte area, one with few replications and one preliminary.

Andrew Godfrey was a student of well-known geologist Charlie Hunt. With other students, Hunt brought Godfrey to the Henry Mountains and turned him loose to seek the dissertation subject of his choice. Godfrey chose the Mancos, and continued studying it for the rest of his life.

In 1980 Godfrey installed two sets of sediment traps (large soil pits) in the Factory Butte riding area and a precipitation monitor west of Factory Butte as part of a study for the Richfield Office of the BLM. In each set of pits one was fenced to keep riders away, and the other left unfenced; they were monitored twice a year. Godfrey's data haven't been published up to now or peer-reviewed. Recently Richard Grauch of the USGS in Colorado (the lead scientist of a study on the Mancos in the Gunnison area) began collaborating with Godfrey. Due to Godfrey's untimely demise last summer, Grauch is now writing up this work as best he can for a guidebook on the geology of central Utah to be published by the Utah Geological Association in 2007.

The best available summary of Godfrey's work on the effect of OHVs in the area is his expert witness testimony for the defense in a suit brought by the Southern Utah Wilderness Alliance (SUWA). Godfrey said that from this study and his other work on the Mancos, he considered that "the effects of off-highway

BLM Colorado Plateau hydrologist George Cruz, left, and the late Andy Godfrey, right, with precipitation station. Ben Everitt photo.



vehicles (“OHV”) use in the Factory Butte area are transitory in nature. . . these effects are short-lived”. He testified that he’d seen the surface crust reform in as little as a couple of days after rain, and that tracks should all disappear within two to five years (www.usa-all.com/docs/GOD-FREY_WITNESS_REPORT.PDF). The BLM now has photographic evidence, however, that tracks may remain at least six years and some longer.

The BLM asked retired USGS geologist John Dohrenwend, now an adjunct professor at the University of Arizona, to do a preliminary study of erosion in the Caineville Badlands (preliminary because the full study wasn’t funded). Dohrenwend explained that sediment traps aren’t a good way to study this. “Factors affecting water erosion include slope steepness, slope aspect, soil integrity, soil permeability, landscape position, vegetation cover, water speed and depth (to name just a few)...” Consequently this would require “construction of a large number of sediment traps in many diverse and widely distributed areas...” Not just two replications.

Dohrenwend used twelve 50-meter-long transects, eight on undisturbed hillslopes, and four along heavily disturbed hillslopes. He found that out that on these slopes the OHVs caused accelerated erosion four times the already fast rate in the area. As an effect, he predicted a big contribution of this erosion to be found in a runoff of salt into the Fremont River, drains easterly along the southern border of the area (www.factorybutte.org/documents/dohrenwend_Report.pdf). But river measurements don’t show this. Not all slopes are as heavily impacted, nor were shallower slopes measured in this preliminary study.

Soil scientist Lisa Bryant of the BLM State Office said that the methodology of Dohrenwend’s study is appropriate. “The data from both of these studies is good,” she says, “and they are pieces of the puzzle.” Bryant is describing local soils and formally describing the soil pits, which hadn’t been done.

The BLM is deciding what to do in the next field season to follow up on these two studies. Bryant points out that although there are several studies of the Mancos in other areas, notably the Gunnison area in Colorado and around Moab, the Mancos isn’t exactly the same everywhere.

Opponents of dirt bike riding call them ORVs, Off Road Vehicles, but riders and others call them OHVs, Off Highway Vehicles. More dirt riding is done on roads and trails than cross-country, but cross-country riding, especially when inappropriate, is more visible. Careless environmentalists tar all riders with the same brush. Hopefully that attitude is fading.

As with skiing or horseback riding, the skillful OHV rider takes great joy in the sport. But some riders seem to lose much of whatever outdoor ethic they had when the power of easy transportation to wild places is available. They don’t seem to be able to see the big picture, that the BLM’s mandate for multiple use means any use should be socially acceptable and sustainable. USA-ALL spokesmen, members, and



A heavily-used slope, transect 9 in Dohrenwend study. John Dohrenwend photo.

sympathizers tend to make incendiary statements not backed up by facts, and like the worst practices of environmentalists resort to regrettable name-calling and demonizing.

USA-ALL spokesmen said:

On the Endangered Species Act, that it: “would one day take away our public and even private land for the imagined benefit of insects and weeds.” “It should be clear that the ecomongers don’t give a hoot about the cacti here or anywhere else.”

On plants: “the Factory Butte lands are void of vegetation....”

On scenic values: “One would think that the environmentalists would happy [sic] to leave this wasted scrap of land for our use....”

On accelerated erosion: “...baseless claims of vehicle-induced erosion.”

Sympathizers are worse:

“Who, besides environmental weirdos, care [sic] about a stinking cactus? ...Kill the cactus, let people enjoy the open space!”

“Just more desert land in Utah that nobody will ever do anything with. It’s desert!! It is the most useless land around. If it was my child I would give it up for adoption; it’s good for nothin! Heaven forbid we put some tire tracks on this God Forsaken already ugly as can be land and actually enjoy it!” (KSL comment board on “BLM Restricts Off-road Travel on Factory Butte Badlands”, see www.ksl.com/?nid=148&sid=505232&comments=true for a variety of reactions).

Seems like Utah schools aren’t doing a very thorough job of environmental education.

The more sensationalist of the media like Salt Lake’s Channel 4 and the *Las Vegas Review Journal* all too often swallow this whole. Deadline-dominated, quick-and-dirty journalism at its worst, referring to those who worry about what’s happening at Factory Butte as “...extremists who would fence off all wild lands have long complained that those vehicles are noisy despoilers, cutting trails that encourage erosion—as though erosion isn’t what gave these lands their distinctive character in the first place (*Las Vegas Review Journal*).”



Tiny young Sclerocactus wrightiae. With the hazards this species faces, it's heartening to find a good stand of juveniles. D. Woodruff photo.

On the Naming of *Sclerocactus wrightiae*

I was privileged to work informally with Dr. Lyman Benson for several years. With so little known about U.S. cacti when he wrote his book (*The Cacti of the United States and Canada*), it was a tall order to cover all of North America. Consequently he appreciated the help of people who were knowledgeable about their local cacti. I remarked to him once that I thought plants should be named after some characteristic of their own. When he named *S. wrightiae* after me, he either forgot that or did it anyway. Naming a species after the person who reported it was his common practice, his way of thanking those who helped him. Dr. Benson was a kind, quiet, generous man, but very determined. He did things his way, but was quick to agree when he found that someone else knew more about a species than he did. The name Wright is from my first marriage, from when I contacted Dr. Benson in 1960, and when I gave him the plants in 1961.

He wrote "San Rafael Ridge" meaning the area of San Rafael Reef as the type locality, meaning to be vague to discourage collectors. As I recall, however, within a year collectors or dealers had it, always avid for a new or rare species. Ironically, the type locality is at the edge of its range, and in my long-term experience it's easier to find it elsewhere. Back then not nearly so many people went to the back-country of the Colorado Plateau, but even now in some of its range you would have to make a major walk out if your vehicle quit.

- Dorde Wright Woodruff

Or suggesting that *S. wrightiae*, which was first reported in the early 1960s and seen on the Mancos in this area not too long after that, was somehow "only recently discovered around Factory Butte" just in time to force an appeal for closure (Paul Foy, in an A.P. story used in newspapers around the world).

Or using inflammatory, misleading headlines: "Off-roading banned in Utah area" But the closure was a restriction not a total ban. This same headline appeared in the *Houston Chronicle*; *Guardian Unlimited*, UK; CBS News, *LA Times*; *Leading The Charge*, Australia; etc.

The riders are very good about the "Leave no Trace" ethic other than the tracks. On a recent visit to Swingarm City, the principal riding area and the one that remains open, also popular for camping, there was no trace of litter whatsoever.

SUWA and the Friends of Factory Butte finally did find a way to convince the BLM to make a serious move, after failed efforts by both factions. On April 1st of last year, they submitted a 40-page petition to Secretary of the Interior Gale Norton for emergency closure of the Factory Butte Area. It cited many reasons: accelerated erosion, possible runoff of toxic selenium and other air and water pollution, riders on private land, visual effect on travelers and tourism, needs of photographers, and damage to vegetation including the listed species, all carefully documented. It cited cautions by BLM personnel on excessive use by OHVs in previous documents, and legal reasons for action (see www.suwa.org/library/001_FactoryButteClosurePetition_FINAL.pdf).

The BLM asked its Resource Advisory Council for a recommendation, forming a subcommittee. They met over a period of months and had three field trips, one each with geologists Andy Godfrey and John Dohrenwend, and a longer one to cover the whole area. In the end, they couldn't agree on a recommendation, though they did submit viewpoints. USA-ALL pulled back from any compromise.

The BLM has been surveying the listed species for years, but they did fieldwork this time focused on the Factory Butte area. Damage to *S. wrightiae* from the OHVs was documented, in addition to the usual damage the species suffers from being smashed or uprooted by cows or horses, mining or other industrial activity, road-building, beetle borers and other herbivory, seed-eating by insects or other animals, theft, and drought. With no particular means of long-distance dispersal of seeds, sometimes you wonder how the species survives at all. I started looking at *Sclerocactus* in 1960, and my early impression was that populations were more numerous and widespread before white settlement; recent monitoring only confirms that conclusion.

In reply to the petition, on April 7, 2006, Richfield area manager Cornell Christensen replied that although the other impacts weren't proven sufficiently adverse over the whole area to justify closure, the protection legally required for listed plants did justify a closure, to be in effect until the new RMP takes effect.

An 11-page document detailed the BLM's response to the items of the petition: www.suwa.org/library/BlmResponse_FactoryButtePetition.pdf. Of all the petition items, they chose to act on behalf of the listed cacti; the law is clear.

After review by Washington, the emergency closure order was placed in the Federal Register on September 20 (www.ut.blm.gov/factorybutte/federal_register.htm). It restricts the riders to a 2602-acre play area that includes most of the smaller one suggested for voluntary use in the 1982 MFP, and designated roads and trails. The BLM urges riders to contact it with suggestions, including routes for additional trails. They will keep the riding away from the visual corridor of highway 24, and ban it between the highway and the river. They found funds for infrastructure such as fencing.

Despite USA-ALL's claims that Factory Butte was the last open riding area left and that riders have no place left to go, Utah State Parks' website www.state.parks.utah.gov/ohv/where.htm lists 28 Open Areas and Trail Systems; the main Paiute ATV Trail alone is 275 miles long, with over 1000 miles of marked side trails and more than 1500 miles of side forest roads and trails. From all over the U. S. and even from abroad, 650 ATV riders and some motorcyclists converge on Richfield every fall for the annual Rocky Mountain ATV Jamboree, with a choice of 69 different rides during the event.

Naturally, riders don't like to face being barred from places they enjoy. But as with all of us, more

users of the outdoors means the pie is split into smaller pieces. Dirt roads we used to drive on that were decent are now terribly washboarded due to increased visitation that maintenance doesn't keep up with. Favorite camping places are now illegal, wood gathering is prohibited, or open fires banned even if you bring your own wood. Places you once owned when you went there, together with the plants and the animals, are no longer so unused.

The Richfield RMP is expected in December, though it possibly may be delayed even more. Earlier management plans and their fallout showed the agency it had to be careful of what it promised to do, such as monitoring. It's totally dependent on Congress to appropriate funds. No funds, no monitoring.

Also the plan is being checked in Washington to make sure it conforms to U.S. District Judge Dale Judge Kimball's decision this summer that the agency, under the current administration's rush to drill, had not been conforming to law in regards to oil and gas leasing (see www.suwa.org/library/080306TribArticle_O&GCourtWin.pdf).

It's important to read the draft RMP and make comments; the riders certainly will. You can ask Richfield Assistant Field Manager and planner Frank Erickson (425-896-1532; Frank_Erickson@blm.gov) to mail you a notice, or just review it online. The Preferred Alternative for OHV use at Factory Butte is expected to be similar to what is specified in the Emergency Closure; the BLM would be grateful for support of what they think is the best solution.

Factory Butte with fall-blooming shrubs. D. Woodruff photo.



Utah Plant Families: The Mistletoes (Viscaceae)

By Walter Fertig

A person's opinion about mistletoes varies depending on their holiday spirit, hobbies, or occupation. Yuletide revelers appreciate the mistletoe for its role in promoting holiday cheer (and the opportunity for socially acceptable public kissing). Birders recognize the value of mistletoe as an important winter food source for overwintering songbirds. Foresters, however, take a more dismal view towards mistletoes because of the reduced growth and vigor of commercially valuable trees infected with these plants.

Mistletoes are parasitic or partially parasitic (hemiparasitic) herbaceous plants that grow from the stems of other woody species. In our area, mistletoe hosts are mostly conifers (especially pines and junipers), but across their range these plants can also infect oaks, acacia, mesquite, eucalyptus, and even columnar cacti. The mistletoe habit has been adopted by members of four closely related plant families found throughout the world, but best developed in the tropics. The families differ in floral morphology and fruit and inflorescence characters. Only one family, the Viscaceae, occurs north of Mexico (although 7 species of the related Loranthaceae occur in Puerto Rico).

Like many other parasites, mistletoes have a greatly simplified body plan. Most of a mistletoe is found below the bark of its host. Specialized, fungus-like stems called cortical haustoria grow just beneath the bark in the food-transporting phloem tissue of the host. Root-like stems called sinkers diverge at right angles from the haustorium into the outer layers of sapwood or xylem. The haustoria and sinkers help anchor the mistletoe into the stem and allow it to tap into its host's food and water pipelines. Depending on the species, bushy aerial stems emerge through the bark near the site of the original infection or sprout periodically along the length of the host branch as it elongates.

In our species, leaves are essentially absent or reduced to small, opposite scales. Outside of Utah, mistletoes often have well-developed green leaves that are capable of photosynthesis. At least 35 species in Australia even produce leaves that mimic the size and shape of their host plants, usually eucalyptus. Non-photosynthetic and fully parasitic mistletoes usually have yellow, brown, or orangish stems.

In the Viscaceae, flowers are small and unisexual, and lack showy petals to attract visually-oriented bird or insect pollinators (as found in tropical mistletoes of the Loranthaceae family). Our Utah mistletoes have sessile or short-stalked yellowish to green fleshy flowers borne in a spike-like, scaly inflorescence at the tip of aerial stems. The flowers have a perianth of 3 or 4 tepals which are all similar in shape, size, and texture, unlike the distinct sepals and petals typical of most flowers. Staminate flowers have 3 or 4 pollen-

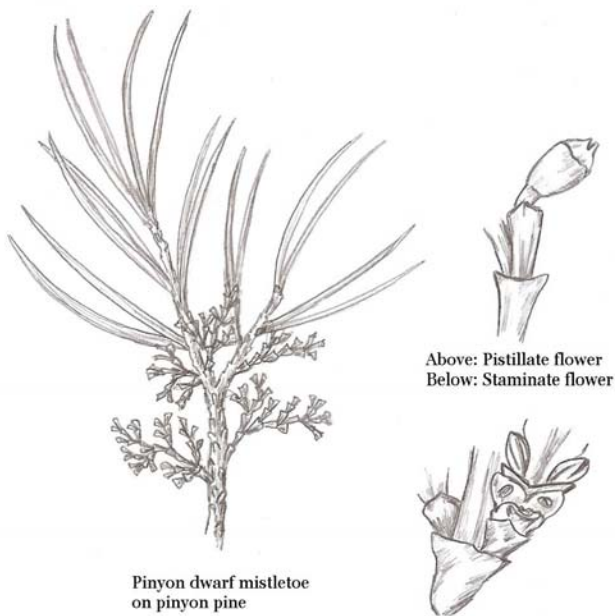


Above: *Juniper mistletoe* (*Phoradendron juniperinum*) differs from most species in its genus by lacking fully developed leaves. This is the most abundant mistletoe species in Utah, occurring widely across the Colorado Plateau and Wasatch Front and primarily parasitizing Utah juniper (*Juniperus osteosperma*). Photo by W. Fertig.

producing stamens, matching the number of tepals. Fruit-producing pistillate flowers have 2 or 3 tooth-like tepals and are either paired or whorled at each branch of the inflorescence.

Two of the eight recognized genera of Viscaceae occur in Utah. The largest genus worldwide is *Phoradendron* (literally translated from the Greek as 'tree thief') with about 200 species, of which only two occur in the state. Juniper mistletoe (*P. juniperinum*) is the most widely distributed of the state's mistletoes occurring commonly across the Colorado Plateau and the Wasatch Front (but largely absent from the Uinta Basin). This species primarily parasitizes Utah juniper (*Juniperus osteosperma*), although it may occasionally be found on Common juniper (*J. communis*). The related Acacia mistletoe (*P. californicum*) is much rarer in Utah and found only in the Beaver Dam Mountains west of St. George. Acacia mistletoe is unique among our Utah species in parasitizing woody angiosperms, especially Catclaw acacia (*Acacia greggii*), mesquite (*Prosopis* sp.), and rarely creosote bush (*Larrea tridentata*) or Fremont cottonwood (*Populus fremontii*). Both of our species are leafless, but other *Phoradendron* species in North America have broad green leaves and are at least partially photosynthetic.

Six Utah species belong to the genus *Arceuthobium* or the dwarf mistletoes. These taxa occur exclusively on conifers; each species typically specializes on one or two specific hosts. With the exception of *A. americanum* and *A. douglasii*, most of the other dwarf mistletoe species are remarkably similar in gross appearance and were, at one time, considered phases of a



Pinyon dwarf mistletoe
on pinyon pine

Above: Pistillate flower
Below: Staminate flower

Above: *Pinyon dwarf mistletoe* (*Arceuthobium divaricatum*) is the most common of the dwarf mistletoes in Utah, ranging widely across the state wherever its primary host, *Two-needle pinyon* (*Pinus edulis*) grows. Illustration by W. Fertig.

single species, *A. campylopodum* (found to the west of Utah). Identification of dwarf mistletoes is aided by their host specificity, though in rare circumstances one species may occur on the typical host of another. In general, though, our major conifer species each have their own particular dwarf mistletoe: *A. abietinum* on White fir, *A. americanum* on Lodgepole pine, *A. cyanocarpum* on Limber and Bristlecone pines, *A. divaricatum* on Two-needle and Singleleaf pinyon, *A. douglasii* on Douglas-fir, and *A. vaginatum* on Ponderosa pine or Engelmann spruce. With the exception of Pinyon dwarf mistletoe (*A. divaricatum*), most of the *Arceuthobium* species in Utah have fairly restricted ranges or are otherwise infrequently collected, perhaps because field botanists are looking for plants on the ground rather than perched on the branches of trees and shrubs.

Our two genera of mistletoes differ primarily in fruit structure and their mode of seed dispersal. Species of *Phoradendron* produce white, pinkish, or red berry-like fruits that resemble tiny beach balls and which are readily consumed by birds. Within each berry is one or two extremely sticky seeds. The seeds are either excreted on a branch (with a dollop of organic fertilizer) or smeared on a stem by a bird's beak

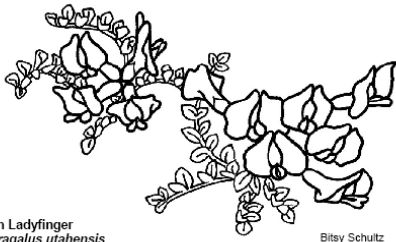
as it tries to dislodge the seed from the tasty fruit pulp. (The word 'mistletoe' comes from an Anglo-Saxon term for 'dung twig'.) *Arceuthobium* taxa have distinctly bicolored ovoid berries that explosively discharge their single seed 15-50 feet (at a speed of 60 miles per hour). Recent studies by Canadian botanist Cynthia Ross have shown that dwarf mistletoes slowly build up water pressure in their fruits for over a year until the pressure becomes so great that the fruit wall bursts. As with *Phoradendron*, these seeds are viscous (it is the "visc"-aceae after all) and stick to any surface they contact.

Masses of mistletoe stems are sometimes called witches'-brooms due to their fanciful resemblance to the flying vehicle of choice for practitioners of witchcraft. These structures can be important as nesting habitat for songbirds, raptors, and squirrels and can provide forage for deer and elk. However, not all witches'-brooms result from mistletoe infection. Rust fungi and amoeba-like microbes called phytoplasmas can infect the phloem of a tree and cause broom-like growths similar to mistletoe.

Since ancient times, humans have been fascinated by the peculiar habit of mistletoe arising from the stems of other plant species. In Europe, the traditional Christmas mistletoe *Viscum album* was thought to have been sent to Earth by a special envoy of the gods, the Mistletoe thrush (a winter migrant from Africa that feeds extensively on mistletoe berries). Many cultures across the globe thought mistletoes possessed spiritual power and medicinal value, especially for promoting fertility. Mistletoes have often been considered omens of good fortune and were frequently hung indoors during winter for some color and to foster positive spirits. Over time, this tradition may have morphed into the practice of hanging a sprig of mistletoe over the door at Christmas time. According to Norwegian tradition, a man should remove one berry for each kiss stolen from a woman until all the berries are gone (and the kissing must cease!)

Very few foresters are likely to feel particularly romantic about mistletoes. Dwarf mistletoe infections are especially deleterious to western conifer species used for commercial timber harvest. Each year an estimated 3.3 billion board feet of timber is lost to mistletoe (for perspective, total timber harvests in 1996 were 15.5 billion board feet. 13,600 board feet of lumber goes into a typical 2000 square foot home). Mistletoe infestation reduces the vigor of the host tree, damages wood, increases susceptibility to drought stress, attack from pine beetles (genus *Ips*) and fire. Fire suppression and high-grading (harvesting large, healthy trees but leaving infested ones) over the past century has probably increased the abundance of dwarf mistletoe in many western forests.

Complete control of mistletoe is unfeasible and undesirable in our western forests, given the value of these plants to wildlife. Besides, without mistletoe, how would shy people work up the courage for a holiday kiss?



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