



# Sego Lily

*Newsletter of the Utah Native Plant Society*

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## Something is in the Dirt: *Pediomelum pariense*'s last foothold in the Grand Staircase Escalante region

by Aljexi Olson

*Editor's note:* This article is part 1 of 2 articles, Dr. Ashley Egan will publish a follow-up article in the next issue. Both Aljexi Olson and Dr. Ashley Egan were recipients of UNPS research grants to study *Pediomelum pariense*.

I began my junior year of my bachelor's degree in Spring 2021 with a burning passion and something to prove. I'll be the first member of my family to graduate college, and I plan to complete a Ph.D. Though a doctorate is still many years off for me, I know that one of the most important steps for an aspiring academic is to get involved in research and publications as soon as possible. Armed with hopeful intentions, nervous excitement, and a thousand questions I began my journey to break into the world of publications and research.

It all started with an offhanded comment I made about my desire to get involved in research within my introduction video to my Biology 1010 class taught by Dr. Ashley N. Egan at Utah Valley University. Dr. Egan commented on my post and invited me to interview to join a cross-specialty project she was heading. It was in this interview that I learned about the plant *Pediomelum pariense*.

*Pediomelum pariense* - commonly known as the Paria River Breadroot - is a small legume from the Fabaceae family. The most eye-catching part of this plant are its teardrop-shaped leaves with striking white veins, making it stand out against the light pink sand where it is commonly found. Taking a closer look we can spot the fuzz coating the stem and leaves along with the violet flower bunches radiating out from the center. Lastly, hidden under the soil, its long tubular roots anchor each individual into the gravelly-dry soil of the Grand Escalante Staircase region.

Besides its unique beauty, I would admit that I am most fascinated by the endemic nature the Paria River Breadroot occupies in the region of Kane and Garfield counties. Located strictly in the Claron and Carmel

rock formations of the Escalante, these plants are not found anywhere else in the world, making them a Utah treasure and a great study system for research. However, with only thirteen known populations, *Pediomelum pariense* faces a serious threat of extinction as the pressures of human development, harsher and longer droughts, and shrinking habitat increase with every passing year.

As a geology major, I was and still am quite limited in botanical knowledge, yet even with this limited experience I can say that I felt that I could aid Dr. Egan in characterizing the habitat and needs of *Pediomelum pariense* compared to the last time it was examined by Dr. Egan about fifteen years ago, perhaps discovering the connection between this legume and its chosen habitat.

By joining the *Pediomelum pariense* project, I was able to work alongside Dr. Egan and my geology adviser, Dr. Stearns. It all started with a simple question: "Why does the Paria River Breadroot grow where it does?"

With the observation that *Pediomelum pariense* only lives on Utah limestone formations, one might hypothesize that the soil creates the conditions for this plant to thrive. The Claron rock formation (the uppermost step) consists of two informal members: an upper white limestone member, and a lower pink member (Davis & Eves, 2002). Meanwhile, the Carmel formation consists of gray limestone commonly referred to as the Gray Cliffs (Doelling et al., 2000). Looking at the two landscapes, there's a strong possibility that limestone is important to the development of the Paria River Breadroot. However, if that were the only requirement for the Paria River Breadroot to thrive, it would grow all over the two steps. So why doesn't it? Perhaps it is because *Pediomelum pariense* needs a mixture of two or more soil types to create habitable soil chemistry. Perhaps there is something unique about these soils that *Pediomelum pariense* needs.

We decided to test our hypothesis by gathering soil data. By characterizing the soils, we could, in theory,

Cover photo by Aljexi Olson : *Pediomelum pariense* in bloom.



Aljexi Olson collecting soil samples at the 'Walter Fertig' population beside surviving individuals of *Pediomelum pariense*. Photo by Dr. Egan.

craft a geochemical conservation and rehabilitation map. With this map, we could find suitable places to start new populations or find previously undiscovered populations by comparing our data to that of publicly available rock formations and chemical data such as those collected by the National Geological Society.

To achieve this geochemical map, we would need to collect an array of soil from all thirteen known populations, plus several control samples for accurate testing. This would be done by measuring each of the population's surface areas and dividing each of them into two or three roughly equal transects. Then by taking 7-10 core samples (about six to twelve inches deep, one-inch wide) per transect, we were able to collect two cups for soil geochemical analysis at the BYU Environmental Analytical Lab. The results of the transects chemical makeup could then be compared

across all transects to identify trends and outliers to help characterize the soil geochemical aspect of the *Pediomelum pariense* niche.

When the months of planning and grant applications ended, we set off to the Grand Staircase region. Listening to Dr. Egan explain her other expeditions to southern Utah, China, and many other places for other field missions, I began to theorize how the work would go as this was my first ever field research mission. With my limited knowledge of this rare plant and botany, I personally expected to see an increased number of healthier specimens within limestone-rich soils, hypothesizing with my professor if the plant's strong white pattern might share some correlation with the calcium found in the limestone. I also quite naively expected these populations to be standard and manageable, as looking at data points on Google Maps



Aljexi at the Poverty Flats population collecting soil samples with a soil prob kit. Photo by Dr. Egan .

had only given me a glimpse at how far-reaching this plant would be. Yet, most of all, I expected that the march of human development would have made the populations smaller and easier to get to. However, all those naive assumptions were swiftly given a very harsh reality check.

Upon arrival to our first location, the 'Walter Fertig' population, named in honor of its discoverer, the three of us set off on what would be our first of many VERY long hikes. Down the rather sandy road, we stepped under the beating rays of a mid-afternoon sun following our GPS units until the trail turned and our marker did not. From there we began our climb up the steep gravelly hills. At first, I noted the beauty of the nature around me. Ponderosa and pinyon pines stretched overhead, periodically blocking the sun. Meanwhile, scraggly bushes pushed through the rocky terrain underfoot. Yet, being a geologist, my eyes were glued to the ground, noting the stones that splintered off in large sheets and made our trail up to the Carmel

limestone formation slow and treacherous. My initial excitement was beginning to wane after that first hour passed on that slope, until we finally came to the top of our mesa and my heart was racing once more with the thrill.

When we breached the slope and came to the end of the treeline my heart at first was exhilarated. We were merely fifty or so meters from the location ping and our prize was surely just beyond the treeline. Yet, as soon as I realized what was beyond me, I was faced with my first reality check and heartbreak of the trip. The entire hilltop had been stripped of all plant life. Large tire marks had crushed what was left of the drying pines and shrubbery into the now disheveled dirt. This was not good. Our team raced across the hilltop to our pin searching for any signs of the plant we'd come for.

The excited whoop that split the air came from our eagle-eyed professor who spotted the first legume to the far west side of the clearing. Joining her side, she pointed out the distinct characteristics of the little survivor, and I realized that this was the first time I'd ever seen a specimen in person. Taking note of the specimen proportions I was nearly brought to tears at the realization of months of work coming to fruition. Then there was another, and another and as we tracked the area we found a small population of *Pediomelum pariense* hanging on through the trauma that had just befallen its habitat. A small celebration was held followed by a quick lunch break as I sat down for my first field entry.

My eyes were focused hard on the dirt as I jotted my field journal, like any good aspiring geologist. The soil was "loose", composed of limestone chunks ranging from two centimeters to three inches in length. The hue was a light pink, a mixture of the limestone and sandstone that we'd hypothesized. Yet after all my careful notetaking, I angrily scribbled the words. "May be unreliable due to recent human development." As Dr. Egan told, we must have a scrutinizing eye and not jump to celebrate just yet.

As we hurried off to our next population known as Poverty Flats, I was relieved to find the soil following a similar appearance to our first stop, this time without the havoc of recent deforestation. That said, this location had some differences that caught my attention: the soil consisted of a much more defined gravel texture wherever the Paria River Breadroot grew.



Alexi traveling to No Mans Mesa population, a quarter of the way there! This photo was taken by student researcher Ciro Mattina.

This, unbeknownst to the group, was the foreshadowing of many tough days of soil collecting as *Pediomelum pariense* seemed to prefer loose gravelly soil - a soil texture which was not the most suitable for the soil probe kits we had brought and which made for many long hours of back-breaking soil collection. Secondly, I began to note that the soils were not nearly as mixed as I expected them to be, usually being loosely mixed in distinct conjoined areas, or layered one on top of the other. I note this as I am curious if the exposure to the variety of mixtures and layering affects the overall health or growing speed of individuals. Further study is needed.

On the third day of our research trip, we came to Co-op Creek - a mesa with a fairly level top sporting a diverse set of desert flora natural to the region but cut by the ATV trail that looped along the edge of the cliff face. We found *Pediomelum pariense* growing along the western and southern sides, its progression

occasionally stopped by natural barriers of sand or large congregations of other desert plant life. Strangely enough, we found patches of *Pediomelum pariense* continuing past these natural barriers by growing along the previously mentioned ATV trail.

Thriving in the compacted, craggy dry light pink limestone, sandstone ecotone, this time core samples reflected soils with sandy texture (between 0.075 mm and 4.75 mm) and more easily distinguished layers. Often fading from the pink sandstone to a white or gray silty texture (<0.075 mm) limestone cap. It was here Dr. Egan hypothesized that *Pediomelum pariense* may be adapting to human development by using the ATV trails as dispersal corridors. Free of natural barriers like sand pits and competition with other plants, the Paria River Breadroot could be using this long stretch of open space to spread its seeds through the likes of natural winds and those generated by ATV traffic. The plant's habit also leaves optimal room for this environment, sporting flat leaves and flexible stems; individuals could withstand being run over before bouncing back to their original state.

Speaking of durability, it was several days later located atop a mesa that required a near-vertical 900 foot ascent, we came to what ended up being my favorite site. The aptly named No Mans Mesa population boasts an area with the unique trait of being mostly undisturbed from human interaction, pollution, and development, in spite of one Lewis Jepson who grazed over 700 goats atop the mesa back in 1927, and whose legacy still remains in the dilapidated fencing and tin can heap near the goat trails used to access the mesa top. With this isolation, interesting effects could have been gleaned from the genetics of these specimens as well as the soil they grew in.

*Pediomelum pariense* grew along the north east-facing slopes of No Mans Mesa, comfortable amid the textured soil we'd come to expect with each population. Yet in place of the light pink hue that I'd grown accustomed to, a muddled brown-pink had taken its place.

This color change was also found in the populations we named Tank Canyon, Deer Spring, Calf Pasture, and Lick Wash. Taking a closer look, I noticed that the limestone had changed from its natural white to a dull yellow, almost tan color.

Though I am still uncertain as to the color change of the sandstone and what effects it may have chemically, there are a few reasons limestone can turn

yellow. First, I was curious if this yellow color indicated a chemical change to the formula. Perhaps the introduction of trace amounts of sulfur or some other element had caused the discoloration. Yet after discussing the matter with Dr. Stearns, my geology professor I consulted with for guidance, I have come to believe this change may be linked to excessive moisture. Many of the core samples from these sites possess a “moist” texture. These areas, due to the surrounding layers, may lack the drainage we see in other locations that lack the yellow moist limestone.

In the future, I would be interested in seeing if the water retention of the soil affects the growth speed and overall health of the Paria River Breadroot in these areas, and is definitely an area that needs further study.

Last but not least, we accessed the location for which the plant is named: the Paria View population. Unlike the other twelve populations, Paria View sits over 1000 feet higher in elevation than the others atop the Claron limestone formation and resides in a forest of tall healthy pines. What did this mean for *Pediomelum pariense* and the soil? For the plant itself, I noticed a drop in the average size of each specimen we collected, with the majority of plants being under four inches in length. This could have been due to a variety of reasons: elevation, the soil, temperature, and possibly even more factors that I am not aware of at this time.

At Paria View, we found soil that matched most of the *Pediomelum pariense* populations with sandstone and limestone chunks starting at 4.75 mm and ranging well into the gravel texture range. Yet the most interesting find, lay under the detritus of the trees where some of these plants made their home. A thick defined layer about four to seven inches deep under that layer of leaves was a dark gray layer of soil with a texture that was something much more akin to potting soil than what I had seen for other Paria River Breadroot locations. This change is likely due to the different soil formation, the significant increase of detritus, as well as the retained moisture in the area which was documented to be notably higher. Considering Dr. Egan's work, I am very interested to see if there are any unique genetic factors that allow the plant to grow here and what those changes might tell of the future of this legume when facing extinction.

In those two weeks, I discovered what it was like to truly be involved in research as I faced and overcame many intimidating firsts that I will never forget. Yet as joyous an occasion it is to be at the end of this fieldwork, I am once again faced with a new feeling: an

intense worry for what will become of the Paria River Breadroot. Through the prep, the expedition, and the aftermath I now am painfully aware of just how dire things are for *Pediomelum pariense*. With an extremely small overall range, one would think this plant deserved a place on some kind of endangered list or fall under some kind of protection order. To date, this is not the case. Many of these populations face drought and raging wildfires that rip through BLM land, in addition to the development of resort areas and recreational trails, it seems there is little a small group like ours can do. So, I not only write this article for my first publication, I write it to share what I know and invite others into taking an interest regarding the welfare and future of *Pediomelum pariense*. The more who know about *Pediomelum pariense*, the more talented individuals with skills and ideas greater than my own or my team can get involved, the better, potentially speeding up the process of research and assisting in developing a case for conservation, protection, and rehabilitation for this tenacious legume.

#### Citations

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Another *Pediomelum*, *P. megalanthum* var. *megalanthum* near vernal Utah. Photo by Andrey Zharkikh.

# From the Mulch Pile

by Tony Frates

The late spring/summer of 2022 has been tumultuous for so many reasons, native plant concerns among them:

## Utah Lake:

The largest freshwater lake in the Intermountain West remains under assault with proposals to dredge and build islands that we have opposed from the beginning. The problems of Utah Lake will not be solved by what has been proposed but instead exacerbated. Research shows that dredging in the long run is ineffective. We continue to participate and provide input to strongly oppose this misguided "reclamation" project that has no scientific support and are thankful for the work of the Utah Lake Conservation Coalition which includes the Conserve Utah Valley (<https://www.conserveutahvalley.org>) and Utah Valley Earth Forum (<https://uvef.org>). Without controlling phosphorus in-flows into the lake (and there is technology available that can be utilized to largely eliminate those), prodigious algal blooms will continue.

## Uinta Basin Railway:

This proposal continues to gain approvals and is being fast-tracked, yet is contrary to national climate change goals. The Uinta Basin already suffers from severe air pollution problems without a ramping of the already extensive oil and gas drilling in the area. Human health problems are inevitable.

We have continued to cooperate with coalition partners, not the least of which is the Center for Biological Diversity, and remain very concerned about the listed *Lepidium barnebyanum*, potential impacts to *Spiranthes diluvialis*, and to the two listed sclerocacti that occur in the area where the railroad terminates as proposed, as well as to possibly *Penstemon flowersii*, *Penstemon duchesnensis* and others.

The crude oil in the Uinta Basin is waxy and has to be heated to avoid solidification. Some 350,000 gallons per day (four times the Basin's current output,

transported in 110 heated unit cars per train) could end up traveling through Utah (to the national rail system in Price) to Colorado and then to the Gulf Coast. Officials in Colorado are understandably concerned about a potential oil spill in the Colorado River headwaters and the resultant negative impact to Colorado communities, watersheds and forests (Utah officials should be similarly concerned). An oil train derailment could be catastrophic. The train route through Colorado's Glenwood Canyon has already endured mudslides. And the Colorado River is already plagued with enough problems.

Construction of the railway will have significant negative environmental impacts to Utah including the degradation of some 443 stream crossings affecting 61 miles of waterway. Yet the US Forest Service approved a right of way through 12 miles of the Ashley National Forest including a roadless area.

The entire purpose of the railway line is to stimulate and support oil production in the Uinta Basin. Cost of the 85 mile line has been placed at \$3 billion.

Some 30 environmental groups, including the Utah Native Plant Society, oppose the railroad's construction which will likely impact several federally listed plant species and other sensitive plant species. At least one Surface Transportation Board member refused to support the railroad on the basis that its environmental impacts outweigh its transportation merits. The project has been characterized as a carbon bomb exactly at a time when fossil fuels need to be kept in the ground as world temperatures continue to rise.

More information:

<https://www.stopuintabasinrailway.com>

UNPS-CBD rare plant meeting presentation:

[https://www.unps.org/miscpdf/UBRailway\\_CBD\\_UNPS\\_March\\_3\\_2020.pdf](https://www.unps.org/miscpdf/UBRailway_CBD_UNPS_March_3_2020.pdf)

## Logan Canyon, La Sal Mountains and Exotic Mountain Goats:

Concerns are mounting over planned DWR mountain goat introductions in Logan Canyon that could impact any number of rare endemic plant species as well as mountain goats already introduced in the La Sal Mountains that are clearly causing damage to high elevation flora. High elevation plants are often slow growing and fragile. The Grand Canyon Trust (<https://www.grandcanyontrust.org>) has documented damage to the wallowing behavior of

these non-native goats in the La Sals. From an independent Forest Service study, there now appears to be a demonstrated decline in at least one of the rare plants of concern, *Senecio fremontii* var. *inexpectatus* (which has quite recently been raised to the species level by at least one taxonomist, i.e. to *S. inexpectatus*). Some sites are inaccessible (to people); few areas are inaccessible to mountain goats. Investigations continue as to the status of this taxon; an ESA petition could be warranted. The senecio is scattered and rarely dense over only a 200 to 300 acre range in Utah (there is one known disjunct occurrence in adjoining Colorado although genetic studies are needed). Discussions about potential mountain goat impacts in Logan Canyon and ongoing damage being caused in the La Sals along with proactive actions that might be taken have been ongoing throughout the spring/summer with our conservation partners and plant experts.

**Graham's penstemon ACEC, after all this time?**

Probably not, but the BLM went through the motions of proposing one in May after the recommendation was made some 16 years ago (the recommendation

was missed in an RMP (resource management plan) update and we were told they would get around to considering it during the next plan update in ten or more years back in 2006) and only because of also a lawsuit by the Southern Utah Wilderness Association that forced them to propose something eventually. The ACEC (area of critical environmental concern) notice that was published by the BLM this year was made in a half-hearted way with no serious attempt to parcel out manageable portions of the habitat that would be best suited for ACEC's, and with no indication of how they would be protected. No discussion of perimeter fences or anything. Not a seriously made proposal.

Duchesne County naturally opposed any ACEC's in their county via June 6, 2022 comments, claiming that the main stressor to *Penstemon grahamii* is drought, plus the lack of resources to survey plants (despite the very considerable survey activity that has taken place) while at the same time and in the same letter claiming that ACEC designations could potentially impact oil and gas development and other "multiple use" opportunities. This in fact



*Penstemon grahamii*. Photo by Robert Fitts.



demonstrates that oil and gas (and other energy) development is of course a very clear threat to the species. ACEC's simply help the BLM manage critical ecosystems. They don't fully stop development; they aren't exactly sanctuaries. The counties and energy companies simply don't want anyone interfering with what they want to do in any way. This is not how public lands should be managed. Private companies are not good stewards of the environment as a general rule especially when left unchecked. There are no permanently protected populations of this species. The current Penstemon Conservation Agreement provides nothing but short term actions and initiatives and will expire in the relatively near future, while massive oil and gas and other development looms.

Detailed comments supporting ACEC designations for Graham's penstemon were submitted on June 6, 2022 by the Center for Biological Diversity, the Utah Native Plant Society, Western Watersheds Project and the Southern Utah Wilderness Association.

### **“Vegetation treatment” leads to a partial population loss for a rare plant species**

What used to be called Pinyon-Juniper (PJ) chaining or removal by other mechanical means is now euphemistically called a “vegetation treatment.” These are rarely indicated and research (see link at the end of this paragraph) contradicts the grounds upon which federal and state agencies continue to undertake these non-stop. Like dredging, they are ineffective answers to proper land management. After disturbing the soil and releasing carbon into the atmosphere, agencies then plant non-native plants of the kind that grazing animals might enjoy under the guise that they are the best things to plant following the disturbance that they cause. True they can sometimes benefit the sage grouse but they can hardly be justified for that reason alone. They aren't done to improve the range except for cows and claim to help wildlife. These projects have even been incredibly slated for old growth PJ forests that agencies want to characterize as invaders and are even against their own rules. And now agencies and government officials have fully bought into the idea that these are invasive weeds. This is nonsense. Native plants will seek out new habitats when they become available. They are not weeds. They are not undesirable. We need these forests that have high environmental and cultural values. Yet the chaining/bulldozing continues unabated with no concomitant

change in grazing regimes, which leads to an endless cycle made worse now with climate change. The practice of piling the destroyed trees on top of the soil is also a poor practice. In the most recent terrible case, a rare plant that should be on the BLM's sensitive plant species list was bladed and half of one of only 13 known populations destroyed. The species impacted was *Pediomelum pariense* (Paria breadroot), endemic to Garfield and Kane Counties. Ignorance is not a defense. The area should not have been “treated” in the first place. Yet under scorched earth policies implemented in early 2020, areas under 10,000 acres have been exempted from NEPA requirements. This needs to change.

More information: [https://www.researchgate.net/publication/331414368\\_Do\\_Mechanical\\_Vegetation\\_Treatments\\_of\\_Pinyon-juniper\\_and\\_Sagebrush\\_Communities\\_Work\\_A\\_Review\\_of\\_the\\_Literature](https://www.researchgate.net/publication/331414368_Do_Mechanical_Vegetation_Treatments_of_Pinyon-juniper_and_Sagebrush_Communities_Work_A_Review_of_the_Literature)

Cultural impacts:  
[https://www.unps.org/miscpdf/PinyonJuniperForests\\_March\\_3\\_2020.pdf](https://www.unps.org/miscpdf/PinyonJuniperForests_March_3_2020.pdf)

### **Joshua tree comments re-opened**

We received an e-mail from the US Fish and Wildlife Service in Carlsbad, California earlier this year indicating that a revised status review for the Joshua tree was underway. Joshua trees in Utah are peripherally rare confined to the southwestern corner of the state, and seem to be struggling with increasing threats from wildfires (caused by cheatgrass which in turn has been caused from severe overgrazing of our landscapes) and global warming. *Yucca brevifolia* in a strict sense and based on more recent studies in actuality does not occur in Utah. Despite being lumped by the Flora of North America and Plants of the world Online and by Utah taxonomists to date, what occurs in Utah is *Yucca jaegeriana* (syn. *Y. brevifolia* var. *jaegeriana*). It has a completely different moth pollinator, growth habitat and fruit characteristics as compared to *Y. brevifolia*. The dividing line is in central Nevada with no overlapping distribution except in the dividing line area. *Y. brevifolia* mainly only occurs in California and eastern Nevada and probably does deserve protection. *Yucca jaegeriana* should be added to the BLM sensitive species list for Utah. And if we had any state laws that protected native plant species (we don't), it should be protected at the state level as well.

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*Heterotheca zionensis*. Photo by Tony Frates.

### **Heterotheca revisited:**

In attempting to understand the latest treatment of the genus *Heterotheca* as published by Guy Nesom in October of 2020 (which includes a new globally rare endemic for Utah in Grand County), New Mexico's Patrick Alexander has prepared corresponding keys for a number of states including Utah (see: <https://polyploid.net/blog/?p=556> which also has linked to the five part Nesom publication). One of the more significant take-home messages in the Nesom treatment is that *Heterotheca villosa* does not occur in Utah. Some of the taxa are hard to distinguish but for most the morphological differences seem to be apparent. Earlier in the year and in a process that is ongoing, we are trying to separate out these taxa for Utah on iNaturalist. *Heterotheca zionensis* (which occurs over much of Utah including the Wasatch Front) and *H. utahensis* are vastly underutilized in horticulture despite their many attributes.

### **So many other things in the pile:**

*Sclerocactus brevispinus* was being considered for an endangered species status upgrade but will remain at the level of threatened, for now (the expected increase in oil and gas activity in the Uinta Basin may change that in a hurry). The shrub *Ceanothus greggii* var. *franklinii* is being lumped into *C. pauciflorus* by

some yet seems deserving of recognition at some level and therefore is being maintained for now under that name on the Utah Rare Plant Guide (URPG: <https://www.utahrareplants.org>). Some early collections by Elizabeth Neese and Ben Franklin in the 1980's along with a 2009 collection by Noel Holmgren in 2009 that place *Oreoxis trotteri* (being treated by some under *Cymopterus*) in Garfield County and at much higher elevations than previously reported have led to some updates on the Utah Rare Plant Guide plus a potential new report of it in San Juan Co. We continue to receive field reports from the indefatigable Tom Elder in the Vernal area with respect to the rare *Frasera ackermaniae* and are awaiting more details with respect to a second occurrence in the John Wesley Powell National Conservation Area where it was observed in July of 2021. We continue to discuss with our conservation partners and make comments on the controversial placement of honey bee apiaries on federal lands which are thought to be highly disruptive to native pollinators. A recommendation has been made to Salt Lake County to add *Geum urbanum* to the county's noxious weed list (invasive species issues overlap with conservation and rare plant concerns). And on it goes.

## 2022 UNPS Grants-in-Aid Awards

by Bill Stockdale, Small Grants Committee

The Utah Native Plant Society has a long record of supporting botanical and ecological research. This is the first year of the “official” research fund. Thanks to support from members of the Society, we have established a fund to support academic research. A few years ago, the board of directors recognized the need for increased support of students and researchers. Our typical “small grants” program of \$200 to \$1,000 barely covered incidental expenses for field or laboratory research. With generous support from professional botanists and a challenge grant, in 2022 we have raised \$7,390 in research grant donations to date. At the same time, we have had continued support in General Donations to support our general mission and raised \$3,513 to date.

Early in the year announced an application deadline of April 15<sup>th</sup> and the results are in. The Grants Committee reviewed applications and determined two worthy of research awards and two worthy of general grants in aid.

From our research donations: Rachel Renne was awarded \$1,985. She is a doctoral student at the Yale School of the Environment and in her second year of field research aimed at investigating shrub-grass interactions in the big sagebrush ecosystems across the Western U.S., including Utah. This research will advance knowledge of how resource partitioning influences coexistence, competition, and plant functional type composition in temperate drylands. She states, “By clarifying the roles of abiotic and biotic factors in determining plant functional type composition, my work will directly inform management practices and elucidate the potential impacts of climate change in these ecosystems.”

Bill Gray, emeritus professor of Biology, along with Mitchell Power, Professor of Geography; Curator, Garrett Herbarium, and Joshua Krahulec, Graduate Student, Department of Geography, University of Utah were awarded \$2,100 to support laboratory costs for isotope analysis of tree samples. Their project is an outgrowth of the study of paleoclimatology and a unique method of measuring moisture in tree rings with a long-term goal of creating a moisture source map of the oxygen that has been built into wood over

the past one or two millennia. Bill Gray noted, “For the past three years my focus has been on tree-ring research, working with Dr. Mitchell Power at the Natural History Museum of Utah to develop new methodologies. A particular emphasis has been a study of Utah Juniper in the West Desert, several which exceed 1000 years in age.”

From our general donations: Alexandria Cartwright was awarded \$496 to support creation of signage for planter boxes in Helper, Utah. Native pollinator plants have been planted and maintained in city planter boxes; the signs will inform the public about the importance of native plants in the landscape.

Draper City Parks and Recreation, through Rick Anton, Draper City Trails and Open Space Foreman, was awarded \$350. Rick, along with the Wetland Rangers, is completing an educational sign project for the Mehraban Wetlands Park in Draper. The Wetland Rangers, a group of young people who live near the park, will be designing and installing the signs.

We will be hearing from all the awardees in the future. As part of the grant request, UNPS requests a statement of results and photos to be sent to the UNPS *Sego Lily* newsletter for publication. Many of our awardees become featured speakers at our Rare Plant Meeting in the Spring.



*Townsendia montana* on Hidden Peak in the Wasatch Mountains on July 19 2022. Photo by Tony Stireman.

# CANYONLANDS CHAPTER SPRING/SUMMER ACTIVITIES 2022

by Diane Ackerman, Canyonlands Chapter president

Spring 2022 has transitioned into summer and a return to Canyonlands chapter activities.

We welcomed spring on March 20, 2022 hiking up to a hanging garden near Moab. One of our founding members introduced us to this hike in 2016 when our chapter was newly revived. Each visit invokes awe at the diverse plants supported by these ancient seeps. The *Primula specuicola* or Easter Lily displays may not have been as spectacular as past years, but it never fails to share its beauty.



March 20, 2022 Steep slopes in and around the hanging garden supports a diverse plant world. One must go early in March to see these marvelous gardens. Photo by Mary Mastin.

Pam Hackley organized our May 25 & 28, 2022 hikes to a section of old-growth ponderosa pines on the Manti-LaSal NF. Marc-Coles-Richie led the hike and was joined by other agency folk to what has been coined the Red Towers Botanical Area. You may recall one option to the current Forest Revision Plan for protection of a section of this old-growth. We hiked around and took lunch in the dappled shade and heard thoughts on how Mike Engelhart, District



Red Towers Botanical Area hike led by Marc Coles-Richie, May 25, 2022 in old-growth ponderosa pines in Manti-LaSal NF. Photo by Diane Ackerman.

Ranger and his staff proposed to protect this landscape. Chapter members met on-site the following Saturday to further discuss what we had learned from this earlier presentation. We remain actively engaged with the Forest Service in seeking the best protection option.

One of the items on our chapter's bucket list came about on June 11, 2022 when we held our first native plant propagation workshop. A collaboration with USU-Grand County Extension when Dr. Larry Rupp, retired USU horticulture professor lectured at the newest USU campus south of Moab. Earlier that morning, a few of us visited the Mayberry Native Plant Propagation Center near Castle Valley to learn about on-site propagation and ongoing revegetation projects they are involved with in the area.

Members are anxious to see what forest fire recovery looks like on our next hike. Wildlife biologist Barbara Smith will lead us on this field trip on Saturday August 6, 2022. She was involved as the Monticello/Moab Manti-LaSal District wildlife biologist on the recent



Red Towers Botanical Area May 28, 2022 when chapter members took a closer look at the flora. Photo by Diane Ackerman.

wildfire that started south of Moab and quickly moved onto adjacent forest land. This hike starts at 9,000 feet where we will explore and learn and see the mosaic burn pattern and revegetation that is occurring.

US Park Service salvaging parties have become quite popular with our members. These organized events invite volunteers to participate in digging and potting up native plants in the park that are in the path of a new parking lot or structure. The surviving plants are utilized elsewhere in the park and volunteers are also encouraged to take plants home for their personal use.

Elaborating on this activity, we are considering a similar plant-swap later this fall as a chapter event. Members would be invited to share excess potted plant material from their home landscapes. Indian rice grass growing wildly abundant in one landscape (think weedy) will most likely become a beautiful revegetation project in another site. What's not to love? All plants will be free and anyone who wants to learn to grow natives are encouraged to come and learn with us, even if they don't have any plants to share.

## UNPS Book Group

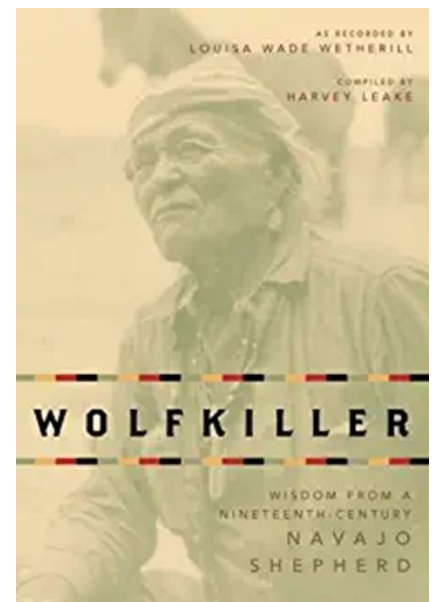
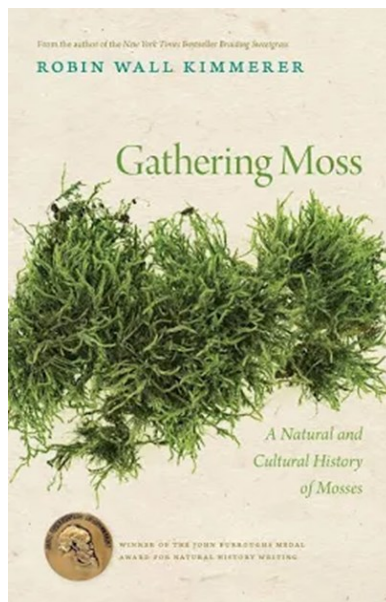
by Morgan Abbott

We just concluded our third book club meeting, where we discussed *Braiding Sweetgrass* by Robin Wall Kimmerer. We discussed cultures of gratitude, practicing reciprocity, current topics in climate change and over-consumption relating to the story of the Wendigo.

For our next book club meeting we will be reading two shorter books, *Gathering Moss* by Robin Wall Kimmerer and *Wolfkiller* by Harvey Leake & Lousia Wade Wetherill. Don't be intimidated! Both books are very short and are a delight to read.

We have also scheduled our book club for Thursday, August 25th at 7pm via Zoom, it is a recurring meeting (every 4th Thursday!). Let us know if you want to be added to the UNPS Book Group email list and to receive the Zoom link, email Morgan Abbott at [abbott.morgan@yahoo.com](mailto:abbott.morgan@yahoo.com).

Looking forward to seeing you at our next one!



# Salt Lake Chapter Activities

by Cathy King, Salt Lake Chapter President

## Salt Lake Chapter Albion Basin Field Trip

Bill Gray led a well attended field trip of about 20 people to Albion Basin in Little Cottonwood Canyon on June 23rd. Early in the season, the road to the campground was still closed, so the group walked along the road and returned through the meadows, botanizing along the way to discover early blooming wildflowers. It's always a treat to find the steer's head dicentra, *Dicentra uniflora*, which requires keen vision to spot in areas where the snow has just recently melted off. Photos taken by Marc Coles-Ritchie.



## UNPS Booth at Red Butte Plant Sale

Salt Lake Chapter members Tony Stireman and Cathy King staffed an information booth at the spring plant sale at Red Butte Garden in early May. They answered a lot of native plant and gardening questions from those attending the sale and distributed information about the Utah Native Plant Society. Photo by C. King





Monarch Butterfly on *Asclepias tuberosa*.  
Photo by Janet Davis at paintboxgarden.com.



Monarch Butterfly on sunflowers.  
Photo by Andrey Zharkikh.

## Grow Native: *Asclepias tuberosa*

by Cathy King

It's a brilliantly orange flowered plant native to Utah that can grow as much as 30" high in the most hospitable conditions, but probably shorter in a dryer, xeric garden bed. If you are looking for that bright punch of color that not only bees love but is also attractive to Monarch butterflies, consider adding *Asclepias tuberosa*, commonly known as butterfly weed, to your xeric or moderately watered perennial border. It flowers in early to mid-June and quite often has a second flush of flowers in late summer.

*Asclepias tuberosa* is second to *A. speciosus* when attracting the Monarch butterfly and the two combined are even better. If you can obtain seed, just direct sow in the fall. But well developed plants are available at local nurseries or can be ordered online and can be planted out in the spring or fall. Right now is a perfect time to add it to your garden.



*Asclepias tuberosa* in the King garden.  
Photo by Cathy King.

**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 Tony Stireman, [tstireman@gmail.com](mailto:tstireman@gmail.com).

**Fall is coming soon...** 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 (**PDFs can be troublesome**). 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](mailto:newsletter@unps.org) or [cathy.king@gmail.com](mailto:cathy.king@gmail.com).



**Utah Native Plant Society**

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**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](http://unps.org).

Webmaster inquiries at [unps@unps.org](mailto:unps@unps.org)

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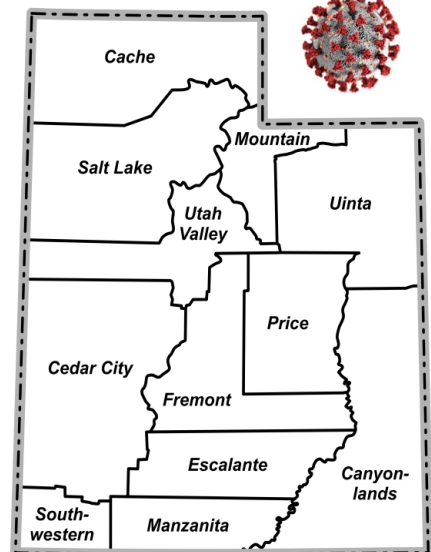
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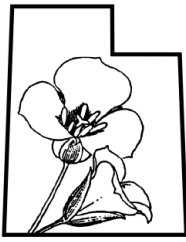
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**UNPS Chapter Map**







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Utah Native Plant Society

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