

**The 2nd Annual Colorado Rare Plant Symposium:
G1 Plants of Colorado
September 16, 2005
8 am - 12 pm
Pagosa Lodge
Pagosa Springs, Colorado**

Meeting Minutes

Recorders: David G. Anderson, Jill Handwerk, Carol Winther, and Tom Grant

Introductions (approximately 18 attendees at 8:15 plus four presenters)

Steve Popovich, USFS - Introduction and ground rules

1st symposium was last year in Steamboat Springs.
It covered all of Colorado's federally listed Threatened (T), Endangered (E), Candidate (C), and Proposed (P) plant species.

Ground rules: 10 minutes per plant, plus comments

G1 plants of Colorado (presented alphabetically)
Aletes latilobus - presented by Peggy Lyon

Known from Utah (Grand and San Juan counties), and Colorado (Mesa County, Colorado National Monument).

Last observation in 2000 by Ellen Mayo.

No real monitoring program set up for this species.

Three populations are known extant; the other two records are old general records and are probably from one of the 3 known populations.

Trampling by botanists and hikers is the worst threat to one occurrence.

Utah populations are separated by a long distance from the Colorado population.

Can survey for this species almost any time of year.

In Arches NP, sand blowing over the plants makes them look different. It can help stabilize the soil.

Plants are at the base of the cliffs in Colorado National Monument, has not been found on adjacent private lands. There is a lot of apparently suitable habitat in the vicinity of these occurrences that is apparently unoccupied.

At intersection of Entrada and Chinle Sandstones.

There are no counts of the species. Some records say “locally abundant,” or hundreds to thousands”. Vague.

Aliciella sedifolia - presented by Dave Anderson

Little knowledge of species, also known as *Gilia sedifolia*; rightfully belongs to *Aliciella*

USFS sensitive species

Distribution limited to San Juan Mountains.

Discovered on a Sheep Mtn (which one?), possibly by Silverton or Lizard Head wilderness. CNHP mapped location based on soils/geology maps, se of Silverton.

Originally seen by Purpus in 1892, not seen for nearly 100 years.

Rediscovered by Susan Komarek in at Half Peak in 2003.

2005 observation by Ken Heil, same location as 2003.
Estimate of 1100 individuals at Half Peak

Threats – ORV, sheep grazing.

Alpine (11,000 ft+) biennial or short lived monocarpic perennial; cobble fields of tertiary parent material, poor consolidation of soils; grows in barren areas.

‘Stonecrop’ = succulent leaves

San Juan NF revising Management Plan – make sure it is included, although it occurs on the Rio Grande NF.

USFS species assessment on WWW.

Astragalus lonchocarpus var. hamiltonii - presented by Jill Handwerk

Found in Pinyon Juniper woodlands.

Fruit is straight and pendulous.

Dinosaur NP botanist (Tamara Naumann) has no resources to survey for this species, focus is on weed management.

CNE is not working on this species.

Not sure what the FNA treatment will look like for this species.

This species is very obscure

Astragalus microcymbus - presented by Peggy Lyon

Along a couple of tributaries of Beaver Creek

Some questions about a newly discovered population at Sevoia (?) creek. This is the farthest south of the known populations. Barry Johnston is looking at it.

Tom Grant has been conducting some monitoring of this species

Many plants were nipped off with a little diagonal cut on the stem. This correlated with a big increase in the rabbit population.

Mostly on BLM within an ACEC

Distribution limited to Gunnison County and barely entering Saguache County. Total range is about 4 or 5 miles.

Stems are purplish, pods are small. Pods are shaped like a little boat (hence the name skiff milkvetch).

Open PJ communities on moderately steep to steep slopes.

Tom Grant – DBG/BLM monitoring project:

Monitoring since 1995. 42 subpopulations, 4 being monitored. Pop has declined in plots from 3000 to 50. Drought and rabbit herbivory are responsible. Small recovery in 2004/2005.

This year went to 10 different populations. Went to populations that should have thousands, lucky to find 10.

Working with a Turkish researcher (Yasemin Erguner – DBG summer intern 2005) – to develop a PVA using Ramas MetaPop. Should be completed in 2006.

DBG looking at seed bank, found 1 possible seed in >20 soil samples/cores (about 1 liter) in the vicinity of reproductive individuals.

Laurie Brummer- CNAP land steward is working on this site.

Flowers in mid July. Most of DBG work was at this time. However, in mid August it appeared to be resprouting. Summer surveying may miss plant if conditions are dry, important to survey in throughout summer (early and late).

Within each of 4 sites there are four plots. Great design for doing a rabbit exclusion experiment. This will be done next year. Needs help hauling equipment into the site.

This year was very bad.

Leo: lots of genetic implications for population crashes.

Tom: we do see fruits, but often fruits abort and there is no viable seed
Flowers are tiny- 3 to 4 mm

Rabbits eat the whole plant. Collected rabbit feces to see if seeds were present.

Astragalus schmolliae - presented by Dave Anderson

Last observation in 2003 by CNHP; currently considered to be 3 occurrences.

2002 drought, 2003 fire on Chapin Mesa. Unburned areas had no fruit set, burned areas were large and had lots of fruit.

Pollinator issues – possibly drawn to burned areas (i.e. increased fruit set).

Populations clumped in PJ woodlands.

Butterfly larvae on defoliated AsSc stems, probably not a threat.

Musk Thistle invades burned areas (Chapin Mesa); old burns infested with weeds.
Weeds introduced with fire equipment? Dave - possibly

Fire didn't kill plants, drought did.

Cirsium scapanolepis - presented by Peggy Lyon

This one is a taxonomic mess; Weber and Wittmann: *spathulifolium* is a synonym for *scapanolepis*.

Possibility that *Cirsium griseum* is a synonym.

Jennifer Ackerfield (CSU herbarium) thinks it is the same as *C. clavatum* in Utah.

Threatened by *Rhinocyllus conicus* (introduced seed weevil for Musk thistle control)

Steve Popovich: At this point, should we still be concerned about its management?

Peggy: It would be difficult to manage for it at this point.

David Keil is working on the taxonomy of this species (Rancho Santa Ana).

Corispermum navicula - presented by Dave Anderson

1 occurrence on BLM (Kremmling) – sand dunes of North Park

Weber – habitat “looks like scene from Grapes of Wrath”, i.e. – ORV use is heavy.

Taxonomy – conspecific with material from Oklahoma???

FNA is working on species, author unknown at this time

Need to address species immediately; survey and possible protection from ORV use.

Cryptantha gypsophila - presented by Peggy Lyon

This plant is a G1S1 by default right now, but Peggy thinks it will stay that way for a while. Found in three areas: Big Gypsum Valley, Little Gypsum Valley, and Sinbad Valley. Peggy spent a lot of time this summer visiting occurrences. Looks very much like a more common species- *C. paradoxa*. Distinguished by hairs on leaves, *C. gypsophila* is glabrous and *C. paradoxa* is hairy.

Grows on mounds of gypsum soil where it can be the dominant plant. Not a lot of other things grow there. The plants really stand out and can be easily seen in flower.

Along with this plant have been found other very exciting things. Larry St. Clair identified about 20 species of lichens, 4 of which are very rare, known from less than five locations in the world. Also a state-rare plant, *Sporobolus neelii* (sp.?).

This species has been thought to be *C. paradoxa* until J. Reveal.

Steve O'Hare and Ken Heil may have found a couple of occurrences of this.

Peggy: ATV use is occurring in this area. Plant and its habitat need some protection.

Draba weberi - presented by Jill Handwerk

Only found below the dam. Dam maintenance is a potential threat. City of Colorado Springs knows about the occurrences.

Steve Popovich: Ellen, how do you feel about the viability of this species?

Ellen Mayo: doesn't make sense to rush to list it given the taxonomic questions about this and other *Drabas*.

Steve Olson: Thinks that Mike Michael Windham, Utah Museum of Natural History, University of Utah, would consider it a good species. Mike has been working on the parents of apomictic *Drabas*. Thinks it is an incipient species.

Steve Popovich: Maybe it would be efficacious to work on getting some kind of formal agreement with Colorado Springs.

Ellen Mayo: Water is coming out of a drainage pipe running through the population.

Jill Handwerk: Karin Decker talked with Colo. Springs, and they seem very interested in taking care of it. They almost always need to run water out of the dam.

Tom Grant: prime candidate for ex situ propagation or seed banking.

Ellen Mayo: later in the season couldn't find any.

Jill Handwerk: Susan Spackman went there once and found only one plant.

9:40 Break

10:00 Announcements

USFS – Moonworts (*Botrychium*)– a “new species” found in Colorado? [Steve Popovich]

Steve: A site was discovered at Guanella Pass with a *Botrychium* “new genetic entity.” We do not yet know if this will be a “new species” or not. Drs. Donald Farrar and Cindy Johnson-Groh used isozymes to investigate the new *Botrychium* specimens. The new entity has attributes of both *B. lineare* and *B. campestre*. They believe it to be a fertile diploid or allotetraploid. It also has alleles of an unknown diploid species. It was first assigned the name *Botrychium 'lincamp,'* but is now tentatively called *B. 'bifurcatum.'* From over 100 isozyme smears, it appears to have unique alleles. Twelve plants of this entity have been found, 11 in the Guanella Pass area and one plant at the Forth of July trailhead west of Boulder.

Additional “strange looking” plants at the Guanella Pass site appear to be very interesting F1 hybrids:

Case 1: *B. 'bifurcatum'* x *B. montanum*. “Moose antler botrychium.” *B. montanum* is not known from Colorado. Only one plant was found. This one plant is probably an F1 hybrid, but spores might be fertile through chromosome doubling.

Case 2: “Christmas tree botrychium.” Very pinnate pinnae - looks different from any other *Botrychium* in the world. This is *B. 'bifurcatum'* x an unknown diploid. Only one plant was found. This one plant is probably an F1 hybrid, but spores might be fertile through chromosome doubling.

Lots of heterozygosity of the observed new plant entities; unusual for moonworts.

The Guanella Pass site was slated for total destruction from a road improvement project. Site is at a roadside. Federal Highways and USFS have decided to not destroy this site, and have re-aligned the road to avoid site.

Not the same taxonomic entity found in the Sawtooths on Railroad Ridge in Idaho.

USFS will do a press release soon. Lots of rumors about it. [Editor’s note: since this meeting, a full press release has occurred.]

Plan to publish something about its taxonomy within a few years.

Emily: Commended USFS on doing a good job to protect the new entities.

CNHP - Request for data, procedures for submission

G1 Species continued

Erigeron wilkenii- presented by Jill Handwerk

Last known observation 1995.

Potential taxonomic issues with *E. nematophyllus*.

Little knowledge of species.

Dinosaur NP (Tamara) is not involved with species.

Discovered by Steve O’Kane and/or Betsy Neely (1987).

O’Kane – grows at base of cliff in sand, different than *E. nematophyllus*, different habitat.

Steve O’Kane believes the two species are distinct. He has examined approximately 1000 specimens, they are found in different habitats. Cronquist thought they were the same.

Eriogonum brandegeei - presented by Dave Anderson

Large number of plants (potentially), but small area (1.2 sq miles). Salida and Fremont (outlier) populations.

Salida geology = Dry Union; Fremont geology = Morrison formation.

Droney Gulch – ORV tracks obvious.

BLM – good interpretation about rare plants and fossils.
Residential development is a problem at Salida populations.

DBG monitoring Garden Park & Cleora for BLM, initiated in 2004. Rust (uromycetes) observed on plants, not a threat, according to CSU extension service. Rust is included in monitoring study.

Hackelia gracilentia - presented by Dave Anderson

Some occurrences have not been visited/observed since 1980’s.

Effect of fires – 2002 burn (CSU grad Joseph Freedlander) on Chapin Mesa (?), CNHP could not locate after fire.

Dave Anderson - Possibly on tribal lands to the south.

Steve O’Kane – has looked for it in Tribal lands around MVNP, and has not seen species.

Habitat – seeps in canyon walls or densely vegetated, shady canyons with oaks.

Contacts - Steve O’Kane, Marilyn Colyer (MVNP)

Lygodesmia doloresensis - presented by Peggy Lyon

11 or 12 occurrences are somewhat misleading- some could be combined. All of them are next to the Dolores River.

Gateway area has suddenly been discovered by recreationists; impacts are increasing.

Peggy doesn’t believe the two northern dots in the distribution map.

Lygodesmia grandiflora is much shorter and more common than *L. doloresensis*.

Steve O’Kane and Ken Heil: Stan Welsh thinks its Utah species (*L. entrada*).

Welsh in 1993: treats *L. doloresensis* as a distinct variety of *L. grandiflora*.

Opinion of CNHP (Peggy, Jill, and Dave) to get rid of the Q in its G rank, use Tomb for paper for validation.

Mimulus gemmiparus - presented by Jill Handwerk

Most of population is at a single population below the Lawn Lake Dam in RMNP, but this area is gradually succeeding to forest that will be unsuitable for *M. gemmiparus*.

Reproduces with gemmae.

Steve O’Kane - doesn’t think there is any other plant on Earth that reproduces this way. It really needs to be looked at.

Denise Culver - tried to relocate the occurrences in the west side of RMNP. Could not find the Cascade Falls occurrence. Found the other one and identified another potential occurrence or sub occurrence.

Velma Richards- a volunteer at DBG that is interested in this species.

Steve Popovich - talked with Dr. David Steingraeber. David and Paul Beardsley revisited all known sites in 2005 under contract to Popovich. They could not relocate Fall River Road site and Type locality. Found no new populations but numerous new subpopulations. All overall population numbers were similar in 2005 as in 2004. Final report to the USFS is due shortly; call Steve for a copy. Hankins Gulch on Pike NF- threatened by trail, may try to relocate the trail.

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Steve Olson - trail would be very difficult to relocate.

Oreoxis humilis - presented by Jill Handwerk

Andy Kratz - added to latest iteration of the USFS Sensitive Species List.

Similar to *O. alpina* - *O. humilis* is glabrous.

Penstemon gibbensii - presented by Dave Anderson

Last observed in CO 1999.

7 occurrences, 2 in CO on BLM and USFWS wildlife refuge at Brown's Park.

Look alike – *P. fremontii*

Flowers in June, found on Brown's Park or Green River formations. All CO populations on Brown's Park formation.

Limited suitable habitat.

Potential Conservation Areas (PCA) determined by CNHP.

CNE – saw plants at Spitzie Draw in 2004, advocating for protection of species on BLM lands.

Physaria pulvinata - presented by Peggy Lyon

Discovered by James Reveal.

Ken Heil: This species will be published soon in Brittonia. Lesquerella's are now included in Physaria.

Grows on Mancos shale, barren areas. Flowers in early May, done by July.

Surveys are just beginning; include private lands adjacent to NF. Lots of potential habitat.

Denise Culver – why not discovered earlier?

Steve O'Kane: Keys to *P. rectipes*. Rollins actually knew about this species but he did not describe it- he instead made the description of *rectipes* very broad.

Another new *Physaria* may be described by O'Kane in near future.

Conclusions

Let's see if we can partition future needs for G1 species by categories

Group discussed this as a whole

Categories developed by CoRPTC

Top species needing conservation action:

1. *Aliciella sedifolia* need to include in BLM RMP (see below)
2. *A. lonchocarpus* var. *hamiltonii* include in Vernal RMP
3. *Corispermum navicula* – USFWS work with BLM
4. *Draba weberi* – cooperative management (CS utility)
5. *Penstemon gibbensii* – RMP in revision, need to address/include in RMP
6. *Mimulus gemmiparus* – heavy traffic at Higgins gulch, trail reroute

Top species needing research:

1. *Aliciella sedifolia* (2nd rarest plant in CO, Heil & O’Kane) – relationship to *pinnatifida*
2. *A. lonchocarpus* var. *hamiltonii* – taxonomic (variety or specific level, are CO plants different than Utah plants?)
3. *A. microcymbus* – determine cause of decline (herbivory), continue monitoring
4. *Corispermum navicula* taxonomic questions
5. *Penstemon gibbensii* – contact Holmgren & Andrea Wolfe (Ohio SU) about taxonomy
6. *Lygodesmia doloresensis* – taxonomy (variety of *grandiflora*, Stuckey?), distribute taxonomic information to involved parties & move forward

Top species needing survey efforts:

1. *Aliciella sedifolia* (only one known site on USFS or BLM, San Juan field office is revising Management Plan, need to include)
2. *A. lonchocarpus* var. *hamiltonii* – define if var. *hamiltonii*, contact Mark Sanderson & Aaron Liston (Oregon SU)@ genetic data
3. *A. microcymbus* – revisit sub populations and new populations, including *Physaria rollinsii* with surveys, establish/confirm identify of *Savoya* pop.
4. *Corispermum navicula* surveys
5. *Draba weberi* – additional surveys on Pike NF
6. *Hackelia gracilenta* - surveys
7. *Mimulus gemmiparus* – additional surveying needed

RPTC will establish working groups to address the priority species; as follows:

Aliciella sedifolia -open
Astragalus lonchocarpus var. *hamiltonii* - Erin Robertson
Astragalus microcymbus - open
Corispermum navicula - open
Draba weberi - open
Lygodesmia doloresensis - open
Penstemon gibbensii - Erin Robertson

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