



Sego Lily



Newsletter of the Utah Native Plant Society

Winter 2020 Volume 43 Number 1



Utah Rare Plants in 2019	2
UNPS Rare Plant Meeting	5
Save Western Monarchs	6
UNPS Grant in Aid Program	7
Canyonlands Chapter	8
GNPP Meeting	8

Utah Rare Plants in 2019

by Tony Frates and Robert Fitts

On November 23, 2019, the UNPS rare plant committee held a ranking meeting which was held at Red Butte Garden prior to the organization's annual meeting. Ranking meetings are typically held annually to discuss the latest status of rare plants that may be of concern to agencies or to the general public and that we may have identified since the last meeting (held October 2018) that are of concern as a result of new discoveries, new threats, recently published research, and the like.

The initial discussion at the November meeting focused on the potential impacts of the Uinta Basin (UB) Railway. Two Duchesne County routes have been proposed with some related minor proposed subroutes. One would go through Indian Canyon and would also parallel Highway 40 for a significant distance. Another route dubbed Wells Draw would pass through Argyle Canyon and go through an entirely different section of Duchesne County. Species of concern include the ESA listed *Lepidium barnebyanum* which could be somewhat significantly impacted by the Indian Creek route and its occurrences further isolated. Both of the Duchesne County routes may then potentially connect to a proposed Craig route that could impact any number of other species in Uintah County including listed and sensitive species (depending on the exact routes that are chosen) as it then potentially proceeds into Colorado and enters that state very near an important plant area.

The UB Railway project is significant in size, will have significant impacts, and could cost as much at \$1.5 billion.

BLM sensitive species that could be impacted include:

Astragalus equisolensis (see additional discussion below)

Astragalus hamiltonii (see additional discussion below) considered for listing and denied

Cryptantha barnebyi

Cryptantha grahamii

Erigeron untermannii (occurs in Indian Canyon)

Hymenoxys lapidicola (Jensen area – treated under *Tetranneuris torreyana* by Flora of North America (FNA))



Astragalus equisolensis habitat. Photos by Tony Frates.

Mentzelia goodrichii (occurs in Argyle Canyon – see discussion below)

Phacelia argylensis (Argyle Canyon see discussion below)

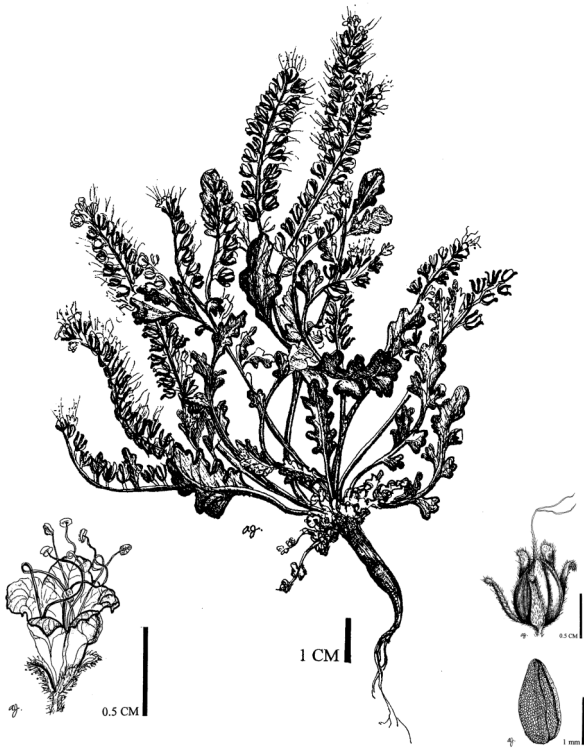
Thelesperma caespitosum (occurs in Indian Canyon – but has taxonomic questions and is being included by FNA under *T. subnudum*)

Yucca sterilis

Other rare restricted endemics that could be impacted (by no means necessarily a complete list) which have little to no federal or other protection:

Boechera duchesnensis

Penstemon duchesnensis



Drawing of *Phacelia argylensis* (Argyle Canyon phacelia) by April Jensen and commissioned by UNPS as part of the Utah rare plant guide project. This was the first illustration of the species, and was reviewed by the primary author of the species (Dr. Duane Atwood).

Penstemon flowersii

Plants specifically discussed including those that had changed scores and/or ranks were (listed in the order in which they were discussed; unk=unknown):

Phacelia argylensis – intrinsic rarity changed from 0 to unk, threat severity has increased (already ranked as 1). Changed from High to **ExHigh**. Was scored at the “high end” of the High category which is why the intrinsic rarity bumped it to a higher category because of how the scoring works which takes an average of the minimum and potential scores. Previously it had scores of 6 and 7 (minimum and potential points, respectively) or an average of 6.5 which is then rounded down (per our scoring protocol) to a 6 (High). But with the unknown factor now in the mix, the scores go to 6 and 8 averaging to 7 placing it into the ExHigh category.

Threats include not only the Uinta Basin Railway proposal but also erosion as a result of fires above its habitat and likely herbivory and previously identified private home construction. May be one of the rarest plants in Utah. More surveys and pollination studies are needed.



Mentzelia goodrichii habitat. Photo by Sherel Goodrich.



Mentzelia goodrichii. Photo by Sherel Goodrich.

Mentzelia goodrichii - threats changed from 0 to 1 and intrinsic rarity from 0 to unk.

Threats include the Uinta Basin Railway proposal in Argyle Canyon. Intrinsic rarity factors have not been studied. Changed from Watch to **ExHigh**. Previously this taxon was ranked at the high end of Watch status

and had scores of 5 and 6 (minimum and potential, respectively) or 5.5 rounded down to 5 (Watch). The changes made put its scores as 6 and 8 or an average or 7 (ExHigh).

Astragalus equisolensis – trend changes from unk to 0. Number of individuals changed from 1 to 0. Range of 2 is questionable given the normal definition for the category, but the second location that would put it out of the range of being a global vs. regional endemic involves a small, restricted occurrence and for now range as been left as a 2. Changed from High to **Watch**.

Astragalus hamiltonii - trend changed from unk to 0. Number of individuals remains low.

Potential score reduced, but overall remains as **High**.

Astragalus desereticus - intrinsic rarity changed from unk to 0 (has high seed/seedling production, and seems to be pollinated by *Bombus* and does not appear to be pollinator limited even though its pollination ecology has never been studied). Downward trend and existing threat rankings appear to still be justified. Additional threats relate to PJ chaining with trees left directly on plant habitat. Huge fires occurred nearby but apparently did not impact the habitat of this species. Private property that includes habitat where plants are found is still for sale as far as is known, and the area continues to grow.

Potential score reduced, but overall remains ranked as **ExHigh**.

Eriogonum natum - number of individuals change from unk to 1 based on most recent surveys, threats changed from unk to 1 (trend remains unk). Changed from Need Data to **High**.

Astragalus striatiflorus and potential sand fracking concerns were discussed – already assigned a 1 for threats and its **High** priority status was not changed since its trend remains unknown.

Eriogonum mitophyllum – efforts to grow seeds have been unsuccessful suggesting an intrinsic rarity factor. Int rarity changed from Unk to 1. A high level of threats remain. Trend remains unknown.

Minimum score increases; species remains ranked as **ExHigh**.

Aliciella tenuis – while it is expected that *Gilia karenae* will be moved here pending ongoing studies and future publications, this taxon remains quite rare and mining threats have been identified. Threat changed from unk to 1.

Minimum scores raised, remains ranked as **High**.



Eriogonum natum in habitat. Photos by James Reveal

Cypripedium fasciculatum – threats may be escalating due to logging/aspens restoration proposals and/or as a result of timber removal as a result of fires, and should stay as a 1. Trend elsewhere may be downward but remains unknown for Utah. Plants may also occur in Cache Co. but not documented.

Scores unchanged, remains as **Medium**. If trend is down and depending on any reduction from logging or other impacts, could change to Watch.

Some additional taxa were identified as needing to be potentially added to the list which will be added to the on-line notes for future review as well as taxa that have had taxonomic changes or for which there has been newer research. Several rare mosses and lichens will also be added to the list for future review.

Extremely high priority rankings have increased significantly since 2016.

As a result of ongoing reviews since 2016, the total number of plants now ranked as “extremely high” has risen from 38 to 50. Some of this increase relates to new discoveries but primarily from new threats. All 50 taxa are either local or regional endemics. Plants

ranked as “high” have decreased slightly from 142 to 139 in that same time period. Roughly 6% of Utah's vascular flora falls now into “high” to “extremely high” priority conservation categories as evaluated by the UNPS rare plant committee utilizing the ranking

methodology developed by our former board member, Walter Fertig, which we have been using since 2009.

More information:

<https://www.utahrareplants.org>

Utah Rare Plant Meeting 2020



Tuesday, March 3, 2020

Swaner Forum

Natural History Museum of Utah

Register online

<https://www.unps.org/urpm2020.html>

co-sponsored by

Utah Native Plant Society and

Garrett Herbarium of the Natural History Museum of Utah

Schedule: Check-in/setup/light breakfast **8am-9am**; Meeting/presentations **9am-3:45pm**

Where: **Natural History Museum of Utah**, Swaner Forum, 301 Wakara Way, Salt Lake City, UT

Cost: **\$25*** (includes light breakfast, catered lunch, and beverages)
(*Students/Presenters: \$15)

Who should attend? Researchers, students, federal/state/local agency personnel, consultants, and the **public** are welcome to attend and present.

Register: See **on-line registration** above. Participants can pay at the door, however, space is limited and cannot be guaranteed, and lunch options may be limited or not available. No discount will be provided for partial day attendance nor omission of lunch as a result of not pre-registering. Students must be currently attending school on at least a half-time basis to qualify for the lower rate.

Eriogonum soredium Photo credit Daniela Roth

<http://swbiodiversity.org/seinet/taxa/index.php?taxon=73891>

An iconic migration is on the verge of collapse. We must all do our part to save western monarchs!

by Rachel Taylor

Once, millions of monarchs overwintered along the Pacific coast in California and Baja, Mexico—an estimated 4.5 million in the 1980s. But by the mid-2010s, the population had declined by about 97%, and starting in 2018, monarch butterflies had tough seasons in their migratory and breeding grounds in the western states, **including Utah**. In the past two falls, the annual Xerces Western Monarch Thanksgiving Count showed that the population hit a new low: In both 2018 and 2019, volunteers counted under 30,000 monarchs—less than 1% of the population’s historic size.

While these numbers are alarming, the real issue is the longer-term monarch decline due to stressors such as habitat loss and degradation, pesticides, and climate change—as well as other pressures on the migratory cycle of the monarch that we still have yet to fully study or comprehend. There are no quick fixes to solve all these large and complex forces, but we can still take actions NOW to help save the western population.

The decline in the western monarch population from the 1980s to the present can be hard to conceptualize. Here we draw the comparison between Los Angeles (human population 4 million) and Monterey (population 28,000), to approximate the scope of the decline from 4.5 million monarchs in the 1980s, to about 29,000 today.

The **Western Monarch Call to Action**, led by the Xerces Society for Invertebrate Conservation, aims to provide a set of rapid-response conservation actions that, if applied immediately, can help the western monarch population bounce back from its critically low overwintering size. We recognize and support longer-term recovery efforts in place for western monarchs such as the Western Association of Fish & Wildlife Agencies (WAFWA) plan and Monarch Joint Venture (MJV) implementation plan. The goal of this call to action, however, is to identify actions that can be implemented in the short-term, to avoid a total collapse of the western monarch migration and set the stage for longer-term efforts to have time to start making a difference.

The five key steps to recovering the western monarch population in the short term are:

1. Protect and manage California overwintering sites
2. Restore breeding and migratory habitat in California
3. Protect monarchs and their habitat from pesticides
4. Protect, manage, and restore summer breeding and fall migration monarch habitat outside of California
5. Answer key research questions about how to best aid western monarch recovery

If you have interest in getting more involved in helping the cause of the monarchs by identifying where we have breeding habitat in Utah, helping to protect and enhance that habitat, or adding additional breeding habitat (which includes nectar sources for all pollinators), contact Rachel Taylor, Research Associate for Southwest Monarch Study at monarchsnotinutah@gmail.com or 801-652-9841.

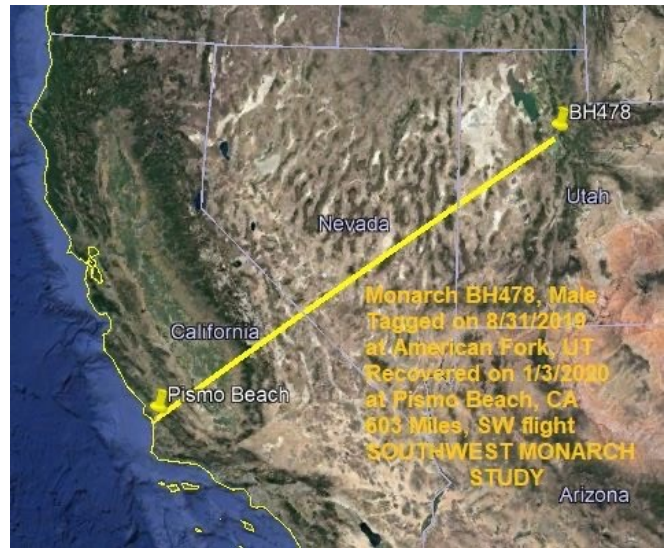


Monarch photo by Craig Corwin

On August 31, I invited Hilary Whitcomb, a wildlife biologist from the Utah Department of Fish and Game and joined Blake Wellard and Kendra Babitz at a site in American Fork to attempt to tag monarchs in the wild. We do this as part of a study of monarch migration, being conducted by Southwest Monarch Study. As you can imagine, there are sites around Utah Lake that offer the type of habitat monarchs require for breeding: ample milkweed and nectar plants. This site is former horse property, slated for development-- however is the most ecologically diverse wetland area -- and filled with *Asclepias incarnata* and Joe Pye Weed (*Eutrochium*

maculatum var. *bruneri*), among many other plants. We were able to tag about a dozen monarchs that day, which were netted, tags attached, data recorded and the monarchs were set free.

On January 3, one of the male monarchs we tagged was spotted in Pismo Beach, California – the largest monarch overwintering site in the state. This male monarch traveled 603 miles southwest, and was captured mating (very early for this!). Hopefully this spring, a female partner of his will make her way inland and future generations will again enjoy the most hospitable breeding habitat I am aware of in Utah. We are currently working to get this site protected, so are not releasing the location at this time. If you would like to get involved with tagging monarchs in Utah for studies through Southwest Monarch Study, please contact me. We tag from mid-August to the end of September throughout the state.



<https://xerces.org/western-monarch-call-to-action>

Utah Native Plant Society Grant-in-Aid Program

by Raven Reitsstetter

The application window for the Utah Native Plant Society Grant-in-Aid program is open for the year 2020. The main target population are students at institutions of higher learning. However, faculty and citizen scientists are also welcomed to submit proposals for scientific research projects. Grants will be awarded for research projects or educational programs that focus on Utah's flora with an emphasis on rare and/or endangered plants. Please see the UNPS website for details <http://www.unps.org/PAGES/grantprogram.html>

The deadline for proposal submissions is April 15 2020. Applicants will be informed about the grant committee's decision by the end of May. Please send inquiries about the program to grants@unps.org

Last year we funded two research projects ranging from plant molecular biology to genomic investigations.

Jennifer Ackerfield from Colorado State University is studying the phylogenomic relationships of *Cirsium ownbeyi*, *C. rydbergii*, *C. virginense*, three native thistle species that are found in hanging garden environments of the Colorado Plateau geographic area. The technical approach she is using comprises of next generation sequencing, a powerful molecular biology technique that has found an ever increasing field of applications. Jennifer will focus on plastid genomes for sequencing

with subsequent generation of plastid trees to infer phylogenomic similarities/dissimilarities among the three thistle species as well as sister species from adjacent montane and alpine plant communities. Furthermore, Jennifer will collect *Cirsium* distribution data from existing databases and couple that information with edaphic information in order to develop an ecological niche model for the current distribution of this species. Once the model has been validated distribution analyses can be extended to past climate conditions on the Colorado Plateau, an approach that can shed light on glacial refugia theories for plant distribution.

Israel Borokini from the University of Nevada at Reno is investigating genome size in *Ivesia* at the cellular level. He is collecting leaf samples from a variety of *Ivesia* species in the western US, to include Utah endemics *Ivesia utahensis*, *I. shockleyi* var. *ostleri*, and *I. gordonii* var. *wasatchensis*. Tissue samples are analyzed for genome size using flow cytometry, as well for ploidy level and chromosome number with karyotyping. Israel will conduct statistical analyses of inter- and intra-species variation of these parameters with abiotic environmental variables (such as climate and soil conditions) as cofactors. Since variation in genome size has been hypothesized as a driver for adaptation strategy, distribution and speciation of plants, Israel's findings promise to shed some light on speciation through adaptive radiation of the relatively young genus *Ivesia*.

Both grant recipients plan to share their findings in upcoming Sego Lily articles and possibly at a future UNPS Rare Plant Meeting once their projects come to a conclusion.

Canyonlands Chapter Report

by Diane Ackerman

Canyonlands Chapter UNPS January 2020 meeting.

Canyonlands chapter met recently in Castle Valley to celebrate our new field trip coordinator, Joan West, and to entertain our annual seed exchange. Joan has some experience planning field trips with school children within Arches National Park Canyon Country Outdoor Education Program. Exposing Moab's children to park trails and outdoor instruction has created a new and fresh perspective. Prior to the program, Joan quoted a study which pointed out a majority of Moab kids had not visited Arches National Park. Joan's enthusiasm grows because she has seen the birth of environmental ethics in school children. The students show significant behavior and value changes and have developed a love and respect of nature and the natural world which they carry into adulthood. This is indeed a "win-win" for the future of a place we all call home.

Entering its second growing season, our chapter's new "Native Plant Heritage Garden" may present opportunities for community-wide environmental educational venues while promoting Moab's recycle center. At the end of the day, we all benefit from these conversations.

Canyonlands Chapter UNPS February 2020 meeting.

The February UNPS meeting will be held on Tuesday, February 25th at 6:45 pm. This month we'll be deviating from the usual member-hosted potluck. Instead, our meeting will be part of a presentation for the community at large, held at the Library's large meeting room (just right off the lobby as you enter).

This month's topic – 2018 Juniper Dieback in the Four Corners Region - is timely, and has received some notice from the press. At this meeting, local National Park Service Ecologist, Dana Witwiki, will be sharing the work she has been doing with forest health specialists and researchers to learn more about juniper tolerance to drought, insect attacks, and conditions on the landscape that can exacerbate drought conditions.

Bio: Dana Witwicki is an ecologist with the National Park Service's Inventory and Monitoring program in Moab, UT. She's been leading their vegetation and soils monitoring program in parks across Utah and western Colorado since 2008, including in pinon-juniper woodlands throughout the region. Her work focuses on evaluating the health of plant communities, detecting management-relevant changes, and understanding how climate drives changes we see on the landscape. She has a B.S. in biology from Cornell University and a M.S. in environmental sciences from Oregon State University.

This promises to be an informative and interesting presentation. Hope to see you there.

2020 Colorado Plateau Native Plant Program Annual Meeting

by Adrienne Pilmanis

The Colorado Plateau Native Plant Program (CPNPP) Annual Meeting will be held February 25-27, 2020 in Vernal, UT at the Uintah Conference Center. This year's focus is **Native Plant Materials Development and Use in Reclamation and Restoration**. Meeting schedule is available here: <https://www.unps.org/miscpdf/CPNPP2020.pdf>

The meeting gathers a wide variety of stakeholders including seed producers, researchers, restoration practitioners, and land management agencies with an interest in the development and use of native plant materials in reclamation and restoration. Private citizens are welcome.

Registration remains open and the meeting is free. Email Rhianna James (rejames@blm.gov) with your name, affiliation, and contact information.

Late poster submissions, table/booth space, and requests to host refreshments may be sent to Adrienne Pilmanis at apilmani@blm.gov.

We hope you can join us!

An Evening of Butterflies and Flowers



Photo Credit: Rachel Taylor

The Colorado Plateau Native Plants Program invites you to attend three lectures on butterflies and rare flowers.

Life histories of Butterflies of the Colorado Plateau: Todd Stout, Lepidopterists' Society

Since the late 1980s, observations of locally common butterflies of the San Rafael Swell have sharply decreased. Since host plants are abundant, what is the cause of this decline, and what can be done?

Finding Utah's Role in the Western Monarch Butterfly Population: Mindy Wheeler, Utah Division of Wildlife Resources

Monarch populations have been declining for several decades, and Utah is an important stop on their winter migration route. Learn what the Utah Division of Wildlife Resources is doing to help, and how you can get involved too!

Flowers' Penstemon: A Rare and Beautiful Utah Plant Under Pressure—Lisa Boyd & Colleen Jones

Flowers' penstemon is a rare plant indigenous to the Myton, UT area. It occurs almost exclusively on tribal and private lands and has no protection. What steps can be taken to protect it?

Who is invited?

Everyone! The event is free and open to the public.

Where is it?

Paradise Banquet Hall
Uintah Conference Center
313 E 200 S
Vernal, UT

When is it?

February 26, 2020
7 PM

Questions?

Email Rhianna James at
rejames@blm.gov



Photo Credit: Todd L. Stout

Ackerman's Green Gentian Site Visit and Scenic Hike



Curious about rare plant conservation? Come visit the only documented location of Ackerman's Green Gentian (*Frasera ackermaniae*).

This strikingly colorful and eroded valley, located just half a mile from UT-191, faces development pressures from increasing recreation from nearby trail-building and mining developments within a mile to the north and south of the site. Site monitor Tom Elder coordinates with the Bureau of Land Management to conserve this species, and will discuss the measures being taken to ensure this beautiful plant will be enjoyed by future generations.



February 27, 2020 (weather permitting)

Meet at 9 AM outside the Uintah Conference Center and travel to site as a group
313 E 200 S
Vernal, UT



Questions?

Contact site monitor Tom Elder (tomelder@easilink.com) for information about the species or logistics

Above: pictures of Ackerman's green gentian. Left: volunteers flag locations of individual plants for species inventory.

Photo credit: Linda West

Your Membership

Your membership is vital to the Utah Native Plant Society. It is important that your information is correct and up to date for notifications and the delivery of The Sego Lily newsletter.

Any questions about your membership, Contact Bill Gray, cyberflora80@gmail.com.

As we look forward to spring... It is time to consider another issue of the Utah Native Plant Society *Sego Lily* which relies mostly upon articles from the society's membership. Please submit articles of your native plant stories and photos from hikes and field trips, conservation activities... whatever might be informative and interesting to fellow members.

The *Sego Lily* editors can use most any text format for articles (dislike PDF). Photos are always best submitted in original resolution and as individual files separate from text. You can indicate desired positioning within a document. We are looking forward to hearing from you. For submissions and/or questions: newsletter@unps.org or cathy.king@gmail.com.



Utah Native Plant Society

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Webmaster: unps@unps.org

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- Utah Valley:** Susan Sims

Website: For late-breaking news, the UNPS store (posters, etc.), the *Sego Lily* archives, Chapter events, sources of native plants, the digital Utah Rare Plant Field Guide at unps.org.

Webmaster inquiries at unps@unps.org

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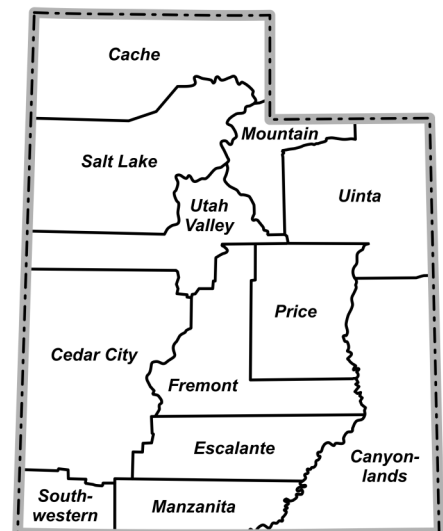
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The *Sego Lily* is a quarterly publication of the Utah Native Plant Society, a 501(c)(3) not-for-profit organization dedicated to conserving and promoting stewardship of our native plants.

UNPS Chapter Map



Utah Native Plant Society



Utah Native Plant Society
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Salt Lake City, UT 84152-0041

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