

**The 3<sup>rd</sup> Annual Colorado Rare Plant Symposium:  
G2 Plants of Southeastern Colorado  
September 8, 2006  
University of Colorado, Colorado Springs  
Colorado Springs, Colorado**

**Meeting Minutes**

Recorder: David G. Anderson

**Introduction and ground rules: Steve Popovich and Jill Handwerk**

Thanks to USFS, CNHP, CONPS, USFWS, and University of Colorado Herbarium for supporting this symposium with time and funding.

The first symposium was held in Steamboat Springs in 2004, and covered all of Colorado's threatened, endangered, candidate, and petitioned plant species. The second symposium, held in Pagosa Springs in 2005, covered the globally critically imperiled (G1) plant species of Colorado that are not federally listed species.

Today's program includes all the G2 species that have one or more occurrences in the southeast portion of Colorado. The species from today's program for which USFS Technical Conservation Assessments have been completed are:

*Asclepias uncialis* ssp. *uncialis*, *Cleome multicaulis*, *Draba exunguiculata*, *Draba grayana*, *Draba smithii*, *Mentzelia chrysantha*, *Penstemon degeneri*, *Ptilagrostis porteri*, *Telesonix jamesii*.

Some more may have been completed since the workshop.

All US Forest Service Species Conservation Assessments for plants and animals to date and their errata and amendments can be found on the web at:  
<http://www.fs.fed.us/r2/projects/scp/assessments/index.shtml>

Additionally, all reports and reviews of rationale of why certain plant and animal species ARE or ARE NOT considered Forest Service "Sensitive" in Region 2 (Rocky Mountain Region) can be found at:  
<http://www.fs.fed.us/r2/projects/scp/evalrationale/index.shtml>

Editors note: A list of species having assessments as of January 2007 has been posted at the CNHP web site <http://www.cnhp.colostate.edu/botany.html>  
Go to the 2006 Rare Plant Symposium section and open "USFS\_Spp\_Assessments1-2007"

Introductions (approximately 39 attendees)

Attendees stated names and affiliations

If you would like to submit information on any rare plant occurrences for which you have knowledge, use the forms available at the CNHP website and provide as much information as possible, particularly directions to the site, and the size and condition of the rare plants. Mail completed forms to CNHP at the address below. For a complete list of rare species in Colorado visit the CNHP website at:

<http://www.cnhp.colostate.edu/list.html>

Field forms can be downloaded from the “How can you help section?”

**Colorado Natural Heritage Program  
Colorado State University  
8002 Campus Delivery  
Fort Collins, CO 80524**

**Ground rules: 10 minutes per plant, plus comments**

**Goals:**

**Facilitate knowledge exchange**

**Facilitate conservation of rare plants**

**Review results of past symposia**

**Review and Progress- Steve Popovich**

Last year we assigned data gathering/conservation priorities to the species discussed at the symposium. We discussed accomplishments and continued needs related to these taxa.

***Epipactis gigantea* G3G4S2**

Denise: Three locations were searched in 2006. Valley View Hot Springs- EOR said about 20 plants but over 1000 were seen. Also easily 1000 plants at Salida. The plants looked good at Salida. The landowners took her crew into the Valley View site and are aware of its management needs. The City of Salida is also aware of their occurrence.

Peggy: There is really only one site for *Epipactis gigantea* at Piedra River.

***Cryptantha gypsophila* G1S1**

Peggy: This species was also found in Dissappointment Valley and Spring Creek Basin. Haven't surveyed northern areas where it has been found. Need to search Paradox Valley and Sinbad Valley- hopefully this will be done next year.

***Eriogonum pelinophilum* G2S2**

Peggy: Surveyed BLM land near Montrose. Set up permanent monitoring plots with Janet Coles. A report to BLM is forthcoming. USGS has also been studying soils to understand why it only occurs on certain soils.

Brian K.: *Eriogonum pelinophilum* - The Wacker Property is a 43 acre property that CO State Parks/Colorado Natural Areas Program (CNAP) have put on an option to purchase. They have applied to USFWS for funds to purchase the property, which will eventually be managed or owned by The Nature Conservancy (TNC). They have started the “Wild Buckwheat Conservation Fund” to raise funds for purchase. TNC is planning to match the USFWS grant. CNAP/CO State Parks have also committed some funds.

Ellen: 45% increase in human population and construction has been seen recently in the Montrose area. Also a road bypass is planned through about 65% of the populations of *E. pelinophilum*.

Steve P.: Colorado Rare Plant Technical Committee has been involved in this.

Erin: The Center for Native Ecosystems (CNE) and the Colorado Native Plant Society (CoNPS) have petitioned to expand the critical habitat designated for this species. New populations have been found since the original designation.

Ellen: Need to establish conservation easements for the species on private land.

Susan: Is it still a G2Q?

Peggy: The Q has been removed.

Susan: We need to make sure that the Q is removed.

Editor’s note: Q indicates there is a taxonomic question.

Betsy: Need really compelling pictures of the plant for fund raising purposes.

### ***Ipomopsis polyantha* G1S1**

Peggy: We spent a lot of time this year counting plants. Revisited the large population at the county fairgrounds and established monitoring plots. Approximately 350,000 individuals were seen this year. We are working with SW Land Alliance to establish a conservation easement on this property. A new population was found on private land.

Ellen: Many roadside populations known of *I. polyantha*. Colorado Department of Transportation (CDOT) and La Plata Electric Association have been working with USFWS in power line maintenance projects.

### ***Draba weberi* G1S1**

Steve O.: Surveys were done this summer by CNHP. 31 individuals were counted at the known site on Colorado Springs Utilities land. Steve will talk with CO Springs Utilities to work on management strategies.

Steve P.: *D. weberi* is arguably the rarest plant in Colorado because there is only one known site with less than 50 individuals.

Peggy: Thought they'd found *D. weberi* on Hoosier Ridge but uncertain; decided with help of CU Herbarium that it was probably *D. grayana*.

Steve P.: RPTC agreed that someone should work with CO Springs Utilities on conservation of this species.

Steve O: The wheels have started turning on this.

BREAK

### ***Gaura neomexicana* ssp. *Coloradoensis* LT, G2T2S1**

Erin: New population of *Gaura neomexicana* ssp. *coloradoensis* was found on the Soapstone Ranch, which was purchased by the City of Fort Collins. Total numbers are down this year from last year, probably due to drought (6000 last year to 4100 this year). Have observed better bolting and flowering inside grazing exclosures; difference is due to trampling cattle.

### ***Phacelia submutica* C, G4T2S2**

CNE has petitioned for emergency listing. Oil and gas leases were issued over 1/3 of the range of *Phacelia submutica*. No plants were seen this year due to drought (it is an annual so it did not come up this year). RMP came out recently for Roan Plateau. Half of the top will be open to drilling, however, only 1% of the plateau will be disturbed at any one time. This assumes that restoration will be effective and ongoing. Scoping comments are due September 30.

### ***Penstemon grahamii* G2S1**

*Penstemon grahamii* was proposed for listing. Final decision is due in December. Proposal for critical habitat is on the table now.

Editor's note: The USFWS final decision, announced in Dec. 2006, was to withdraw the proposed rule to list *Penstemon grahamii* as threatened. This decision also removes the species from candidate status.

### **Other species of concern**

Dudley Bluffs: Plans are underway for developing research project for oil shale development in this area, but these plans don't appear to impact the rare species in this area.

Rob: Surveys were conducted for *Penstemon debilis* this year.

Ellen: *Penstemon debilis* numbers were higher this year than previously known but there had not been a rigorous count before. Third population on Occidental Oil land was accessed for the first time this year by USFWS.

Brian K.: *Lesquerella congesta* is found at the Duck Creek SNA. Surveys were conducted with CONPS this year. One site decreased from 750 to 430 individuals. Another monitoring site decreased from 1620 to 620 individuals. The decline may be due to use of the area by horses. Working with BLM/Tamara Meaghley.

*Sclerocactus glaucus* and *P. submutica* - CNAP wanted to fund fencing at Pyramid Rock ACEC, but now BLM has year-end money and will fund fencing and will fence more than originally planned. They will monitor this too and try to keep the area off-limits from OHV. Currently OHV go right by *Sclerocactus glaucus*; ORV tracks were seen within 5 feet of rare plants.

Ellen: Some damage at Pyramid Rock is due to rabbits.

Ellen: Mark Porter has completed analysis of *S. glaucus* based on RAPD markers but the results aren't published yet. Apparently publishers aren't accepting work on RAPD data anymore. Thus they are struggling to use other molecular techniques. They are certain that the CO populations are separate from the Utah populations.  
*Astragalus debequaeus* and *Phacelia submutica* need resurveying.

Brian K.: Hoosier Ridge- did another survey for *Eutrema penlandii*. Found 131 plants where only 40 were documented before. A total of 161 plants were seen. USFS and CONPS staff and volunteers came (about 28 people).

### ***Spiranthes diluvialis* LT, G2S2**

Susan: Found an occurrence of what appears to be *Spiranthes diluvialis* this summer in Larimer County. This and subsequent work with USFS and CNHP found a total of 6 new occurrences with approximately 400 individuals total. One plant had been herbivorized by rodents and the broken top of this plant was sent to Chuck Sheviak, who said it is *S. romanzoffiana*. Thus more specimens will now be collected and sent to Dr. Sheviak to make a more definitive determination.

Editor's note: Steve P. said he would follow up with the *Spiranthes* issue, and he found this fall that all specimens he further collected and subsequently sent to Dr. Sheviak after the symposium were determined to be *S. romanzoffiana*. For now, the new sites in Larimer County that were thought to be *diluvialis* are all best treated as *romanzoffiana*. Nonetheless, Dr. Sheviak and Popovich will confirm this identification via genetic testing in fall 2007 as a second line of evidence.

Jill: However, a population of true *Spiranthes diluvialis* was found on City of Fort Collins property, adjacent to a known site on private property.

### ***Botrychium taxa***

Steve P.: *Botrychium lineare* - There may be one new site found this year on private property in Colorado. This is unconfirmed but Don Farrar (*Botrychium* expert) will run analyses on material from this occurrence to verify the identity.

Editor's note: Since the symposium, Dr. Farrar has told Steve that this plant is much more likely *B. 'bifurcatum'* based upon genetic analyses, but that there is still a remote possibility that it may be *B. lineare*. More collections are needed to perform analyses, and Steve and Don plan to collect more in 2007 if access is not an issue.

There are two new taxonomic entities of *Botrychium* in the "*lineare* complex" that have been found in Colorado by Steve and others in 2005 and 2006.

One is called *B. 'bifurcatum'* (unpublished name), and occurs on Guanella Pass on the Arapaho NF and at one site on the San Isabel NF (Brian Elliott is the lead contact). One site has about 17 plants; one has about 12 plants. There is also a single plant found west of Boulder by Dr. Farrar in 2005 that failed to be relocated despite several intense efforts in 2006 by the USFS and Farrar and others. There may be a few other sites, all in Colorado; Steve is working on the final analyses with Don. This is it for the entire world. At this time, this is a *very* rare plant! Steve thinks more may show up but that the plant is probably truly rare because it is unique looking and neither Herb Wagner, Don Farrar, Peter Root, Scott Smith, Erica Smith, Dave Steinman, Peter Zeike, Warren Hauk, Cindy Johnson-Groh, Steve Popovich or other Forest Service botanists nationally have ever collected it before, a cumulative set of eyes representing many, many years of looking hard for special moonworts. There is also genetic evidence that the sites vary between them, indicating possible genetic isolation. Steve has no idea why all of a sudden the Forest Service and Dr. Farrar found the 3 sites in 2005 and 2006, unless it reflects that "no-one ever looked for them so hard before, or they decided to come above ground those years more so than in other years, or both factors."

*Botrychium 'bifurcatum'* is also unique in the genus in that it is the only taxon that seems to exhibit large amounts of outcrossing and heterozygosity; this is important to our understanding of reproduction and possibly speciation among moonworts, and Dr. Farrar feels it is very noteworthy.

Dr. Farrar will likely propose new taxonomy for the *lineare* complex by 2008, and is leading toward regrouping it as:

*B. campestre* ssp. *campestre*

*B. campestre* ssp. *lineare*

*B. campestre* ssp. '*furcatum*.' '*Bifurcatum*' has bifurcate basal pinnae, but these are not always bifurcate, sometimes either once furcate or multifurcate, so the name Dr. Farrar now prefers is *B. 'furcatum'*.

Another taxon found is definitely a new species (alleles are different than anything else). Determined last year. Called *B. 'red bank'*, named after a spring where it was found in the Black Hills. A final name has not yet been derived. Found first in South Dakota and Canada, also found on Cameron Pass by Johnny Proctor and perhaps 4 or more other sites

in Colorado by Steve and others in 2006. It is possible that this was actually first found long ago in Colorado (Cameron Pass and other places) and was simply misidentified by Herb Wagner, Dr. Farrar, Peter Root and others as *Botrychium pallidum* because they did not realize it was a new taxon; Dr. Farrar is reviewing old herbarium collections to resolve. Habitat at Cameron Pass is an open meadow in spruce-fir forest. These are currently rare but Steve thinks probably not as rare as perceived, more surveys are needed.

*Botrychium* is an ancient group that existed before the dinosaurs. Only a few other plants have a two-parted leaf that has both reproductive and non-reproductive parts.

Brian Elliott: We found moonworts on the San Isabel NF at a localized project site. Turns out that both of these new taxa were present and were found as last minute verifications on site by a visit by Popovich and Dr. Farrar. The *B.* 'redbank' were in the path of a bulldozer that was to destroy parts of the area, and the 'redbank' plants were salvaged to a new site even though we know transplantation rate is less than optimal. Some site destruction had already occurred, and it is possible that other 'redbank' plants were impacted. The 14 or so *B.* 'bifurcatum' plants that were found have not been transplanted and for now their site is secure. It may be impacted in the future, and we are not yet sure what management options could occur to conserve the plants. Don't know how the transplants of 'redbank' will take. Stay tuned.

Steve P: Moonworts rely on mycorrhizal associations, which may make transplant difficult. Transplants on Guanella Pass are in decline. In Minnesota there has been more success with transplants, but success is still limited.

Steve P: Don Farrar made a draft key for the moonworts of Colorado. In the next iteration Don will add pictures to the key to help with using the key, possibly along with photos and larger diagrams. This should be completed next year.

Editor's note: timeline has been shifted to spring 2008 to allow incorporation of any new distributions found in summer 2007.

Susan: Why are you concerned about data sensitivity for moonworts?

Steve P.: Somehow people found out about the Guanella Pass site and tried to dig up or collect some of the moonworts that were found there. Also in summer 2006, *Listera* orchids were transplanted from one site to another, (without authorization) by well-intentioned public.

Editor's note: In a letter dated Jan. 22, 2007, from Dr. Farrar to Steve Popovich, Dr. Farrar indicated that the most current proper naming of the new *B.* 'furcatum' entity is now to be referred to as *B. furcatum* Farrar (ined.), implying that the name is under preparation for eventual publishing. As discussed above, the final name may be *B. campestre* ssp. *furcatum*.

***Mimulus gemmiparus* G1S1**

Steve P.: Mark Beardsley, Paul Beardsley, and Dave Steingraeber have finished a 2-year project on *Mimulus gemmiparus*. It is known from about 15 sites and is a front-range endemic. They expended 84 hrs of search effort. Mark even climbed cliffs to try to find new sites! There were about 21,000 plants known globally 2 years ago, now known from about 100,000 individuals.

168 square meters of the earth is occupied by this species.

Found 15 new subpopulations (separated by 30 m from a known site), no “new” sites

Presume that 2 sites may be extirpated because they were not seen for 2 years.

The largest site may be threatened by natural and anthropogenic processes.

Thought that they would find very low genetic variability because this species is almost entirely asexual. However, the variation is extremely high, higher than is typically observed. Also observed considerable morphological variation. Variation was greater with increasing distance between populations, but within populations variation was also very high. Mutation rate appears to be very high. They do not think that there are many more populations that remain to be discovered; that it is truly rare. Steve showed slides of morphological variation from a common garden study Dave Steingraeber is conducting at CSU.

The final report has been posted at the CNHP web site

<http://www.cnhp.colostate.edu/botany.html> Go to the 2006 Rare Plant Symposium section and open “*Mimulus gemmiparus* Report - GPS Redacted 2006.”

Susan: G1 is justified due to extremely small occupied area.

Rob: Will try to do a reintroduction of *M. gemmiparus* at Staunton State Park.

### **Other species of concern**

Ellen: Warren Wagner at the Smithsonian Institute will publish *Gaura neomexicana* ssp. *coloradensis* as *Oenothera coloradensis* ssp. *coloradensis*.

Erin: *Astragalus hamiltonii* - Only occurrence in Colorado is in Dinosaur NM. However, it may not actually occur in CO. Erin is attempting to contact Tamara Nauman to update this. Most occurrences are found in the area around Vernal, UT which is being developed heavily for oil and gas.

*Penstemon gibbensii* - Little Snake FO has nominated Spitzie Draw as an ACEC. One alternative in the Draft EIS will include this, but this will not be the preferred alternative. Draft will be out for public comment in January. Contacted Brown’s Park NWR to find out if they had looked for it on their property; they were not aware of the population there. A new population was found in Wyoming in a pipeline survey. The only closely monitored WY population appears to be in decline, probably due to drought, although another appears to be spreading.

Michelle: *Astragalus microcymbus* - no seed bank was found at the DBG monitoring plot for this species. Rabbit exclosures were installed this spring. Exclosure data will be

forthcoming to see if decline is caused by herbivory. Herbivory by rabbits may be preventing seed production. Definitely grazing occurring but populations are mostly in areas that cattle would have difficulty accessing.

Brian E.: *Salix arizonica* - a small enclosure was established for this species on the San Juan NF, but cows and horses were placed into the enclosure because it looked like a good corral and the plant suffered with 20% mortality or more.

*Eutrema penlandii* - surveys were conducted at most occurrences of this species on the San Isabel NF. Put mine enclosures around it.

Andy: This problem of using enclosures as handy corrals happens frequently.

Steve P.: Need to use more threatening signage on the enclosures.

Steve P.: Needs assistance for moonwort surveys- please be on the lookout for moonworts and send close-up pictures if you find them. Don't collect them.

Erin: Roan Plateau - plan was released yesterday for the Roan Plateau. The comment period is very short. Deadline will probably be October 15. Will need to look at how alternatives overlay with rare plant occurrences.

### **Rare Plant Conservation Initiative**

Betsy: Rare Plant Conservation Initiative - this has been being discussed for about 1 year now. This is planned to build on what the RPTC has been doing and what the CNHP Scorecard has intended to do. Need to identify:

- Key needs
- Threats
- Strategies to abate threats

Then we will need to develop a partnership and launch an initiative to get some real money to purchase land, develop policies to protect rare plants, work with land trusts, etc. No single plant conservation organization can do everything. TNC has been focused primarily on landscapes, but sometimes rare plants fall through the cracks. This has been discussed with members of the RPTC and Betsy is working within TNC to build support for this. We need a strong group of people interested in helping with this initiative to develop a strategic plan and scope out potential funding sources. We are currently in the early stages of developing the initiative. Idea: what is it going to take to conserve our G1 and G2 species in Colorado, and what is it going to cost?

### **LUNCH**

#### **Part 2 - review of G2 Species from Southeastern Colorado**

Susan Spackman Panjabi, Presenter

Steve Popovich, Moderator

G2 Species- species found in 5 to 20 locations in the world, or have other factors leaving them vulnerable to extinction; considered as globally imperiled.

We need accurate information to keep the G rank of these species accurate. Information gained today from participants in this symposium will be used to adjust the G rank of these species if necessary.

Thanks to our sponsors for making this possible. Katie Neuhaus and Jill Handwerk assisted with preparation of this presentation.

Editor's note: You may view the accompanying Powerpoint presentation for additional information on each species on the CNHP website

<http://www.cnhp.colostate.edu/botany.html> and go to the 2006 Rare Plant Symposium section.

### *Asclepias uncialis* ssp. *uncialis* G3G4 T2T3 S2

There is a great deal of taxonomic uncertainty regarding this species. Taxonomic revisions underway will probably not be finished until 2009. Known from many historical occurrences. *A. uncialis sensu stricto* will occur in eastern CO and NM, and southeast AZ. Known from 9 counties in Colorado. Was collected much more in the late 1800's than recently, leading to suspicions that it is in decline. We have some recent information. Approximately 500 individuals have been documented in CO.

Most occurrences have been documented on private lands.

Steve P.: Went to the single site on Pawnee NG six times in 2006 and it apparently remained dormant all summer. It was very dry this year.

Steve O.: Found 3 individuals flowering at Picketwire Canyon in flower on April 30 2006. Revisited site and plants were still there. This is the first definitive site on the Comanche NG.

Brian E.: Not much habitat on the San Isabel NF. Often use the known site as a training site for technicians to familiarize them with the plant. It was not up at this site in spring, but it was up and in bud in late July in 2006. However, all flowers had aborted at a later visit. 50 to 80 individuals reported at this site. The area was also used as a garbage dump.

Steve P.: Habitat at Pawnee NG is in an area that has been heavily grazed, was impacted during dust bowl years of the 1930s, plants are directly in a sometimes-used stock trail. Pollinator communities may have been very different 100 years ago. Most plants in Region 2 are probably in CO- total population assessment in the USFS Species Assessment report is estimated to be 633 plants globally.

### *Cleome multicaulis* G2G3 S2S3

The best, largest populations are found in Colorado, although it is found in many states and in Mexico. In Colorado it is found in the San Luis Valley. Over 5 million individuals have been documented to date. It is an annual species. Flowers in July and August. Found in alkaline wetland areas.

Brian K.: What percent of the population is found in protected areas?

Susan: An analysis was done on this. There are 18 protected occurrences in Colorado of the 35 known in Colorado.

Betsy: John Sanderson has been working at Mishak Lakes, but he hasn't seen a plant there in 2 years due to drought and the water isn't reaching the occurrences.

Juanita: In NM, all occurrences are historical. In the Sieneccas, the areas it is known from have been dried up by water diversion projects. Thinks that the range has contracted considerably- it has not been seen in AZ and NM for many years. Current range is really just CO.

Susan: Still an S1 in Texas.

#### ***Delphinium ramosum* var. *alpestre* G2 S2**

Found in NM and CO. It is known from 10 occurrences in 9 counties in Colorado. Also found in one county of northern NM. Four occurrences are historical. At one occurrence there were 50 to 100 individuals reported, no info on other occurrences. Information on this species is very sparse. It may have been overlooked over the years, but the data we have suggests that it is rare and/or threatened. Primarily on NF System lands. Specimens at COLO; a photo on NM Heritage Program website.

Denise: Looked for it in Golden Gate Canyon SP- there is a specimen in the park collection that was verified by someone at DBG. The plant was not found.

Tim: It is very common in the Sangre de Christos. Found at Buffalo Peak.

Brian E.: Thought it was more common- thinks he knows of about 12 occurrences. Found in loose substrates (scree)- when it is pulled up it often has long rhizomes, with more of the plant below ground than above. Most abundant on private land in the land grant areas of the state in Las Animas/Huerfano/Costilla counties.

Tim: At CU herbarium there are at least 9 counties represented.

#### ***Delphinium robustum* G2? S2?**

Found in CO and NM. CNHP is considering changing the rank on this species to SH- has not been seen since 1969. May also add "Q" for taxonomic uncertainty because it may be lumped with *D. ramosum*. Known from 4 to 9 locations in CO. A species assessment

has been done on this species. Number of individuals is totally unknown. Predominantly found on private lands.

Tim: Saw this in the Huerfano Valley somewhat recently. It grows in wet areas and may just be a robust form of *D. ramosum*. More research is needed.

***Draba exunguiculata* G2 S2**

Known from 8 counties, 19 occurrences, 7 are historical. Of 7 occurrences, 250 plants were reported, other reports did not include an estimate of number of individuals. Juanita wrote the species assessment for this species.

Juanita: This species and *D. grayana* appear to have declined over the last 2 decades in the Grays Peak area, according to Loraine Yeatts. Human use/recreation may be responsible for some of this.

Steve P.: Looked for this species at the Winter Park expansion area at the top of a proposed new lift terminal. Approximately 800 *Drabas* were pin-flagged there, Bill Jennings thought a few were *D. grayana*. However, these turned out to be *D. streptocarpa*, but, 5 *D. exunguiculata* individuals were found and were of concern. Suitable habitat for these taxa is vast in this area and includes most of the Indian Peaks wilderness to the east. We decided to endorse the expansion at the site despite the fact that the 5 plants could be destroyed as a result of the construction of the new ski lift terminal (they are at the very edge of the possible footprint and may not be harmed). I do not feel the possible death of these 5 plants would compromise the long-term viability of the taxon across its range on the Arapaho-Roosevelt National Forest.

Juanita: Can these 5 plants be transplanted as an educational exercise?

Steve P.: Yes, this is planned and Winter Park is really proactive in trying to “do the right thing.” Transplanting may not happen if construction occurs this winter over snow, which is the way I prefer because the snow greatly protects the alpine environment from ground disturbance.

Erin: Arapaho Basin expansion proposal may impact *D. exunguiculata*.

Steve P.: Yes. This is on the White River NF, where there unfortunately is no Forest botanist, and I was not asked to assist. At Winter Park they are trying to minimize impacts when they can and they work closely with me.

Tim: Center for this species is up Clear Creek in Boulder and Grand counties. There is lots of habitat in the Berthoud Pass area.

***Draba grayana* G2 S2**

A Colorado endemic known from 9 counties and 34 occurrences (8 are historical, not seen in the last 25 years). Last seen in Colorado in 2003. Mostly on FS System land. Tiny plant with yellow flowers. In 6 occurrences, a total of 200 plants were reported.

Juanita: See comments above for *D. exunguiculata*.

Peggy: Lots of plants were found on the White River NF. The information from this survey will be added to the CNHP database this year.

Steve P.: I have seen plants in 2003, 2004, and 2005 in various alpine areas on the Forest. In 2005, I stopped counting plants at 200 individuals in Chicago Lakes/Chicago Basin USFS trail reroute on Mount Evans, many more were seen in areas that will not be impacted by the trail. The trail was rerouted 6 times (!) in an attempt to avoid mountain goat calving areas, unstable ground, wet seepy terrace areas with sensitive vegetation, and in particular *D. grayana*, but in the end the trail needed to be routed through the population. About 30 plants will be directly impacted by trail construction with another 50 probably indirectly impacted. Some of it is on City of Denver property- they appear to be very conscientious about management to minimize impacts to rare species and communities, and I am working with the head person on this. I am not worried about viability to the plants at this site given the large number of plants there. I noted that the mountain goats tend to brose and dig (paw) up the area, which could also be impacting plants to some degree.

Jill: This species was found for sale at a Fort Collins nursery.

Steve P.: I approached this nursery in a formal capacity but the nursery staff told me to instead seek the vendor selling the plants to the nursery in the first place, which I will do in summer 2007.

Brian E.: Other occurrences at Mt. Massive in the Collegiates, Shadow Mountain, and others. Probably 3 to 6 new sites total, all identified during trail reroute projects.

### ***Draba smithii* G2 S2**

Colorado endemic known from 6 counties, 22 occurrences 5 of which are historical. Also found on National Park Service land at Great Sand Dunes National Park, which was not included in the presentation. Fruits are distinctive on this species. We do not have a good habitat shot for this species.

Tim: Found in mixed forests (white fir, aspen) on rocks.

Brian E.: Found in openings in mixed conifer forests. Unable to relocate occurrence in the San Isabel NF.

Juanita: Found in roadside sites in Mineral County. These may be impacted with planned road expansions.

Brian E. and Tim: Not common on the west side of the Sangres, and not seen on the east side.

***Grindelia inornata* G2 S2**

Known from 7 counties, 12 occurrences in the southeast portion of CO.

Tass: Have found this abundantly in Fremont and Pueblo counties. This has been overlooked. Many of her specimens are just of the top, but need the basal leaves to verify, often erroneously identified as *G. squarrosa*.

Steve O.: Being mowed by the acre along roadsides. Found at his house and at his office.

Steve and Tass: Definitely not a G2.

Tass: A late bloomer.

Steve O.: Native habitat is the second tier above moderate to large streams. High quality occurrences in native habitat are found along the Purgatory River.

Tass: Good occurrences in native habitat at Grape Creek near Canon City.

Steve O.: This species has been synonymized with another *Grindelia* in the new Flora of North America volume. The new taxon is very broadly circumscribed and lumps many taxa.

Tass: We should ask the person who wrote this treatment if they looked at CO material.

Tim: Treatments in FNA are widely variable. We shouldn't look at FNA as the new "bible."

Tass: However, the PLANTS database goes by FNA treatments, so this taxon may no longer be recognized widely.

Georgia: Found abundantly at Fort Carson and Pinyon Canyon Maneuver Site where it is common along roadsides.

Steve O.: Maybe we can arrange for the author of the FNA treatment to look at CO material.

Tim: For all of us in the field, making good specimens and depositing them in accessible collections is extremely important. Without a voucher it is just hearsay. Strongly encourages everyone to make collections with good labels.

Andy: Vouchering is important. Also keeping CNHP in the loop is very important. Permits are needed for collecting in many situations- best to check with local authorities

before collecting. There is a state law that you can collect 25 stems per person per day, but no one is ever busted for this.

Brian E.: Strongly believes that specimens should be deposited in a public herbarium. The specimens don't do any good unless they are available to the public.

Peggy: often herbarium specimens don't offer much information about abundance, but this is good to include on the label.

Andy: Weber offers guidance on writing herbarium labels in his floras.

Editor's note: This species has since been reranked to a G4S4 (secure on a global and subnational level), and is no longer tracked by the CNHP.

### *Herrickia horrida* (= *Eurybia horrida*) G2? S1

Known from NM and CO. 4 locations in CO, two of which are historical. Very rare in CO, but extends into NM along the Canadian River Drainage. Last seen in CO in 1999. Only known from private lands in CO.

Tass: Buddy Smith, a terrific Utah botanist, found it in Las Animas County on a pipeline clearance reasonably recently (maybe in the last 5 years). This was in the area near Trinidad, possibly connecting to the Pinon Canyon area, may have a specimen.

SteveO.: Have not looked for this species.

Brian E.: Best habitat for it will be on Fisher Mesa, but you will be escorted off of the Mesa. We need to persuade this landowner to allow surveys but he appears to be hostile to this.

Tim: Collected in Lake Maloya Watershed- COLO has specimens from J.H. Robertson (a dentist) in the mid 70's to 1990.

Andy: Maybe we could work with Mr. Robertson to conduct more surveys for this species in that area if he has any contacts with the landowners.

Tass: Recalls that Ron Hartman has recently collected this species and may know of other occurrences. Not clear if collections were from CO or NM. He should be contacted.

Tim: One specimen from the Spanish Peaks in 1999 was collected by Hartman.

### *Lesquerella calcicola* G2 S2

This species may turn out to not be quite as rare as currently believed. 6 counties, 28 occurrences, four of these are historical. 2000 plants observed at 2 occurrences; 26

records do not report number of individuals. Found primarily on private land. Found on limestone substrates.

Raquel: has seen it in shale barrens at Fort Carson. She has locations for this species that will be provided.

Rob: Stephanie Neid found it on private land north of Canon City.

Georgia: Found 200 plants along about 100m of a cliff edge, estimate thousands.

Tass: Can still ID *L. calcicola* with flowers, which do not emerge above the leaves. Estimate this should be a G3. It is being found in NM too.

Steve O.: The record from NM is unverified.

### ***Nuttallia chrysantha* G2 S2**

Endemic to Colorado, known from three counties. Narrow distribution. About 4,100 plants known from 14 occurrences, 26 occurrences total. 73% of these occurrences are on private land. Found on shale barrens.

Tass: This cannot be distinguished easily from *N. reverchonii*. Needs more research to distinguish these species. No one appears willing to tackle these issues. Eastern Pueblo County is the overlap zone for these species. Southeastern Pueblo County is where *N. reverchonii* begins to occur. Craig Freeman may have some thoughts on this.

Rob: Dina Clark collected some seeds east of Garden Park and will work on those.

Susan: Collected seeds from the Garden Park site, which were verified as *N. chrysantha* by COLO personnel.

Georgia: *N. reverchonii* is a G5?.

Tass: Maybe the Kansas herbarium could send us seeds of *N. reverchonii* from KS that we could compare with *N. chrysantha*.

Susan: There is a report on CNHP website on its pollinators.

### ***Nuttallia densa* G2 S2**

Endemic to CO, only found in Fremont County (dot on map in presentation in South Park is erroneous). 14 occurrences with 13,500 individuals estimated from 10 reports. 4 are historical. Found primarily on private land, also BLM and NF lands. Found on naturally protected sites between Canon City and Salida.

Brian E.: Also grows on canyon floor in relatively unprotected sites. Christo project will result in hundreds or thousands of concrete anchors along Arkansas River. Rare plants won't stop this project- if anything stops it, it will be safety issues.

Susan: Main species potentially impacted by the Christo project will be *Nuttalia densa*.

Brian E.: It will be up for two weeks but under construction for a year.

Erin: Have you heard anything with respect to Mexican Spotted Owl?

Brian E.: No.

Rob: Bighorn sheep and fish species are being considered in the EIS.

## **BREAK**

### ***Oenothera harringtonii* G2 S2**

Found in 6 counties at low elevations in the Arkansas River watershed. 34 occurrences known. Lots of variability year to year- much more found in moist years.

Raquel: Richard Bunn has a report for it at Fort Carson this year. Not sure how many plants.

Tass: In a wet spring year, it carpets the landscape in the Apishapa River area. This is hard to see because the roads there are impassible then. In a good year 1,500 plants can be seen in a ¼ mile. Some BLM land and DOW land in this area. Needs to have a wet April for it to become very abundant. Also found in tank tracks in Pinyon Canyon in wet springs. Surveys need to be done in wet years.

Susan: Tass, is rank appropriate?

Tass: This is difficult because it is so variable. It is probably still a G2 because of restricted habitat and variable population size, but in a good year it could be a G3. It probably has a seed bank in the soil. Maybe an annual or biennial. Las Animas-Huerfano counties are where it is most abundant.

Betsy: TNC has been working with DOD on an area south of Fort Carson to conserve this and other G2 species on a particular ranch.

Tass: The military might end up with a lot more of this species in the future if the enlargement of Pinyon Canyon Maneuver Site is successful.

Susan: This plant was studied in her pollination study- it is most likely pollinated by Sphinx moths.

### ***Oonopsis foliosa* var. *monocephala* G2G3T2 S2**

Only found in Las Animas County, endemic to CO. Found in 12 occurrences, five of which are historical. Approximately 400,000 plants known from 2 of the 12 occurrences (no report of abundance for other 10 occurrences). 96% found on private land.

Tass: Greg Brown will finally describe this. He believes it is not worthy of conservation concern, it is quite common, although only in Las Animas County. He is writing the FNA description. It will be treated as *Oonopsis foliosa* var. *monocephala*.

Andy: Need to heavily weight the threats in a species that is narrowly distributed such as this. Life history, response to disturbance, condition of its habitat are important if they increase the vulnerability of the species.

### ***Oonopsis puebloensis* (unpublished name) G2S2**

In the CNHP database as “*Oonopsis* sp. 1” because it has not been published yet. Known from Pueblo and Fremont counties. Also on state land at Pueblo State Park (not included in pie chart in the presentation). Looks like *O. foliosa*. Could be in shale outcrops or in valley bottoms, but is in fine soils.

Raquel: This was found this year by Richard Bunn in El Paso County on Fort Carson at seven sites. Lots of them are in the firebreak where they get graded or run over.

Jill: Found a lot of it on Fort Carson. Probably two or three more occurrences, and an additional 10,000 individuals.

Brian K.: Also on Pueblo State Wildlife Area adjacent to Pueblo State Park. CNAP will move forward on designation for this site as a State Natural Area.

Betsy: Arkansas Valley Barrens is an area included in an appendix on the new Central Shortgrass Prairie Ecoregional Assessment. Steve Kettler has written about conserving these species.

### ***Oxybaphus rotundifolius* G2 S2**

Mostly on private and military lands in four counties, a Colorado endemic. One disjunct occurrence in Las Animas county. 27 occurrences, 23 of which included estimates of population size; 6200 plants estimated total. A very showy species. Found primarily in the Smoky Hill member of the Niobrara Formation. Plants don't come up in dry years. Easily seen in shale habitats when flowering.

Brian E.: Occurrences of this species are threatened near Florence by a cement plant.

Raquel: Many new populations were found at Fort Carson, including a new site called “oxy heaven,” where thousands of plants were found.

Georgia: Negative search results do not mean that it is not there.

Tass: Unbelievable amounts of this species were found at Fort Carson. We have increased the area known to be occupied by this species 10 to 50 fold with the discoveries made this year. May be something we will only see rarely such as in a year like this.

***Penstemon degeneri* G2 S2**

12 occurrences, one of which is historical. 1500 individuals documented at 6 of these occurrences. A large percentage is found on private lands. Found in pinyon-juniper woodlands. More pollination studies were conducted this year.

Steve O.: This species was found flowering within the last couple weeks (it usually flowers in June). In Locke Park, one of the larger occurrences, only one plant was found in June. However, after the rains this summer the plant appears to be doing better. Now it appears that there is more than has been realized.

Andy: Is it still in bloom?

Steve O.: According to Leo there are still some in bloom, apparently there hasn't been a frost yet. It will be interesting to see if it sets fruit after blooming outside of its normal blooming time. North of Highway 50, it looks like it is *P. griffinii*. Problems with Weber's key.

Brian E.: Some occurrences appear to be misidentified on the San Isabel NF, so there are efforts to verify these occurrences. Bill Jennings annotated a *P. degeneri* specimen, which caused him to check others.

Susan: It is great to hear when specimens are annotated so we can update the database.

***Ptilagrostis porteri* G2 S2**

Almost all occurrences are in Park County, with one in El Paso and one in Lake County. Occurs in fens. Known from 22 occurrences, with approximately 408,000 individuals. Associated with many other rare fen species. Barry Johnston wrote the technical conservation assessment recently on this species.

Tass: Also found a couple drainages over, on the Pike NF, from the occurrence in El Paso County. Plan to survey likely habitat at site near Farish.

Steve O.: Grazing is a threat in a dry year when cattle don't have to get their feet wet.

Brian E.: Occurrence in Lake County is historical. Has attempted to find it but it appears that the habitat is no longer present.

Denise: Has also looked for the Lake County occurrence but habitat appears to have been destroyed.

Betsy: Fremont Fen was one of the larger occurrences but appears to have been extirpated.

Ellen: Petition to list was denied. It was based on a large water project that did not go through.

### ***Telesonix jamesii* G2 S2**

Only about three years ago this was a G4, but taxonomic revisions and better understanding of its range, it is now ranked G2. Known from New Mexico and Colorado. Susan found reference to several additional locations in Teller and Park Counties. Two locations in RMNP. Up to about 22 occurrences in Colorado. Found in one mountain area of NM. About half of the occurrences are on NF land. It is a very showy plant that is threatened by collecting for rock gardens. Often found with *Heuchera bracteata*.

Tass: Found it in Fremont County but has not yet vouchered it.

Andy: I thought it was also in Montana.

Susan: The Montana plants are now considered another species.

Andy: Has seen it in Lost Creek Wilderness.

Susan: It would be great to get your information- the information for that area is from a specimen collected by Pat Murphy.

Tass: Actually is pretty common on Pikes Peak granite. Lots of it in the Tarryalls, throughout the Pikes Peak massif. On land owned by T.J. Anderson and soon to become Cheyenne Mountain State Park. May be in bloom now because it is moisture sensitive.

Andy: It is recognizable vegetatively. There is a lot of habitat for it in places where it is not likely to be impacted by goats, fire, or recreation.

### **CNHP Scorecard**

Jill Handwerk presented maps generated from the pilot of the CNHP Scorecard. The draft species scorecard ranked 53 Colorado endemic plants based on their abundance, range, threats and level of protection. The maps presented this information spatially, and were overlain on land ownership maps for comparison.

Andy: It is important to note that plants in USFS Wilderness Areas can still be threatened by activities such as herbicide use.

### **Prioritization of Southeastern Colorado G2 Species**

*Asclepias uncialis* ssp. *uncialis*: more inventory needed on NF System land. Need to research its biological requirements, including studying its pollinators. Need to work with NM. Needs protection, species appears in decline (habitat loss).

*Cleome multicaulis*: Range retraction (i.e. NM and AZ occurrences likely extirpated).

*Delphinium ramosum* var. *alpestre*: Not eminently threatened, needs inventory/documentation; could be moved to G3.

*Delphinium robustum*: Needs inventory and taxonomic research.

*Draba exunguiculata*: Steve will commit to more inventories and transplant 5 plants at Winter Park if construction disturbance occurs in times when soil is not wet or frozen.

*Draba grayana*: Seem to be picking up new occurrences slowly. Not eminently threatened; needs more documentation.

*Draba smithii*: Needs more inventory.

*Grindelia inornata*: Rerank to G3 or lower, follow up with the author of the FNA treatment, more taxonomic research.

*Herrickia horrida*: Need survey efforts at Mesa de Maya (Steve O. will try). Brian E.: this one is a high priority. Need to talk with the collector who documented it with specimens at COLO.

*Lesquerella calcicola*: Protect habitat in Arkansas Valley.

*Nuttallia chrysantha*: Protect habitat in Arkansas Valley.

*Nuttallia densa*: Ready for protective efforts.

*Oonopsis foliosa* var. *monocephala*: Need to resolve taxonomy issues, and to understand its response to disturbance. May need to be a G3. Need to look at land ownership patterns.

*Oonopsis puebloensis*: Protect habitat in Arkansas Valley.

*Oxybaphus rotundifolius*: Protect habitat in Arkansas Valley.

*Penstemon degeneri*: Steve O.: Will continue inventory and pollinator study efforts. Susan: Ready to move forward on protection of known sites. Andy: Need to verify identity first.

*Ptilagrostis porteri*: Steve: May still be a few areas that need to be inventoried. Protection efforts are needed.

*Telesonix jamesii*: Need more documentation of this species to improve our understanding of it.

Tim: We could be effective by working on the cluster of endemics between Pueblo and Canon City (*Oenothera harringtonii*, *Nuttallia densa*, *N. chrysantha*, *Oxybaphus rotundifolius*, *Lesquerella calcicola*).

Betsy: Habitat protection is the highest priority for these species.

*Astragalus tortipes*: Ellen: The tribe has not applied for any federal funds to work with their listed species because they don't want federal involvement. Possible people to discuss trying to work with on *A. tortipes* include Arnold Clifford, Marilyn Collyer, George San Miguel. Washington won't let us keep it on the list if it can't be surveyed. A canal goes through the habitat for *A. tortipes*.

Peggy: This area has been surveyed by many people so there is not a great need for more surveys off the reservation.

Andy: Lucy Jordan should be contacted about this species.

*Ptilagrostis porteri*: Ellen: This species was not listed because the water development issue on which the petition was based did not happen.

Erin: Two species stood out. The range of *Cleome multicaulis* has contracted and water is not reaching some Colorado occurrences. *Draba exunguiculata* is showing signs of decline. The Arapaho Basin expansion may also impact it.

Ellen: Some new information from New Mexico suggesting it (*Cleome*) remains extant there.

Steve P.: Need more inventory for *D. exunguiculata*. John Giordenengo may have found more *D. exunguiculata*.

Susan: Shares Erin's concern for *C. multicaulis* - water issues are a major concern for this species.

Rob: John Sanderson has trained volunteers to monitor the occurrence at Mishak Lakes.

Brian K.: John Sanderson calculated that closing 3 center pivots upstream would refill Mishak Lakes.

Barbara: Tough to raise enough funds for projects like the Wacker Ranch.

Susan: *A. uncialis* is in decline and needs protection efforts.

### **Recommended Priorities for Action**

Arkansas cluster  
*Cleome multicaulis*  
*Penstemon degeneri*

## Results - CNHP status changes

*Eriogonum pelinophilum* rank changed from G2Q to G2.

*Pediocactus knowltonii* removed from CNHP tracking list.

*Grindelia inornata* rank changed from G2S2 to G4S4.

*Penstemon grahamii* rank changed from G2S2 to G2S1. USFWS withdraws proposed rule to list as threatened and removes it from the candidate species list.

## Comments Received from Attendees to Make Next Year's Presentation Better

1. As an introduction, show slides of all species thus far presented in 2004, 2005, and 2006 symposia. Present by year covered (which is rarity - T/E, G1, G2, etc.) and alphabetically by species for each year. Show 2 slides per taxon, one with distribution map, revised statistics of rankings, number of EO's, number of plants, ownerships; and one with a close-up of the plant and occupied habitat. Spend 30 seconds per taxon discussing highlights as you show both slides.
2. For distribution maps, in future use:
  - Different colors of dots for extant versus historic/extirpated sites.
  - Use the following colors in pie charts for ownership: USFS – light green; BLM – tan; NPS – light purple; State – light blue; private – white.
  - Use topo-versions (geo-relief) of State of Colorado, not just black and white flat depiction
  - Add a star symbol for Denver, smaller star or other symbol for Ft. Collins, Pueblo and Grand Junction
  - Add a light dotted line or similar legend indicating Continental Divide
  - Retain county boundaries but do not add county names (to busy)
  - For that symposium year's maps, add a symbol at the city in which the symposium is held and add the city printed name to the map (e.g., \* Steamboat Springs). You could add each city for each year and retain them in outyears with year of symposium indicated (e.g., \* Steamboat ('04), \*Pagosa ('05), \*Colorado Springs ('06)). That way the maps would tell where we've had past symposia over time.
  - Use the hillshade and county boundaries as base images behind the dot maps for each species.
3. Go back and update year 1 and year 2 slide shows for EO's, number of plants, dot maps, ownerships generated from new info at each symposium and post updated slides shows on web site.

4. Post revised Dr. David Steingraeber's *Mimulus gemmiparus* report on CNHP web site with the meeting notes.

5. Send out results of final determinations from Sheviak of the possible *Spiranthes diluvialis* reported plants in Larimer County.

6. Include the presented pilot draft CNHP score cards as part of the minutes.  
Editor's note: A final version of this will be available on the CNHP website  
<http://www.cnhp.colostate.edu>

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