

7th Annual Colorado Rare Plant Symposium
G1 Plants of Colorado; Current Conservation Status and Needs
9:00 am - 4:00 pm, September 10, 2010
North Classroom 1207
CU Denver Auraria Campus
Denver, Colorado

Meeting Minutes

Sponsors: CoNPS, CNHP, DBG, CU Herbarium, USFS, USFW

Recorders: David Anderson, Bernadette Kuhn, Alicia Langton

Introduction and Ground Rules (Moderator - Steve Popovich, USFS)

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. The third symposium (2006) was held in Colorado Springs and covered imperiled (G2) plants species of southeastern Colorado. The fourth symposium (2007) was held in Boulder and covered the imperiled and vulnerable (G2 and G3) species known from the northeast quadrant of Colorado. The fifth symposium (2008) was held in Montrose, and covered the imperiled (G2) species known from the southwest quadrant of Colorado. The sixth symposium (2009), held in Loveland, consisted of a review of listed species; G1 species; G2 species from southeastern Colorado; G2 and G3 species from northeastern Colorado; and G2 species from southwestern Colorado. In addition, G2 plants from northern and central Colorado were introduced. This year, the symposium is focused on G1 plants of Colorado. Current conservation status and needs of the G1 species will be covered. At the end of the symposium, there will be a review of species from previous years.

Request for data, procedures for submission.

Goals:

1. Exchange knowledge about botany
2. Foster exchange of information
3. Strategize conservation efforts and prioritize Colorado species in most need of conservation
4. Review results of past symposia

Review of G1 Plants of Colorado; Current Conservation Status and Needs (led by Susan Spackman-Panjabi)

Review of G1 definition:

Species are typically known from 5 or less occurrences globally, or are very threatened by human activities or natural processes.

Purpose of today is to share information about the G1 species of Colorado.

Red text in slideshow- indicates new information for species since previous symposium.

1. *Aletes latilobus (Lomatium latilobum)*

Jenny R-N.: DBG collected seed this year in Rattlesnake Canyon.

Bernadette K.: I surveyed in Devil's Canyon, but no plants found.

Gina G.: Habitat is protected, due to steep cliff sides.

Bernadette K.: I believe that Peggy did not find this species in Rattlesnake, Mee and Knolls Canyons.

Susan S-P.: Peggy has searched in many areas of potential habitat and not found it. This species is found in the Monument, and in Utah at Arches National Park. This species could potentially go to G2.

Ellen M.: USFWS did a negative finding based on lack of threats.

Andy K.: Concerned about potential for climate change and disconnection of plants and pollinators. This may not be an important concern for this species, however as this is probably a generalist.

Steve O'Kane: There are also demographic threats. Small populations are inherently more susceptible, and if the population declines more, will it increase the G level? Will climate change and decline in numbers be enough to boost its protection status?

Ellen M.: Yes.

Pat M.: What if we do see populations decline? Will that affect its rank or affect its status with USFWS?

Gina G.: If you can demonstrate a decline, then yes. With this species there is no ongoing monitoring, however.

Steve O’Kane: There is often a disconnect between the occurrence and population.

Susan S-P.: This is correct- we don’t know enough about the population structure of most species to be able to define populations accurately. For each species, there is a field in the database that includes information on what defines an occurrence. Typically occurrences are separated by 1-3 km, or may be divided by significant geographic features like mountain ranges. Researchers are bringing information to CNHP to help understand metapopulations and adjust ranks accordingly.

Gina G.: EOs represent the best guess of what a population is. There’s interchangeability in the terms “population” and “environmental occurrence”, which we use to estimate what may represent a population.

Jennifer Kessler: Does CNHP know of any monitoring going on?

Susan S-P.: There are eight factors used to rank a species, or to assign a global/state rank- number of locations, trend in population, population size, total occupied acres, inherent vulnerability, phenology, range, and how current the data is.

Susan S-P.: G2 is a possibility for this species. Any thoughts? This plant is very recognizable in the fall.

2. *Aliciella sedifolia*

Steve O’Kane: Looked for it and did not find it. May be one or possibly two more occurrences. One is at Stony Pass in 2007.

Tim H.: This does not sound right.

Steve O’Kane: Could be in 2008.

Gay A.: One population was visited by Benny Rosignol this year at Half Peak.

Tim H.: Half Peak is one of the “century” peaks- one of the 100 highest 13ers. Hikers may be a threat, as it is a high summit attractive to serious 13er hikers. The logical route to the top passes right through the population. There were footprints all over the area when I visited it.

Andy K.: If we have rare plants in the Wilderness they automatically get a higher level of protection, but still have grazing, herbicides, outfitters- there are still threats. So even if it was in a Wilderness area, this might not confer protection for it.

Pat M.: This one is not in the rare plant field guide- is there a way to be notified?

Susan S-P.: There are 106 species not in the rare plant guide, even after the 2002 update, and they are not online. We're working on funding to add those species to the guide and to produce/update the rare plant guide online.

Brian K.: Planning to beat the bushes for funding this. CNAP has some funding. We need these in the book and on the website. We are going to ask people for support for this.

Susan S-P.: We are seeking illustrations and photos for this.

3. *Astragalus deterior*

Susan S-P.: We need to follow up with Marilyn Collier as this species is in Mesa Verde (MEVE).

Ellen M.: We consider it one of our most sensitive species. George San Miguel has a new ecologist. They have information and GIS data for this species. They are working on finalizing a management plan for the species.

Susan S-P.: One EO is 40 individuals. We need more information and need to work with other agencies willing to help collect data. You can also have some trouble accessing Ute land.

Brian K.: Met with George and superintendent. CNAP is moving forward with natural area designation for this area.

Dave A.: Did survey work in 2003, and will make sure all data is distributed to CNHP. Last observation is 2003.

Andy K.: There is only one EO with 40 plants, assuming that is because historical ones have not been looked at and do not have plants. Historic ones probably still have plants.

Brian K.: This area and Dinosaur are both managed by NPS. NPS does not provide these data easily. We need to negotiate data issues with these areas because they are very sensitive with their data. If we cannot get the information, we'll drop it to a G1 to get it more attention.

Susan S-P.: This is a very good point. We do a much better job with other federal agencies.

4. *Astragalus humillimus*

Steve O'Kane: Found two more populations in San Juan Co, NM. Quite a bit more in NM, but is still very rare and not deserving a G2.

Susan S-P.: G2 is less than 20 EO's worldwide.

Ellen M.: Ute Mtn Utes do have a botanist-Domoe Natori. I hope she can provide more information.

Steve O'Kane: Use a color card with photos to ensure the correct color of the plants. Wibal makes this product.

5. *Astragalus lonchocarpus* var. *hamiltonii*

Jennifer A.: Where is there a specimen of this species?

Gina G.: The key separates it out based on leaf width. There is some discussion of the taxonomy of the Colorado EO in Dinosaur National Monument.

Steve O'Kane: Talk with Stan Welsh.

Jennifer A.: Could not find it in Colorado.

Steve O'Kane: Specimen is at CSU.

Gina G.: Specimen is not *A. lonchocarpus* var. *hamiltonii*, but may not be *A. lonchocarpus* var. *lonchocarpus* either. I did surveys this year.

Alicia L.: I have a map of the site.

6. *Astragalus microcymbus*

Susan S-P.: USFWS will send us better photos.

Gina G.: October 31 we will do a new finding on this species. We will send a status update. Have found several new sites for this species this year- not new occurrences but additional sub-EOs.

Gay A.: Noxious weeds (cheat grass) are a threat to this species.

Steve Popovich: Cheatgrass is not tested for in local noxious seed tests. Need to request an "All States" noxious weed seed exam (which tests for all noxious weed seed in all 50 states, and cheatgrass is noxious in Wisconsin) or specifically ask for its testing.

7. *Astragalus osterhoutii*

Susan S-P.: This species has been the focus of Conservation Action Planning in Kremmling/North Park through the RPCI involving local stakeholders. We examined

threats and identified strategies for protection of these species.

Carol D.: BLM is still conducting long- term monitoring.

Susan S-P.: Carol D. did her PhD on this species.

Steve Popovich: I heard a new site was found, and if there was beetle kill in that area, then access roads to salvage dead trees by USFS may be heavily utilized. If that's the case, then the USFS will survey for plants in that area. [update – no projects are planned in the area, so no surveys occurred in 2011]

Pat M.: Will look into this- it is possible.

Steve Popovich: Roads in that area will probably be surveyed soon.

Brian K.: One of five populations is on state land that is planned for disposal. It is possible to establish protections for the species on this property.

Susan S-P.: I suggest changing name to Kremmling Milkvetch.

Carol D.: The Osterhout family is very proud of this-I suggest leaving it as is.

Andy K.: How about Osterhout Kremmling Milkvetch!

Brian K.: We are holding a work project, with the BLM and the town of Kremmling, to address OHV issues on this plant on the state owned property. This will take place on Sept. 25th, 2010 in Kremmling at the Open Lands Day.

Susan S-P.: It would be good to work closely with the OHV community to identify win-win strategies.

Betsy N.: There is a housing development that is another threat. Good news- the new director of the Middle Park LT (Karse Pustmueller) is interested in establishing conservation easements in this area.

8. *Astragalus schmolliae*

Dave A.: I worked on a demographic monitoring project in 2003. There is a lot of reproduction and a lot of herbivory from rabbits.

Brian K.: I saw this in 2010. George San Miguel would like to rename it Mesa Verde milkvetch.

Steve O'Kane and Susan S-P.: How about Schmoll's Mesa Verde milkvetch?

Ellen M.: This species is included in the 12 month finding due in October.

9. *Astragalus tortipes*

Steve O’Kane: This is a Mesa Verde endemic. The habitat is very unusual. It is on flanks of Sleeping Ute where the Mancos shale is washing away.

Gina G.: There might be more individuals, but it is difficult to access the Ute land. There are only two locations known in the world.

Susan S-P.: It is possible that some plants are not considered rare because they are known from the four states of the Four Corners, but their range is very small.

Steve O’Kane: The San Juan Flora has been at the publisher for two and a half years.

Pat M.: Mancos shale is exclusionary.

10. *Boechera glareosa*

Jill H.: This is known only from Blue Mountain on UT/CO border, collected by Dorn in 2002.

Steve O’Kane: There might be collections of this that have not been described. Check new edition of FNA and look at Windham’s treatment.

Jennifer Ackerman: A grad student at CSU is working on *Boechera* (John Lovell).

Steve O’Kane: We should look at CSU and CU herbaria. Also, check other specimens and see if one is misidentified that might be *B. glareosa*.

11. *Botrychium* tax. nov. "furcatum"

Steve Popovich: Dr. Farrar is working on the taxonomy of the *B. campestre* group. "Furcatum" will no longer be a separate taxon, but will be subsumed within *B. campestre*. *B. campestre* var. *campestre* was believed to be seen this year at Bonny Prairie for the first time since 1994. [update – DNA testing showed this site to be var. "lineare", not var. *campestre*, so var. *campestre* is still not known to occur in Colorado] There are about 50 sites of *B. campestre* var. "lineare" (= *B. lineare*) in CO, and a few more in NM. *B. campestre* var. *campestre* is found on plains and in the Black Hills. *B. campestre* var. "lineare" is found in the mountains. The var. "lineare" entity will include genetic material and morphologies corresponding to *B. furcatum*." The "lineare" taxon, which will include "furcatum," is not as rare as we thought - its viability is secure in CO. Dr. Farrar hopes to have this treatment revision published in 2 years.

Gina G.: There is a report out now on this. Dr. Farrar prepared the report for the Boise Fish and Wildlife Service that is now available.

Steve Popovich: To tell the “furcatum” entity from other moonworts, note that the lower pinnae are strongly furcated (branched, sometimes like antlers). No other moonwort globally has this strong branching with such clearly linear or strap-like pinna segments.

Jennifer Ackerman: What about *B. tax. nov.* “redbank”?

Steve Popovich: *B. “redbank”* is a clean genetic composition not closely related to *B. campestre*, and it is totally new to science. I will publish it this next year with Dr. Farrar. It is not very rare. There are >50 sites known in North America, probably >50 known just in Colorado, we find more each year in Western states, with many more undoubtedly occurring. This taxon was previously identified range-wide erroneously as *B. pallidum*, which can look quite similar, and which is not known to occur in Colorado. The closest sites of *pallidum* are in the Black Hills. All plants previously identified in Colorado as *B. pallidum* are now treated as *B. “redbank.”* We will likely propose the name *B. “furculatum”* for the often wishbone-like junction of the sporophore and trophophore stalks.

Steve Popovich: There are still only around 1,300 total plants of *B. “furcatum”* in Colorado. But, there has got to be more out there. Do not confuse “furcatum” (to be under “lineare”) with “furculatum” (“redbank,” a new species)! Too much new stuff!

Gina G.: Distribution range of “furcatum” is very wide, though. When you include *B. “furcatum”* with *B. campestre var. “lineare,”* it will expand the known EO’s of “lineare.”

Steve Popovich: Each site of *B. campestre var. “lineare”* may be genetically isolated over time, and is often nearly 100% homozygous. So each site may be different genetically. Interestingly, the “furcatum” entity shows outcrossing levels (leading to heterozygosity) not observed in any other moonwort, so that entity is very important in understanding the speciation or evolutionary biology of moonworts. It is still important to maintain genetic diversity by maintaining as many sites as possible of any *campestre* group, whether a site exhibits homo- or heterozygosity.

12. *Cirsium scapanolepis*

Susan S-P.: This is a poorly understood taxon. *Cirsium* are poorly collected. *C. scapanolepis* is just part of the variation of *C. clavatum* and is part of the Flora of North America treatment (FNA).

Jennifer Ackerman: This is *actually C. clavatum*. Here in CO, *C. clavatum* has not been recognized. This is in FNA now (David Keil). My flora will also have this.

Tim H.: With Jennifer's work and new FNA treatment, *Cirsium* is in better shape now than ever. There is a lot of overlap between their treatments. They will still be problematic.

Jennifer Ackerman: The real issue is we need to collect alpine specimens.

Tim H.: A grad student is looking at *Centaureae* and their elevation gradient and climate change- may shed light on the issue of *Rhinocyllus conicus*.

Michelle D.: *C. ownbeyii* populations in Dinosaur National Monument (G2) have remained stable despite weevils (*R. conicus*).

13. *Corispermum navicula*

Susan S-P.: Taxonomic questions are pending. May need a Q on the rank.

Dave A.: I corresponded with Yakin, who described it in 1995. The specimen material was poor, so we sent him more material.

Jenny R-N and Carol D.: We are working on conservation genetics of this species. Seed measurements overlap between *C. navicula* and *C. americanum*.

Carol D.: BLM is building more fences on their land to protect this species.

Gina G.: There is a proposed ACEC there too.

Brian K.: The BLM had emergency closures out there and actions to curtail activity on BLM. No changes on State land and the population is relatively secure.

Pat M.: Where is the habitat on the dunes? Toeslope?

Carol D.: All over.

14. *Cryptantha gypsophila*

Susan S-P.: Worked on a CAP in Norwood for this species with Betsy, Bernadette and Peggy. This is being changed to G2. The participants at CAP workshop thought threats were not imminent. With 16 known occurrences, so they are comfortable with a rank of G2.

Mitch M.: My graduate student and I are working on genetics of this species. *C. gypsophila* is distinct from *C. paradoxa*.

Steve O’Kane: I have collections and photographs of this species.

Bernadette K.: Peggy and I collected some material that had intermediate characters between *C. paradoxa* and *C. gypsophila*.

Mitch M.: Most perennial *Cryptantha*'s are going to be moved to *Oreocarya*.

Carol E.: Examined pollinators while at Norwood meeting. I noted ground nesting bees were visiting the plants.

Betsy N.: Lots of Uranium mining in the area. Also, OHV use is high in the area. Bernadette K. has drafted a letter to the BLM to factor into the resource management plan.

Tim H.: There is going to be some nomenclatural confusion for this species. Weber and Wittmann have been using *Oreocarya* for the perennial *Cryptantha* for a couple of additions. In the new addition, this will be different. *O. gypsophila* is already used. So, it will be called *O. revealii*.

Susan S-P.: I have been working with Art Goodtimes, and he is going to try to set up a meeting with the OHV community.

15. *Descurainia kenheilii*

Susan S-P.: The last observation was in 1997, that’s a long time ago!

Bernadette K.: Peggy and I will visit this in a couple of weeks.

Steve O’Kane: Looked for it two months ago in mid-July and did not find it. Ken Heil went looking for it two weeks ago and also did not find it. This is highly unusual for two reasons. It is perennial, and it also gets to very high elevation. It was collected somewhere near the top of Stony Pass at approx. 12,200 feet. FNA has a distinct error- includes a county that it is not in. It is not in La Plata Co.

16. *Draba malpighiacea*

Susan S-P.: Last observed in 1997, that’s a long time ago.

Jill H.: I believe that there is more of it around.

Susan S-P.: I need photographs of this species.

Tim H.: We need specimens of it too.

Steve Popovich: This one would be good as an Adopt a Rare Plant species for CONPS to work on.

Susan S-P.: Since it is on Forest Service Land, access is not an issue either.

Andy K.: We need to get USFS botanists working on this.

Steve O’Kane: The hairs are dolabriform- a.k.a. malphigiaceous.

17. *Draba weberi*

Bernadette K.: Gina, Alicia, Steve, Rick surveyed for it along the Middle Fork S. Platte. We may have found a couple of occurrences in the splash zone of the river on USFS land.

Rick M.: I found one plant along the edge of a lake that looked like it. I did not collect and was not positive on the id.

18. *Erigeron wilkenii*

Susan S-P.: This is named after Dieter Wilken. There has not been enough communication with NPS staff to keep records of this species updated.

Steve O’Kane: Tamara Nauman of Dinosaur National Monument has seen this.

Jennifer R-N: Lynn Reidel was there this summer- she may have seen this. Need to check in with her about this.

Steve O’Kane: In the photo, the plant is growing along the base of the escarpment.

19. *Eriogonum brandegeei*

Susan S-P.: Park and El Paso Co records are questionable.

Gina G.: This species, *D. weberi*, and *C. navicula* have 90 day findings- enough information to warrant doing a status assessment and enough evidence of threats to warrant this. We will have 12 month findings on these moving forward.

Ellen M.: This is the time for you to contribute to anything that will be useful in our assessment.

Steve O’Kane: Residential development is a threat.

Mo E.: I did a lot of surveying with DBG. I constructed a habitat map and found another population in Fremont on BLM (a large population on Garden Park) and near Salida on

private land.

Brian K.: The roads have been closed but they still exist. WRV is going to do a road obliteration project in 2011 to get rid of roads there.

Susan S-P.: Garden Park populations were found where several type specimens of dinosaurs have been found. Is archaeology considered as a threat? We have worked with Eric Brekke to modify travel plans.

Mo E.: DBG has a research plot that is not in their data.

Betsy N.: Garden Park site is included in the Arkansas Valley Conservation Action Planning exercise.

Susan S-P.: It was brought into the CAP because *Mentzelia* overlaps. There is overlap here with other Arkansas valley endemics.

Bruce W.: Inherited land to the west at Garden Park. This area needs to be surveyed for *E. brandegeei*.

20. *Eutrema edwardsii* ssp. *penlandii*

Gina G.: Recovery plan was never written. We held a Recovery Meeting in South Park to get people involved in the process. We spent four days in the field visiting at least four sites this summer. Looked up the Middle Fork of the South Platte but probably did not get high enough there. *E. penlandii* was recently synonymized by Al Shehbaz; working with Dr. Bruederle to take another look at this.

Leo B.: The species *E. penlandii* is not recognized in FNA. Already have a lot of data suggesting they are distinct. They are very similar though. Kim Regier has been studying this. Leo could not go on the field trip due to Alaska trip- she collected *E. edwardsii* there.

In Alaska, the plants are tetraploid, hexaploid, octaploid. In Colorado, they are diploid, probably also tetraploid. The plants self-pollinate, and characters become fixed because of that. Based on existing data, they are cryptic taxa. *Eutrema edwardsii* extends from Mongolia to Greenland.

Tim H.: Ours are completely disjunct, right?

Leo- Yes. *E. edwardsii* is from Nome, Fairbanks, Churchill, northern Quebec, Greenland, and Mongolia. Plants in mountains of British Columbia is closest.

Brian K.: On the subject of threats- one of our volunteers noticed OHV tracks through

one population.

Gina G.: November 10, 2010 is the next recovery planning meeting for this species.

21. *Gutierrezia elegans*

Susan S-P.: This is known from just one location in the world. There is talk of a reservoir there. We are doing a CAP there this fall.

22. *Hackelia gracilentia*

Susan S-P.: This is only known from MEVE.

Brian K.: George San Miguel sees this species often.

23. *Ipomopsis polyantha*

Susan S-P.: RPCI had a CAP meeting for this species. Proposed for listing.

Andy K.: This is proposed for listing.

Gina G.: We are putting some resources into work on this species. Sandy Friedley will work on prioritization of which lands are most important to conserve.

24. *Lesquerella congesta*

Steve O’Kane: This is now *Physaria congesta*.

Susan S-P.: We are updating action plan for this species.

Bernadette K.: I found some new sub populations in the Yellow creek area this year containing thousands of individuals.

Gina G.: There should be a draft recovery plan available for comment within the next six months.

Susan S-P.: We are working on coordinating this with the CAP.

Brian K.: I can put together a synopsis on what is going on. We are funding BIO-Logic to do a dust study looking at potential effects of Oil and Gas on this plant and *P. obcordata* and their pollinators. This is going well. Doing some monitoring for this species. One area by the yellow fence saw a precipitous decline this year- near a road that was just put in. There is some hand spraying of leafy spurge in the area. There has been a big fire in Duck Creek. It will be interesting to see how dust from this impacts this species.

Jennifer R-N: We collected seeds of this species, and *P. obcordata* this year. We are conducting genetic analysis on these.

Betsy N.: It has been very difficult to keep a botanist in Meeker.

Carol D.: The position will be filled but not necessarily soon.

25. *Lygodesmia doloresensis*

Susan S-P.: We ranked each occurrence on estimated viability. A lot of EO's are not in very good shape, which is why it is considered G1/G2. The county weed crew is covering the *Lygodesmia* plants before spraying along roads. This taxon is not recognized in Utah by Stan Welsh.

Gina G.: But, this plant thrives in disturbed areas.

Susan S-P.: We're looking more for natural types of disturbance. There is a lot of question about the treatment of this species in FNA.

Bernadette K.: Talked with David Bogler who did the FNA treatment. He had written the key under a contract without much material to work with. He thinks this is really something to look at in more detail and would like material.

Susan S-P.: This differs from *L. arizonica* and other species.

Ellen M.: We are not aware of any occurrences in San Miguel County. Has Peggy found it in San Miguel Co?

Jill H.: Yes.

Gina G. and Bernadette K.: Found it in Devil's canyon this summer in Mesa County.

26. *Mimulus gemmiparus*

Mark Beardsley gave a presentation on this.

Mark, his brother, and Dave Steingraeber have been working on this species. Have seen a couple of occurrences wink out over the last 20 years. There were 8 occurrences on the Pike National Forest:

Hankins Gulch population was the largest population. It has been heavily trampled, as it is right next to a trail.

We counted up to 102,000 individuals at this population in 2005. The population has declined to 20,000 individuals here.

Found almost exclusively at the base of south-facing rock cliffs underneath an overhang where there is a seep, in extremely shallow soils.

In nature it is completely asexual- reproduces with a bulbil in the petiole of the leaf and overwinters this way.

There is probably a lot of natural variability in this species' abundance, but need to monitor it to understand this. It is clear there is a lot of disturbance potential to the sites because habitat is on very shallow soils on hard rock.

Horseshoe Park population in RMNP. Populations are separated by 30 m here. Was over 20, has declined to 8 and now 7; it is in a strange location along Fall River after Lawn Lake Flood. There is evidence that individuals here were carried down river. However, the site is not stagnant. This population is in decline. Could not relocate historical population, so there are 7 EO's total.

One plant found last year in the Horseshoe Park population. Creek is depositing sediment on the bars where it is found.

Staunton State Park is proposing a captive breeding scenario. They want to cultivate ex situ in greenhouse and put some back into wild, monitoring very closely.

Susan S-P.: It has a very big elevation range.

Steve Popovich: This species needs more attention. Need to do something at the Hankins Gulch population.

Steve Olson: I will discuss what to do about moving the trail. It will require moving the trail quite a ways. Trail is between a rock and a wet spot. [update – the trail has been re-routed away from the population!]

Brian K.: CNAP has funding to help with this. We have money allocated from state legislature for interpretive needs. We need match funding.

27. *Oreoxis humilis*

Susan S-P.: The global distribution is on the Pikes Peak Massif.

Steve Olson: Tass Kelso believes it is also on Amagre Peak.

Dina C.: I saw this plant in 2009.

Alison Shaw: Dee Malone found it in 2010.

Steve Olson: There is a threat that the Pikes Peak/Colorado Springs Utility watershed is going to reopen to use. More public use in the Pikes Peak Watershed may begin- eventually there will be more and more development.

Dina C.: That area is the type locality. This is also the most untrammled part of Pikes Peak.

Gay A.: Are there mountain goats there?

Susan S-P.: No.

Steve Olson: There are lots of Bighorn Sheep there. Impacts from sheep are uncertain. 50-60 animals live there.

28. *Penstemon debilis*

Susan S-P.: Vince Tepedino calls this the "Little Debbie" Penstemon. Two occurrences of this species are D ranked. Lots of oil and gas development, recreation, oil shale. Proposed for listing- not just a candidate now.

Ellen M.: Carla DeYoung found no plants on one of the sites. It has been extirpated.

Steve O'Kane: One of my photos is blown up huge and is hanging in the Parachute town hall. They are very proud of the name. Good example of local pride for rare plants.

29. *Penstemon gibbensii*

Jennifer R-N: We will collect seeds this year.

Susan S-P.: The Penstemon Society had their annual meeting in Craig this year.

Ellen M.: Two locations in Colorado. We have survey data and numbers this year.

Alicia L.: BLM personnel helped with surveys this year. Hoping that they will help survey in Colorado too.

30. *Penstemon penlandii*

Pat Murphy offered a short presentation on this species.

Tristate electric has some power poles running through the largest population of this species. In 2009, they surveyed through these corridors and did a count. They needed a total population estimate to assess impacts of power line work.

This species is virtually non-existent in sagebrush areas, but density high in other areas. They did a detailed map of the distribution. Found 780,000 plants on 151 acres on BLM land previously.

They used R statistical package and SP Survey, then selected stratified random plots. In field, found that non-suitable habitat almost always got 0 density. They were able to remap potential habitat with 2 foot imagery to refine the placement of 30 random points. New refined population estimate is 1.4 million.

31. *Phacelia formosula*

Gina G.: I took Duane Atwood to the new population; it will be a new species. Duane wants to call the new one *P. scullyii*.

Alicia L.: I found several more sites with Megan. Mapped the Troublesome Creek Phacelia- this one may also be described as a new species.

32. *Physaria obcordata*

Susan S-P.: We did a CAP in this area for 2008, and are updating it for 2010.

Mo E.: Went to Calamity Ridge in early May in 2009 and saw hundreds. This year there were no plants anywhere.

Michelle D-L: I visited other sites this year and there were many plants present.

Bernadette K.: Expanded the boundaries of the Dudley Bluffs population this year and saw numerous plants.

Andy K.: Sometimes Penstemon populations do not come up in certain years and remain dormant. This is not seen in Physaria but it seems necessary to get back to Calamity Ridge.

Alicia L.: Where in Yanks Gulch was it? I visited a site on white shale that was invaded by cheat grass and saw 50-100 plants at this site.

Jennifer Ackerman: Cheat grass could be a big problem for this genus.

Alicia A.: It would be good to check old EORs and see if cheat grass was documented previously because it is now an issue.

Gay A.: The Science Center in Logan has observed that cheat grass is altering the nutrient content of soils over the course of years.

Gina G.: Exxon is doing soil chemistry work on the plant, comparing soil chemistry attributes to key in on for this species.

Alison G.: I have EOs that were asked for by the operator and not BLM. We need to get permission to submit them to CNHP.

33. *Physaria pulvinata*

Susan S-P.: We completed a CAP for this plant; will be available this winter.

Brian K.: It is known from Miramonte, one of the new Natural Areas. Will be removing Junipers for Grouse management. They are on board with doing this by hand. CNHP has found more occurrences on adjacent properties.

Steve O’Kane: When working on FNA, 3 specimens were for *P. parvula* at CU that didn’t look right. Steve recognized this as a new species. The phone rings, it is Jim Reveal. He says “I was just in the field and found a new *Physaria*”. I replied “I’m looking at it right now!” When we are in the field- collect specimens! They are the only information we have.

34. *Physaria scrotiformis*

Steve O’Kane: I received a photo of this species, but no voucher.

Susan S-P.: If you have a large population, send specimens to multiple herbaria.

Tim H.: We will not be around forever- but specimens are around forever. However, we are not encouraging irresponsible collecting. Need to weigh real risk vs. how valuable the specimen will be in perpetuity.

Steve O’Kane: What would be worse- me taking it, or an elk taking it?

Susan S-P.: Think it through- don’t take the last one!

Jennifer Ackerman: Be inconspicuous in collecting.

Steve O’Kane: Here is the story of the name- should it really be the scrotum bladderpod? No, we will stick with West Silver bladderpod. Another anecdote- there must be another alpine Colorado *Physaria*- because there are a series of them through Colorado and Wyoming. This area is very little explored. There is very little limestone

there. But it is found on Leadville Limestone there. As for threats- it is on a large slab of tipped limestone- it is very vulnerable to climate change because there is nowhere left for it to go.

Review of Species from Previous Years (Speaker- Jill Handwerk, CNHP)

Focus: Colorado T&E, G2, and selected G3 species

Colorado T&E:

Eriogonum pelinophilum-

Gina G.: Ben Grady, from University of Wisconsin is comparing genetics of *E. pelinophilum*, *E. clavellatum*, and *E. contortum*. We recently completed a 5 year review on this species.

Oenothera coloradensis-

Ellen M.: There may be a new site in Jefferson County.

Jill H.: I believe they are out today looking for it in the Thornton Area.

Penstemon grahamii-

Peter G.: I visited it again this year at Raven Ridge. Population is the same as always. There were many visitors this year including Brian and CNAP.

Penstemon scariosus var. albifluvis-

Carol E.: I found a new location this year- no voucher specimen.

Phacelia submutica

Alicia L.: We are doing a breeding system study on this in the DeBeque area.

Gina G.: CNAP is looking at seed bank and to see if seeds are present when the plant does not emerge. The disjunct location in Garfield county is probably not good.

Gina G.: There are new locations on Horsethief Mountain.

Bernadette K.: We found at least four new sites.

Peter G.: Funding for more research in the White River.

Gina G.: There are at least 10 more locations.

Susan S-P.: It as a very narrow global range.

Ellen M.: This now proposed for listing.

Sclerocactus glaucus

Ellen M.: This is now called Colorado hookless cactus.

Jennifer R-N: We added four new plots near DeBeque, working on monitoring and genetic analysis.

Jill H.: New occurrence on the GMUG on Forest Lands.

Bernadette K.: We found at least 10 new sites this year.

Gina G.: We are updating historical occurrences.

Susan S-P.: This is the only listed G3.

Gina G.: The USFW has a recovery plan in process.

Ellen M.: Is the G3 rank still based on UT as well?

Susan S-P.: It is not, but if there are opinions we would like to hear them.

Jill H.: We need to redefine the EO Specs- if an EO constitutes a certain number of plants, many records would not qualify because there are many small populations.

Gina G.: Several new sites we found had over 8,000 plants. Many plants along CO River near the water.

Jill H.: Transcontinental pipeline went through population in 1998 and many plants were transplanted. We do not know how these are doing. A total of 20 EO's have been ranked as U.

Bernadette K.: Many populations we visited this summer consisted of 2 plants or 20 plants. It is more common to find very few individuals.

Jill H.: This is part of the conundrum in ranking this species.

Sclerocactus mesae-verdae-

Susan S-P.: Coles, Naumann, and Decker have just finished a manuscript on the long-term monitoring results of the 20 year study.

Steve O’Kane: There is a lot of this in NM.

Ellen M.: NM Fish and Wildlife has a draft of a 5 year review now.

Gina G.: The New Mexico Fish and Wildlife have reported that it is difficult to quantify the population due to fluctuations. Many populations have declined.

Susan S-P.: Key results from Coles et al. populations were stable or increasing at 2 of 3 populations. There are severe declines due to impacts from long horn beetle.

Spiranthes diluvialis-

Denise Wilson: The Golden population is down to 28 individuals.

Dave A.: I resurveyed the Wheat Ridge populations. There is evidence of decline and threats from invading *Dipsacus laciniatus*.

Ellen M.: The City of Golden is working on doing some avoidance measures for fishing.

Gina G.: There is no federal nexus for protection unless there are transportation dollars involved.

Pam Smith: Some populations in Wheat Ridge were getting over grown with willows.

Ellen M.: In Carbondale there are a moderate number of plants compared with previous observations.

Steve Popovich: The Golden site is the type locality. Downward trend there should receive attention.

G2 and selected G3 species:

Asclepias uncialis ssp. uncialis-

Steve Popovich: Looked for it at the Pawnee Nat. Grassland site this year and it was not there. We believe this site is actually on private land by about 50 feet. It has been monitored by the USFS every year since 2003 or 2004 when it was first discovered, but it has not been present above ground since the discovery year. The USFS R2 Species

Assessment cited <1000 plants total rangewide. One former USFS Regional Botanist treated it as an annual in terms of exhibiting sporadic annual above-ground expression.

Steve Olson: I have seen the occurrence at La Junta in the last couple of years. This site was going to be extirpated, but was not.

Dina C.: This species is much more plastic in the environments it grows in- it is in SGP, shale barrens, gravelly rock pavements in the PJ. It is more common in southeastern CO than elsewhere on the plains.

Steve Popovich: The plants are often connected underground.

Cleome multicaulis-

Susan S-P.: The best known populations are in CO.

Steve O’Kane: There are 1 or 2 sites in Wyoming, but probably none in NM.

Delphinium ramosum* var. *alpestre-

Tim H.: It is much higher in the Sangres. It is not uncommon. There are way more than 75 individuals.

Gina G.: Observers need to get numbers and sightings to CNHP so that the information is comprehensive.

Jennifer Ackerman: *D. ramosum* is actually a complex.

Delphinium robustum-

Mo E.: Is this near La Veta?

Jill H.: Yes.

Steve O’Kane: Five to ten locations are known in NM. I have good photos of it. The white should be yellower than it appears in the photo in the slideshow.

Draba smithii-

Steve O’Kane: I found this one in NM, not too far north of Taos. Now it is not a CO endemic. Is it really all over in the Sangres of CO?

Tim H.: Yes, it is widespread there.

Herrickia horrida-

Steve O’Kane: This should be on NM list.

Jill H.: I found new habitat and relocated some sites from the 1970s.

Lesquerella calcicola

Steve O’Kane: This should be a G4. There are quite a few dots in northeastern NM; also lots more in CO.

Nuttalia chrysantha-

Jill H.: We have a CAPS plan for this.

Nuttalia densa-

Alison Shaw: I believe I found it in Teller Co. I have voucher collections.

Penstemon degeneri-

Carol E.: I found it in Fremont Co in BLM Natural Area north of Canon City.

Steve Olson: Students are monitoring at the Oak Creek Campground.

Carol E.: They may have misidentified the plants. I think that those plants are actually *P. virens*.

Steve Olson: There are hundreds to thousands of plants at the campground.

Steve O’Kane: Is there a voucher?

Carol English: *P. virens* blooms earlier; *P. degeneri* does not bloom till July.

Ptilagrostis porteri-

Jill H.: This was found in northern NM on the Turner (Vermejo) Ranch by Ben Legler as part of his Master’s Thesis.

Steve Popovich: While visiting Ben on the ranch a few years ago, he told me it is a rather small site, and that despite additional looking he has not found another.

Steve O’Kane: It is not in their flora of NM.

Alison: Dave, Denise, Tass and I relocated the EO at Farish Recreation about a month ago.

Telesonix jamesii-

Jill H.: It may be more common than the rank reflects.

Aquilegia saximontana-

Bernadette K.: Peggy and I may have found this on Grand Mesa this year. We need to verify it at the herbarium.

Steve Popovich: We found a new small site west of Denver in the Idaho Springs area.

Astragalus sparsiflorus-

Pam S.: I found a new population south of Staunton SP, and another location.

Bolophyta (=Parthenium) alpina-

Dina C.: I found new location on the Eagle Rock Ranch in Weld Co.

Carex oreocharis-

Alison Shaw: We found more at Farish Recreation Area.

Steve Olson: In the South Platte district, someone did a widespread study on this species. They found it is actually quite common in some areas. I will send information to CNHP.

Draba crassa-

Susan S-P.: It may need to be ranked as a G4.

Jill H.: The number of individuals is low, though.

Draba streptobrachia-

Jill H.: This may need a rank change

Heuchera hallii-

Jill H.: I have been told that it is everywhere. We've found a lot in Teller County, also in El Paso County. This might get a new rank.

Nuttallia sinuata-

Steve Popovich: We found one small new site west of Loveland in an old borrow pit.

Jennifer: I think that *N. sinuata* and *N. speciosa* are the same thing. Flowers are very similar, and they have the same habit. The distinguishing character is the leaf midrib: the midrib is wider in *N. sinuata*. This is extremely variable and depends on what leaf you choose from the plant. Seed morphology is also a key character.

Susan S-P.: *N. sinuata* is known from 12 occurrences; *N. speciosa* is known from 6. If you lump it together, it would be a G4.

Phacelia denticulata-

Jill H.: Rich Scully has been working on this species, now we have good photos of it.

Gina G.: Why is this listed as a G3?

Jill H.: We need to revisit the S rank- may need to be an S2?.

Physaria bellii-

Steve O’Kane: We need to remove the southern populations from the map. This should only be known from Boulder and Larimer counties.

Dave A.: Linda Cothra did her study on this species and found that two populations in Jefferson County were hybrids. El Paso occurrence is an error.

Jill H.: If the identification is uncertain, we should denote it as “identity?”.

Potentilla ambigens-

Steve Popovich: We keep looking for this yearly but have only found one small site several years ago (found by Pam Smith). We’ve mentioned in previous symposia that I am concerned that county weed people may be spraying roadside sites thinking they are sulphur cinquefoil.

END OF SPECIES REVIEW

Announcement: Social hour is scheduled for 5 pm at Braun’s Bar and Grill.

Jill H.: If there is info you'd like to share on species we did not cover, please send it to Jill Handwerk. She will make sure that it gets out to those who included their emails on the sign-up sheet.

Wrap Up (Speakers: Susan Spackman-Panjabi, Brian Kurzel, and Steve Popovich)

Susan S-P. Panjabi: The goal of the Rare Plant Symposium is to protect these species. We are working on integrating plants into the State Wildlife Action Plan (SWAP).

Every state has a state wildlife action plan. For the first time, we are going to have a list of plants that are recognized at the state level. We are interested in having you all review this list. It will be ready this fall, 2010 and will be posted on the CDOW and CNHP websites. We are interested in getting this list out to a wide range of stakeholders and citizens. Please give us your feedback- would like to ensure that the list is as complete as possible. Threats are tied to specific conservation actions and prioritized. It would be great to get your feedback.

Brian K.: State Legislature has been able to support rare plant projects for the last three years. CNAP has another pot of funding now. If there are priority projects concerning G1 and G2 species they can help. If you have ideas with things we've talked about today, we have funding for that. Imminence of threat, conservation priority, and ability to bring soft or hard match to the table is important. The effects of energy development on the West Slope are one priority. Another opportunity is that DBG is helping to administer the rare plant stewards program. Please contact Brian at Brian.kurzel@state.co.us and Jenny at Neale.ir@botanicgardens.org.

If you are looking for other ways to get involved, we would like to move CoNPS to being more active in the conservation field.

Steve Popovich: Anyone can join on the Colorado Rare Plant Technical Committee meetings. We work on prioritizing species for action. Also, anyone can get involved in the Colorado Rare Plant Initiative. And, there are field Studies program at CoNPS. Adopt-a-species program is another way to get involved. Informal phone tree- could use this to coordinate trips among botany enthusiasts in Colorado.

Ann Henson: How do you want CoNPS to provide feedback on the SWAP list?

Susan S-P.: Review is a mandatory part of the SWAP amendment process. I am not sure how the mechanism is going to work. It probably will need to go through CDOW.

Betsy N.: October 21st is the next meeting of the RPCI, in Boulder at the TNC office. We do have a contact list for this. If you are interested in being on that list let Betsy N. or Susan S-P know. There are several possible groups/committees to participate in.

List of Participants

NAME	AFFILIATION
Ackerfield, Jennifer	CSU herbarium
Anderson, David	CNHP
Austin, Gay	USFS
Beardsley, Mark	Ecometric
Brand, Barbara	CoNPS
Bruederle, Leo	UCD/CoNPS
Clark, Dina	DBG
Cummins, Andrea	CSU extension
Danyi, Stephanie	USFS
Dawson, Carol	BLM
Denham, Miriam	Garden City Herbarium
DePrenger-Levin, Michelle	DBG
Dykgreve, Katie	CNHP
Ehrenberger, Joe	CNAP
English, Carol	CNAP
Ewing, Mo	CNHP and DBG volunteer
Ferrari, Lorenzo	BLM
Glenne, Gina	USFWS
Gordon, Peter	BLM
Goshorn, Mary	DBG
Graff, Alison	BIO-Logic
Handwerk, Jill	CNHP
Henson, Ann	CoNPS
Hogan, Tim	CU Herbarium
Houston, Heather	Western Ecological Resource
Huyett, Alison	Center for Native Ecosystems
Kesler, Jennifer	Boulder County Open Space
Kratz, Andrew	USFS
Kuhn, Bernadette	CNHP
Kurzel, Bryan	CNAP
Lane, Eric	CO Dept of Agriculture
Langton, Alicia	USFWS
Larson, Denise	ERO
Mayo, Ellen	USFWS
McGlaughlin, Mitchell	UNC
McNeill, Rick	USFS
Miller, Dave	DBG
Murphy, Patrick	Ecotone
Neale, Jenny	DBG
Neely, Betsy	TNC
O'Kane, Steve	Univ. of Northern Iowa
Olson, Steve	USFS

Popovich, Steve	USFS
Richardson, Mary	CoNPS
Richter, Sandy	CNAP
Regensberg, Pam	DBG
Rosmarino, Nicole	Western CO Earth Guardians
Shaw, Allison	CNHP
Smith, Pam	Fort Collins Natural Areas/CNHP
Spackman-Panjabi, Susan	CNHP
Taliga, Christine	NRCS
Wahle, Bruce	Consultant
Wilson, Denise	EcoPlan WRV, CNAP
Zielinski, Ann	CoNPS