2019 Colorado Rare Plant Symposium

By Lisa Tasker; CNHP

What's new in regards to southwest Colorado's globally imperiled plants? If you were one of sixty plus attendees of the Colorado Natural Heritage Program's (CNHP) Annual Rare Plant Symposium in Grand Junction in September, you know! Professionals to amateur botanists and ardent native plant enthusiasts have coveted this gathering the Friday before the CoNPS annual meeting for sixteen years.

How has this worked over the years? CNHP, under the guidance of Botany Team Leader Jill Handwerk, has always intended for this meeting to allow for data sharing. By who? By botanists usually dispersed across the state, fresh off a field season in late September, and remarkably assembled in one room for a day with their latest findings freshly on their minds.

Besides providing the opportunity for participants to learn more about Colorado's rare plants, their distribution, levels of protection, and conservation concerns, the Colorado Natural Heritage Program puts the information to work. Pertinent information gathered here goes into maintaining Colorado's most comprehensive dataset of our rare flora. The shared camaraderie and public education have been the other valuable pieces.

Reviewed this year at the symposium were fourteen G1 species, twenty-three G2 species, and twenty-five Threatened and Endangered or Candidate rare plants from Southwest Colorado, all listed in the table below. G1 and G2 species are those considered to be globally at risk throughout their range and vulnerable to extinction.

2019- SW G2 Species					
State Scientific Name	**Global Scientific Name**	**G Rank**	**S Rank**	**USESA**	**USFS/ BLM**
Astragalus anisus	*Astragalus anisus*	G2G3	S2S3		BLM
Astragalus cronquistii	*Astragalus cronquistii*	G2	S2		
Astragalus debequaeus	*Astragalus debequaeus*	G2	S2		BLM
Astragalus iodopetalus	*Astragalus iodopetalus*	G2	S1		FS
Astragalus naturitensis	*Astragalus naturitensis*	G3?	S2S3		BLM
Astragalus piscator	*Astragalus piscator*	G2G3	S1		BLM
Astragalus rafaelensis	*Astragalus rafaelensis*	G2G3	S2S3		BLM
Camissonia eastwoodiae	*Camissonia eastwoodiae*	G2	S1		BLM
Erigeron kachinensis	*Erigeron kachinensis*	G3?	S1		BLM
Eriogonum clavellatum	*Eriogonum clavellatum*	G2	S1		BLM
Eriogonum coloradense	*Eriogonum coloradense*	G2	S2		BLM
Lepidium crenatum	*Lepidium crenatum*	G2	S2		
Lomatium concinnum	*Lomatium concinnum*	G2G3	S2S3		BLM
Lupinus crassus	*Lupinus crassus*	G2	S2		BLM

Mentzelia paradoxensis	*Mentzelia paradoxensis*	G2	S2		
Oreocarya osterhoutii	*Cryptantha osterhoutii*	G2G3	S2		BLM
Penstemon mensarum	*Penstemon mensarum*	G2	S2		
Physaria pruinosa	*Lesquerella pruinosa*	G2	S2		FS/BLM
Physaria vicina	*Lesquerella vicina*	G2	S2		BLM
Puccinellia parishii	*Puccinellia parishii*	G2G3	S1		
Salix arizonica	*Salix arizonica*	G2G3	S1		FS
Thelypodiopsis juniperorum	*Thelypodiopsis juniperorum*	G2	S2		
Townsendia glabella	*Townsendia glabella*	G2	S2		
2019 - SW G1 Species					
State Scientific Name	**Global Scientific Name**	**G Rank**	**S Rank**	**USESA**	**USFS/BLM**
Aletes latilobus	*Lomatium latilobum*	G1G2	S1		BLM
Aliciella sedifolia	*Gilia sedifolia*	G1	S1		FS
Astragalus deterior	*Astragalus deterior*	G1G2	S1S2		
Astragalus desperatus var. *neeseae*	*A. desperatus* var. *neeseae*	G5T1	S1		BLM
Erigeron abajoensis	*Erigeron abajoensis*	G1G2	S1		
Gutierrezia elegans	*Gutierrezia elegans*	G1	S1		FS/BLM
Hackelia gracilenta	*Hackelia gracilenta*	G1G2	S1S2		
Ipomopsis ramosa	*Ipomopsis ramosa*	G1	S1		
Lygodesmia doloresensis	*Lygodesmia doloresensis*	G1G2	S1S2		BLM
Oreocarya revealii	*Cryptantha gypsophila*	G1G2	S1S2		BLM
Packera mancosana	*Packera mancosana*	G1	S1		FS
Physaria pulvinata	*Physaria pulvinata*	G1	S1		FS/BLM
Physaria rollinsii	*Physaria rollinsii*	G1G2	S1S2		
Physaria scrotiformis	*Physaria scrotiformis*	G1	S1		FS
2019 - T,E & C Species Statewide					
State Scientific Name	**Global Scientific Name**	**G Rank**	**S Rank**	**USESA**	**USFS/BLM**
Astragalus humillimus	*Astragalus humillimus*	G1	S1	LE	
Astragalus microcymbus	*Astragalus microcymbus*	G1	S1	C	BLM
Astragalus osterhoutii	*Astragalus osterhoutii*	G1	S1	LE	
Astragalus schmolliae	*Astragalus schmolliae*	G1	S1	C	
Astragalus tortipes	*Astragalus tortipes*	G1	S1	C	BLM
Corispermum navicula	*Corispermum navicula*	G1?	S1		BLM
Draba weberi	*Draba weberi*	G1	S1		FS
Eriogonum brandegeei	*Eriogonum brandegeei*	G1G2	S1S2		FS/BLM
Eriogonum pelinophilum	*Eriogonum pelinophilum*	G2	S2	LE	

Eutrema penlandii	*Eutrema penlandii*	G1G2	S1S2	LT	
Ipomopsis polyantha	*Ipomposis polyantha*	G1	S1	LE	
Mimulus gemmiparus	*Mimulus gemmiparus*	G1	S1		FS
Oenothera coloradensis	*Gaura neomexicana* ssp. *coloradensis*	G3T2	S1	LT	
Pediocactus knowltonii	*Pediocactus knowltonii*	G1	SNA	LE	
Penstemon debilis	*Penstemon debilis*	G1	S1	LT	
Penstemon grahamii	*Penstemon grahamii*	G2	S1		BLM
Penstemon penlandii	*Penstemon penlandii*	G1	S1	LE	
Penstemon scariosus var. *albifluvis*	*Penstemon scariosus* var. *albifluvis*	G4T1	S1		BLM
Phacelia formosula	*Phacelia formosula*	G1	S1	LE	
Phacelia submutica	*Phacelia submutica*	G2	S2	LT	
Physaria congesta	*Lesquerella congesta*	G1	S1	LT	
Physaria obcordata	*Physaria obcordata*	G1G2	S1S2	LT	
Sclerocactus glaucus	*Sclerocactus glaucus*	G2G3	S2S3	LT	
Sclerocactus mesae-verdae	*Sclerocactus mesae-verdae*	G2	S2	LT	
Spiranthes diluvialis	*Spiranthes diluvialis*	G2G3	S2	LT	

Based on NatureServe methodology, G1 and G2 ranked species are the starting point for a plant's potential inclusion in the newer Forest Service (USFS) Species of Conservation Concern (SCC) lists that are quickly replacing the older USFS Sensitive Species lists. Of the approximately 520 rare plant species tracked by CNHP, 23% fit this category of imperiled on a global level in Colorado and are eligible for USFS consideration as a species of "substantial concern." This relatively newer approach to rare species by the Forest Service makes CNHP's communication with them even more essential in recent years.

Often announced at the meeting are the newest strategies to improve our understanding of our rarest plants. This year, Dr. Jennifer Neale with the Denver Botanic Gardens shared the results of an upcoming publication addressing the genetic distinctions between the two populations of *Phacelia formosula* (G1/S1), with the conclusion that both the North Park and Laramie River populations are the same species. Dr. Mit McGlaughlin, with the University of Northern Colorado, reported he is beginning genetic sampling in 2020 to determine the genetic fitness of *Mimulus gemmiparus* (G1/S1), a factor critical in a species' response to climate change. Dr. McGlaughlin and others voiced concerns that *M. gemmiparus* may not reproduce sexually in the wild, an obvious disadvantage especially for a rare plant.

Dr. McGlaughlin has also done extensive genetic work on *Sclerocactus glaucus* (G2G3/S2S3) and *S. parviflorus* (G4/S3) revealing information critical to understanding the geographic range of populations, and essential to conservation strategies. The important but frustrating take-away

for both *Sclerocactus* is the curve of the spines or their absence, are not good morphological features for field identification.

Jill Handwerk announced the start of a pilot study utilizing a drone for *Penstemon debilis* (G1/S1), a plant colonizing steep shale talus-covered slopes. This is a first for Colorado, thanks to the efforts of Raquel Wertsbaugh of the Colorado Natural Areas Program. Researchers who have literally risked life and limb to track plants are undoubtedly thrilled. A drone can obviously cover steep sites that have historically been inaccessible. The potential for new findings and fun photography seems considerable.

Pam Smith, a botanist with CNHP, orchestrated the afternoon session and everyone gained insights into the importance of the Floristic Quality Assessment (FQA) project. Through CNHP, Pam is leading the charge to cover the remaining 800 or so plants that were not given what is called a coefficient of conservatism, or C-value, during the first efforts in the 2000's to complete an FQA database for Colorado.

The FQA index reflects a plant's fidelity to a natural area or how obligated it is to a high quality habitat versus its tolerance to landscapes with anthropogenic disturbances. On a one to ten scale, a plant with a value of one resides almost exclusively in highly disturbed sites (e.g. *Helianthus annuus*). A value of ten would reflect a plant wholly found in undisturbed, intact habitats (e.g. *Erigeron kachinensis*). Work continued on October 18 with Pam organizing a panel of experts invited to Fort Collins to assign the remaining evaluations.

CNHP is now planning the next Rare Plant Symposium to ensure it stays lively and well attended as it has for sixteen years. So look for an even more alluring gathering for 2020!

For more information:

All of the information from this meeting as well as previous symposia (2004-2019) is available online at the Colorado State University, Colorado Natural Heritage Program (CNHP) website: https://cnhp.colostate.edu/projects/colorado-rare-plant-symposia/.

For more information on the FQA efforts, contact pamela.smith@colostate.edu

View the Colorado rare plant guide here: https://cnhp.colostate.edu/library/field-guides/

The Rare Plant Symposium is open to anyone with an interest in the rare plants of Colorado. For more information contact Jill Handwerk at jill.handwerk@colostate.edu and check the CoNPS website (www.conps.org) for details as they become available for the 2020 symposium.