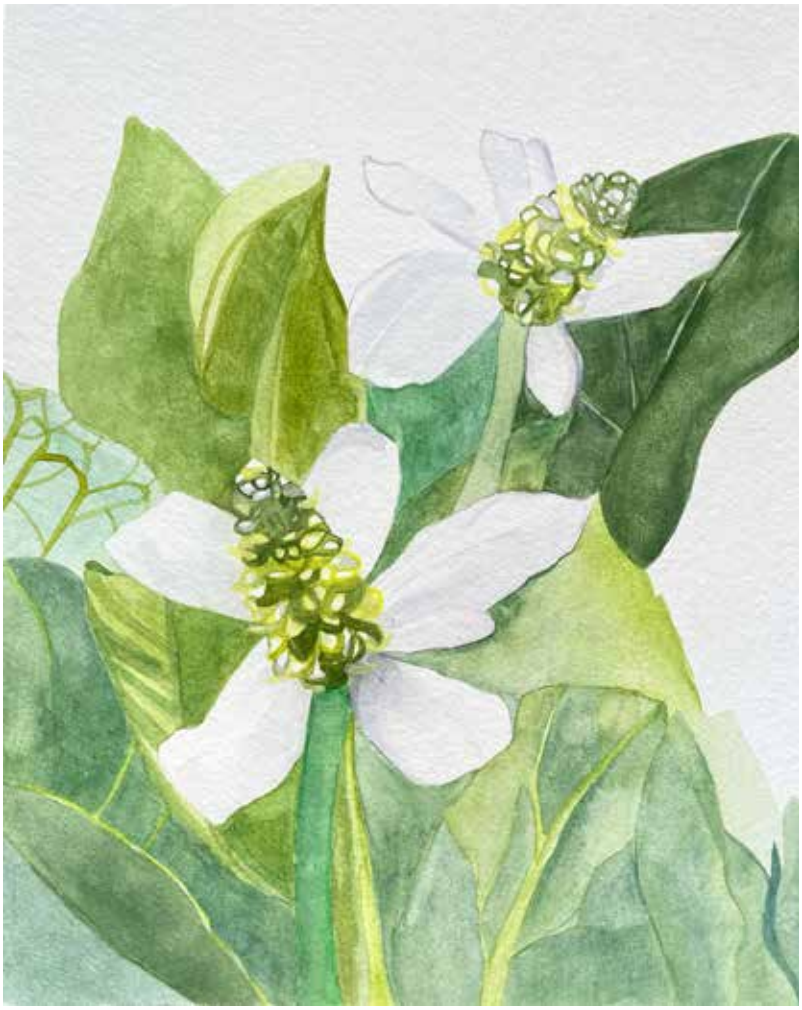
New Mexico's Voice for Native Plants

Newsletter

of the

Native Plant Society of New Mexico

January, February, March 2022 Vol. XXXXVII No. 1



Yerba Mansa
(*Anemopsis californica*).
Image: Carolina Benavidez

Inside This Issue

The Newsletter of the Native Plant Society of New Mexico
January–March 2022, Vol. 47 No. 1. This newsletter is published quarterly by the Native Plant Society of New Mexico (PO Box 35388, Albuquerque, NM 87176) and is free to members. The NPSNM, a nonprofit organization, is composed of professional and amateur botanists and others with an interest in the flora of New Mexico.

The next submission deadline is February 25, 2021. Articles and high-resolution artwork supporting NPSNM's mission are welcomed and can be sent to the editor, Margaret Ménache, ***npsnmnewsletter [at] gmail.com***.

Native Plant Society of New Mexico

Board of Directors

Mission The Native Plant Society of New Mexico (NPSNM) is a non-profit organization that strives to educate the public about native plants by promoting knowledge of plant identification, ecology, and uses; fostering plant conservation and the preservation of natural habitats; supporting botanical research; and encouraging the appropriate use of native plants to conserve water, land, and wildlife.

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NPSNM encourages members to consider including NPSNM in their wills.

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From the President

by Tom Stewart

Nature depends on disturbance to create the changes that keep things running smoothly. We have learned that occasional fire is necessary, that predators are essential, and that we humans actually benefit from some exposure to dirt and germs as we grow up.

I admit that sometimes I would like to retreat from all the changes these days. Our 45-year-old organization has been disturbed and changed by the Covid-19 pandemic, but it is doing quite well thanks to our great membership and our ability to adapt. Although our state board has enjoyed in-person meetings every year until now, it has had to meet and vote online during the past year. We had to postpone our popular statewide conference entirely in 2020, but it was even more appreciated in 2021. Some chapters have begun meeting in person again, with appropriate health precautions, while others have not or cannot, as their meeting places are still not available.

In contrast, winter is when we have time to plan purposeful change. I'd like to mention a few of the changes we're making right now.

Our Albuquerque chapter is busy putting together a fascinating conference for August 6-8, 2022, with a rich assortment of presentations, hands-on workshops, field experiences and very special content for educators. Save the date!

Our website now has a more obvious search button to help visitors find specific content. Until now you needed a search box to find the search box! Please spend some time with our website. I'd like to encourage you to let our webmaster, Madeleine, know what you like, what you would like to see, or anything else: mwoodward095 [at] gmail.com.

Our newsletter is continually evolving — more material of interest, less space taken up with blank forms (rarely mailed in), and fewer ads. Fewer ads is not an entirely good thing as we can use the support of like-minded companies, organizations, and services to help pay the substantial cost of producing the newsletter. I think of it not so much as that we are selling them advertising, but rather that it is a show of mutual support; that we value what they provide and that they understand "we are all in this together."

We don't have a marketing team beating the bushes for advertisers, so maybe you can lend some help. ***We will waive a year of individual or household dues for you or any other member who finds and makes the first contact with a new supporter who places an ad.*** In addition to the usual nurseries, landscape services and booksellers, do you know ecotourism services, outdoor gear retailers, conservation organizations, even your credit union, favorite bed & breakfast or retreat lodge that might like to advertise with us? Keep your mental wheels turning and help us reach a larger audience through our advertising!

Tell prospects that you know of nearly a thousand nature lovers who trust the exclusive advertising in our newsletter. Provide them with the link to check out past issues online (npsnm.org/newsletters), all of which have information on page 2 about advertising.

Who knows what turns the climate will take in the coming year and what familiar plants or surprise rarities will bloom starting in just a few months?

Our organization has resources for you as we watch the changing seasons. While our beloved wildflower posters are no longer available, we have quite a selection of detailed wildflower information available online and in print.

Hard copies of our *Thistle Guide* created by Bob Sivinski, and the *New Mexico Milkweeds Guide* by Marcia Corl are returning with a sturdier cover to better withstand life in a backpack. Our chapters will have them available at a discount for members. Don Graves, Gila NPS president, is working on a layperson's *Guide to Grasses*. There is a demand for regional native plant gardening guides like the *Central New Mexico Gardens* book on our website.

We recently got a request for information to help gardeners in Carlsbad. We are proud to serve as a resource for gardeners throughout our state. Receiving this request made me thing that we should consider a revival of the classic *Chihuahuan Desert Gardens* and *Northern New Mexico Gardens*.

These are changes we can look forward to! ❖

Conservation Corner

by Rachel Jankowitz, NPSNM Conservation Committee Chair

EMNRD Rule Change Comments

NPSNM submitted comments in support of a Rule Change proposed by the state Energy, Minerals & Natural Resources Department. State Botanist Daniela Roth says, "This is the most important action to protect New Mexico's rare plants since the passage of our existing Endangered Plants Rule." A public hearing was held on November 10 and the EMNRD Secretary will issue a decision on whether to adopt the rule change.

The existing rule was enacted in 1985 and directed EMNRD to investigate all plant species in the state to develop biological and ecological data, determine conservation measures necessary for survival, and establish a list of endangered plant species. It also authorized the Department to prohibit the taking of listed plants or plant materials, except for permitted scientific purposes or propagation and transplantation activities that enhance the survival of endangered species.

EMNRD proposes to amend the definition of "take" to include harm, kill, and destroy. The current rule does not fully protect and conserve endangered plant species as it only regulates the removal of endangered plants with the intent to possess, transport, export, sell, or offer for sale. The current rule does not regulate the harm, killing, or destruction of endangered plants during the conduct of other activities or the intentional destruction of endangered plants. The proposed amendments are in response to a decline in New Mexico's endangered plant species over recent decades which indicates that stronger efforts are needed to protect and conserve those species.

Public comments were largely in favor of the rule change. Several organizations representing the agricultural industry requested expanding the definition of agricultural operations exempt from the permitting requirement. Some oil-and-gas organizations raised questions of state versus federal jurisdiction.

EMNRD also proposes an amendment to add American Hart's-tongue fern, *Asplenium scolopendrium* var. *americanum*, to the list of state endangered plant species. American Hart's-tongue fern was discovered at the El Malpais National Monument in 2020 and its identity was recently verified by various specialists. The fern is a federally listed threatened species

American Hart's-tongue fern, *Asplenium scolopendrium* var. *americanum*. Image: Tab Tannery. https://www.flickr.com/photos/tabtannery/30733658888

previously not known to occur in New Mexico, but it is now known to occur at one site containing 66 individuals. As a result, this plant must be included on the state endangered plant list as required by regulation, because it is federally listed under the Endangered Species Act.

This fern is typically found in close association with outcrops of dolomitic limestone, in coulees, gorges and in cool limestone sinkholes in mature hardwood forests. It requires high humidity and deep shade provided by mature forest canopies or overhanging rock cliffs. It prefers soils high in magnesium. Although this plant is found over a very wide area, from Alabama to Canada, its populations tend to be very small and isolated due to its unique habitat. Because of its natural rarity, it is particularly vulnerable to disturbance.

Lincoln National Forest Comments

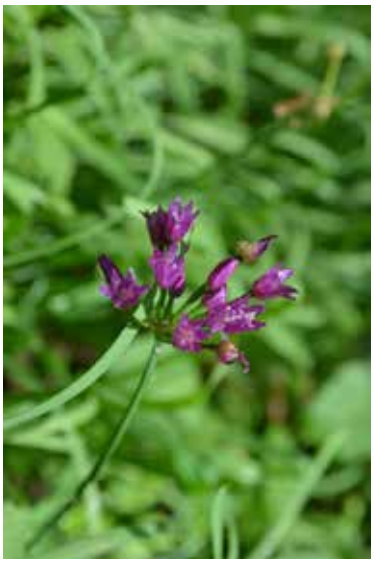
NPSNM submitted a letter to the Lincoln NF during the recent public comment period on their Draft Land Management Plan. Our comments focused on the treatment of At-Risk Species (ARS), which we found to be inadequate.

Discrepancies between the Draft Plan and the associated Draft Environmental Impact Statement (EIS) make it impossible to know what exactly is on the Lincoln NF ARS list. We stressed that the Final EIS and Plan must show an unambiguous current list of at-risk species. Presumably, the list will evolve over the life of the plan as Endangered Species Act and Forest Service regional Species of Conservation Concern (SCC) listings change. An up-to-date ARS list must be available to Forest staff and the public at all times.

The Forest Service's analysis of ARS consists of a list of potential generic threats to ARS but there is no discussion of threats to any particular species. We recommended that the

analysis of ARS threats should identify which potential threats are associated with which species.

One of the two proposed Standards (mandatory provisions) for ARS says: "Where the Forest Service has entered into signed conservation agreements that provide guidance on activities or actions to be carried out by Lincoln National Forest staff, those activities or actions must be undertaken consistent with the guidance found within those conservation agreements." We would like to believe that the Forest Service would always implicitly commit to honoring signed agreements. However, the example of Goodding's onion, *Allium gooddingii*, a Forest SCC, suggests otherwise.



Goodding's onion, *Allium gooddingii*. Image: Daniela Roth

A Goodding's Onion Conservation Agreement was signed between the Forest Service and US Fish & Wildlife Service in 1997, with a term of 10 years. A review by researchers associated with the University of Arizona found that two other National Forests failed to implement the Agreement. Though biologists recorded the potential presence of the species in many project-specific environmental evaluations, there was no evidence that project sites were surveyed or that any projects or grazing allotment plans were amended as a result. It appears that the same situation obtained on the Lincoln NF.

Goodding's onion does poorly after high-intensity wildfire, and 95% of all known sites in both NM and AZ have burned between 2006 and 2021. In the Lincoln NF, the 2012 Little Bear Fire burned Goodding's onion populations. In 2020, surveys found that the remaining plants had since been significantly impacted by ski area maintenance, post-fire restoration activities, hazard tree removal, and tree removal associated with a bark beetle outbreak. The largest population on the Lincoln NF was burned in the 2021 Three Rivers Fire, and its condition has not yet been assessed.

We recommended elevating proposed ARS Guideline 01 to a Standard: "All authorized activities should be designed and implemented to address and mitigate threats to at-risk species and their habitats." This Standard should be further revised to specify that all project-level environmental evaluations will assess the potential presence of ARS, require site surveys if applicable, archive survey results, and specify actions that will be taken if at-risk plants are present to minimize or eliminate impacts.

The Draft Plan lays out a resource monitoring program with several questions, the indicators which will be used to address those questions, and the frequency with which each indicator will be evaluated. However, as we noted in our November 2020 comment letter on the Draft Assessment of Sustainability Conditions and Trends, the ability of land managers to influence Forest conditions toward a desired state is undermined by a lack of information documenting current conditions. Areas where the Draft Assessment report indicated inadequate or obsolete data include: invasive weeds, riparian condition, and terrestrial vegetation communities.

We recommended that the new Forest Plan would be an appropriate venue to identify and prioritize existing data gaps. The Forest should be realistic about resources that they can reasonably expect to be available for monitoring, and design a strategy to fill critical baseline data gaps, and to prioritize or make adjustments if resources do not allow all of the proposed monitoring to proceed as scheduled. ❖

Yerba Mansa

by Hannah Eisenberg, Santa Fe Chapter

See painting on front cover

The first time I saw yerba mansa (*Anemopsis californica*) was in the fall, and it hardly resembled the images of white petaled stalks I'd seen in pictures. Rather, it was a dusty red the color of sand in Abiquiu, only recognizable by its conical stamen. Dried but still holding its recognizable shape, this is the time when yerba mansa becomes root heavy, growing wide underground, storing its resources to survive until the following spring. Despite yerba mansa's ability to overhaul its appearance and structure for the season, like any desert herb, its likelihood of survival still depends on slim conditions: deeply saturated ground, room to root, protection against invasive species. In this way yerba mansa is a symbol of this age, a plant that has survived for thousands of years (it is one of the earliest herbaceous plants and the only one in its genus) to come up against modernity; invasive species, climate change, and all. It is this predicament, its need, along with its importance, that brought yerba mansa to the attention of Dara Saville, founder and project director of the Yerba Mansa Project.

As a volunteer and donation driven organization, the YMP has worked in service of the legacy and future of the yerba mansa plant, and others like it, since 2014. Volunteers and local governmental organizations have worked alongside the YMP, spending countless hours digging up roughly 2,000 invasive plants (specifically Ravenna grass) and planting new stands of yerba mansa along the Bosque region of Albuquerque.

For Dara, a long-time herbalist, yerba mansa's importance lies not only in its beauty but also in its uses. Its natural antimicrobial and anti-inflammatory structure makes it a key

Chapter Activities & Events

For further information on upcoming events, notify the contact person listed, or visit the chapter's web page: First go to www.npsnm.org; click on Chapters; then select the chapter. **Hikers** should always bring plenty of water, hat, sun protection, lunch and/or snacks, field guides, and wear sturdy shoes, suitable for rough, uneven ground. As we go to press, **Covid-19 restrictions** are evolving and many in-person events have been delayed or migrated online. Remember that, if you do meet with your fellow society members, you should follow CDC, state, and local guidelines. On the positive side, many chapters are now using online meeting platforms and recording sessions, which they are making accessible to the general public. The home page of the NPSNM website has a number of interesting talks you can "attend." ❖

Albuquerque

Monthly meetings are normally the first Wednesday of the month at 7:00 pm, currently online via Zoom. Meeting links are distributed to chapter members via e-mail prior to the meeting. For more information on programs and/or registration for an upcoming Zoom meeting, contact Sara Keeney at skeeney [at] swcp.com or 505-379-3392 or check the Albuquerque Chapter page of NPSNM.org. No public field trips are scheduled at this time. Plant lists are available for hikes on your own on the website.

Jan 5 Meeting. "Creating Pollinator Friendly Landscapes: What it means to garden in times of climate change, an increasing water crisis, polar vortexes, pandemics and the sixth extinction." George Miller, author of the recently published *Native Plant Gardening for Birds, Bees and Butterflies: Southwest*,. The massive worldwide loss of insect populations has created a modern "Insect Apocalypse." The collapse of the foundation of the food chain pyramid is destabilizing ecosystems from farmlands to rainforests. By turning our yards into pollinator-friendly landscapes, we can restore part of the habitat lost by urban development. The key is choosing native plants that provide three-seasons of food, shelter, and nesting for butterflies, bees, and birds. With pollinators, it's true that "Build it and they will come."

Feb 2 Meeting. "The Ecology of Herbal Medicine." Local herbalist and native plant advocate, Dara Saville invites all to join this discussion on some of our region's most famous medicinal plants. We'll explore iconic local landscapes, key medicinal plants from those places, and species responses to environmental change. We will also look at what we can learn about medicinal uses of these plants as they play healing and balancing roles in their ecosystems and in our bodies. Moving through these themes, we will discuss *Juniperus monosperma* (juniper), *Sphaeralcea* spp. (globemallow), *Pedicularis* spp. (lousewort/betony), and *Populus deltoides wislizeni* (cottonwood). All of these are featured species in Dara's recently published book, The Ecology of Herbal Medicine.

Mar 2 Meeting. "A Journey Across the Southwest: Unveiling the Relationships of a Spiny Group of Desert Shrubs called *Glossopetalon*." Maya Allen, doctoral student at UNM will introduce us to a little known Chihuahuan Desert genus: *Glossopetalon*. These cryptic, intricately branched shrubs have been difficult to identify due to the lack of delineating morphological characteristics. In this talk we will transverse the range of Glossopetalon, learn the species and their identifiers, as well as uncover their newly discovered relationships as a result of Maya's analyses. Desert ecosystems harbor some of the most endangered species in the world. Their unique stressors have elicited captivating adaptations such as succulence, thorns, and shiny, waxy cuticles. A distinctive population of short, compact, scabrous shrubs were discovered in arid northern Arizona and their identity was questioned due to their unique morphology. Maya aimed to identify this northern Arizonian population as well as the species relationships within their hypothesized genus, *Glossopetalon*, an understudied group of angiosperm desert shrubs in the small family of conservation concern, the Crossosomataceae, found throughout the western United States and northern Mexico on limestone substrates.

El Paso

Meetings are usually at St. Alban's Episcopal Church, 1810 Elm Street (Elm at Wheeling, off Piedras). Programs are second Thursdays at 7:00 pm. Coffee social at 6:30 unless otherwise noted. All events free unless a fee is specified. Nonmembers welcome. Info: John White, 575/640-7555; jmwhite [at] utep.edu.

Gila (Silver City)

Monthly evening programs will resume in January on the third Friday of the month at 7:00 pm. Because of Covid-19 inroads, we will have to depend on Zoom for a while longer. Gila Chapter members will receive a Zoom link by email; any others interested may request a link from gilanative [at] gmail.com. All are welcome. For more information check our website at www.gilanps.org/events/programs..

Jan 21 Meeting. 7:00 pm via Zoom. "The Fabulous Flora of City of Rocks State Park." William (Bill) Norris, Professor of Biology at Western New Mexico University. Bill will provide a summary of the diverse plant life (> 300 species) of City of Rocks State Park, which he has studied with several collaborators (especially Timothy H. Geddes) since the early 2000s. In addition to presenting a brief history of the park, he will discuss the goals, methodology and significance of basic plant inventory work.

Feb 18 Meeting. 7:00 pm via Zoom. "Spring Blooms in the Southwest: Not Just Creosote Bush." Donna Stevens. One of the best things about early spring is the anticipation of wildflowers in bloom. These species are among the first to emerge early in

the year in southwest New Mexico: Golden Smoke (*Corydalis aurea*), two small wild mustards (*Draba cuneifolia* and *D. mogollonica*), Desert Anemone (*Anemone tuberosa*) and Stemless Townsend Daisy (*Townsendia exscapa*). A short time later, if we receive any rain, we'll see Mariposa Lily (*Calochortus ambiguus*) and Arizona Onion (*Allium macropetalum*). In a good year, entire hillsides turn yellow and orange with the yellow mustard Gordon's Bladderpod (*Physaria gordonii*) and the sunny Mexican Poppy (*Eschscholzia californica* subsp. *mexicana*). This presentation features some of the lovely wildflowers of spring in the Gila region, a few early-flowering trees and shrubs, and an invitation to get outside to renew your spirit with beauty.

Mar 18 Meeting. 7:00 pm via Zoom. "Update on Moths of the Gila National Forest." Ronald Parry. People are familiar with butterflies because of their beauty and their presence during daylight hours. Moths are little appreciated since they are largely nocturnal. Yet they are beautiful, and they play an important role in all terrestrial ecosystems. Many moth species are now endangered by climate change, habitat destruction, and the overuse of pesticides. Greater public awareness of the importance and beauty of these insects is needed if we expect to save them. Most of the larger moths found within the Gila region fall into one of eleven moth families. Ron will give us an update on his talk three years ago, including a description of the microlepidoptera superfamily Zygaenoidea and a discussion of the functional roles played by the scales found on moths and butterflies.

Las Cruces

Meetings are usually the second or third Wednesdays (unless otherwise noted) at 7:00 pm in the NMSU Herbarium, Biology Annex on NMSU campus. Zoom link will be announced a few days before the presentation. Field Trips are usually on the Sunday following the Wednesday meeting; most last into the afternoon.

Jan 12 Meeting. Zoom Presentation: 7:00 p.m. "The Organ Mountains-Desert Peaks National Monument: Behind the Scenes." Daniella Barraza, Park Ranger at Organ Mountains-Desert Peaks & Prehistoric Trackways National Monument for 5+ years. Her work revolves around interpretation, environmental education, volunteer management, visitor's services, and recreation. On May 21, 2014, almost 500,000 acres of BLM-managed public lands surrounding Las Cruces were designated by Presidential Proclamation as a national monument. Follow on a virtual tour of the resources, objects, and values that are protected by this designation as well as how they are managed by BLM staff. Learn about some programs and projects that are being implemented in OMDP plus a bonus conversation about the lesser known, Prehistoric Trackways National Monument.

Feb 9 Meeting. Zoom Presentation: 7:00 p.m. "Historical Ecology of the Organ Mountains." Marisa Mancillas and Justin Lopez, NMSU Grad Students, will present Marisa's graduate student research investigating biogeographic shifts among plant species in association with climate change along elevation gradients in the Organ Mountains, Las Cruces, New Mexico. They will share exciting discoveries from archival data sources, preliminary results, and future directions. Marisa Mancillas is a field botanist interested in the ecology of rangelands and prairie ecosystems. She has worked in ten Western U.S. States on wetland mitigation, reclamation, and restoration sites. Additionally, she has managed field botany crews for endangered species, invasive species, and rangeland surveys.

Mar 9 Meeting. Zoom Presentation: 7:00 p.m. "Historic and Modern Use of Native Plants." Alex Mares, Park Ranger at Mesilla Valley Bosque State Park.

Mar 12 Field Trip. Tour of Mesilla Valley Bosque State Park by Alex Mares – Tour will begin at 9:00 a.m. from the Visitors' Center.

Otero (Alamogordo)

For workshop and field trip details, contact Elva Osterreich, echoofthedesert [at] gmail.com, 575/443-4408, or Jennifer Gruger, jengruger [at] gmail.com, 505/710-2924. More information will be available by the beginning of each month.

Jan 8 11:30 a.m. - Annual chapter meeting. Bring a dish for lunch, we will eat and then meet. Bring your ideas and questions for the coming year. Location TBA..

Feb 11 10:30 a.m. - Victoria Milne with the Otero Soil and Water Preservation District shares a presentation about noxious weeds in the Sacramento mountains and Tularosa Basin, how to recognize them, what to do about them and how the battle against salt cedar is progressing. Meet at 3501 Mesa Village Drive in Alamogordo..

Mar 5 9 a.m. - David Greenwald reprises the Creekside Village tour near Tularosa, giving chapter members unable to attend this field trip during the conference a chance to see the layout updates about the ancient site. Observe the effects prehistoric and historic land-use activities have had on the landscape. Discuss what native plants were exploited by the Jornada Mogollon who occupied the canyon. Meet at the Y in Tularosa at 9:00 a.m. to caravan to the site.

Santa Fe

Meetings are third Wednesdays at 6:00 pm at Christ Lutheran Church, 1701 Arroyo Chamiso (in the triangle of Old Pecos Trail, St Michael's Dr., and Arroyo Chamiso). For more information, check the NPSNM website. Meetings and talks are free and open to all.

Taos

Monthly meetings are usually third Wednesdays at 6:00 pm in the Kit Carson Electric Cooperative boardroom, 118 Cruz Alta Rd. Check the NPSNM website or our Facebook page (search for "Native Plant Society New Mexico Taos Chapter") for updates. Contact: TaosNPS (at) gmail.com, or phone Jan Martenson at 575-751-0511. Videos of past meetings can be found at https://tinyurl.com/TaosNPSvideos ❖

Conservation and Restoration at DeHaven Ranch

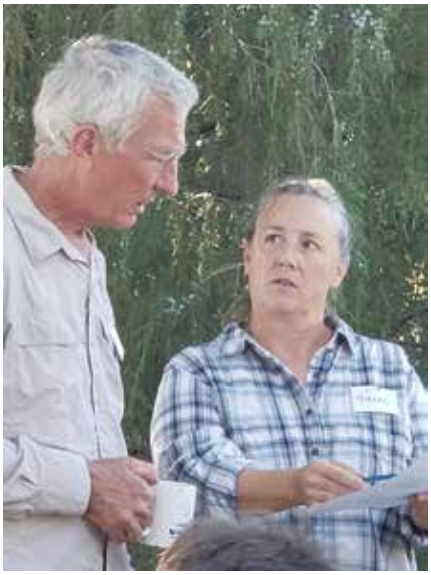
by Bonnie Wood, DeHaven Ranch

Thirty-two people, including attendees, presenters, and support personnel, participated in "Wetlands Restoration in Northeast New Mexico" on Saturday, August 28, 2021. Made possible by a grant from the Jack and Martha Carter Conservation Fund, this workshop was held at DeHaven Ranch, 27 miles northeast of Roy, NM. The featured speakers were Robert Sivinski of RCS Southwest and Mollie Walton, PhD, working with Quivira Coalition and the Cimarron Watershed Alliance, Inc.

The workshop incorporated many aspects of the NPSNM mission. In the different venues throughout the day, native plants were identified and issues discussed, like their habitat and appropriate uses. The restoration measures being implemented on the property clearly illustrated the importance of water to native plant conservation and the preservation of natural habitats. The presenters demonstrated the advantages of botanical research and encouraged the use of native plants for conservation of all resources.

DeHaven Ranch is a 680-acre property ... situated across Alamocita Creek – including the valley bottom, slopes and some adjacent open prairie. ...DeHaven not only has representative shortgrass prairie, but also has the topographic relief and permanent water of the Alamocita valley. A variety of habitats are available to plants and animals from relatively dry upland down to the stream channel, but the most special biological aspect of DeHaven Ranch is its wealth of wetlands and riparian woodlands.

Sivinski, 2015



The two workshop presenters, Bob Sivinski and Mollie Walton, discuss their ``Wetlands Restoration in Northeast NM" topics for each of the four sites to be visited during the day. Image: Lester Swindle.

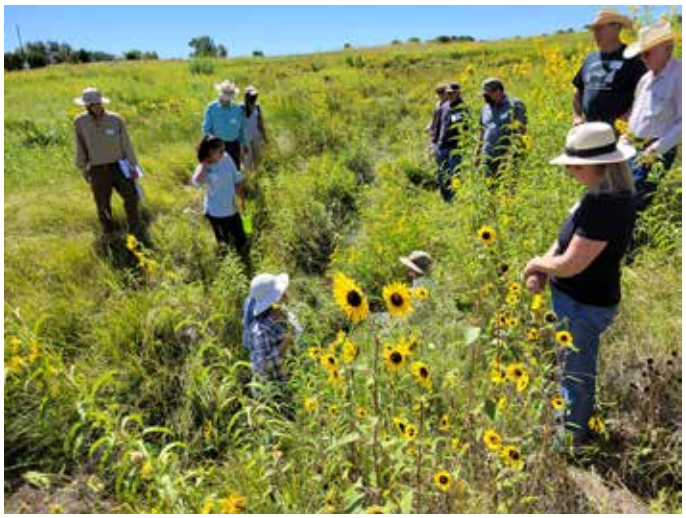
Participants saw four different unique sites of vegas. The first site was the wettest and contained bulrushes. The second and third sites were in various stages of restoration designed to reduce erosion by slowing down rainfall runoff and by retaining the moisture in the soil. The fourth site was an example of a healthy wetland that has a diversity of plant life such as Indiangrass, Western Wheatgrass, Autumn Sneezeweed, and Marsh Vervain.

Robert Sivinski, a botanist and biologist, defined wetlands as distinct ecosystems that hold or slow down water. In New Mexico, certain wetland types are called ciénegas or vegas. He described the importance of wetlands, particularly in the arid Southwest, as unique and essential features for retaining water and adding plant diversity. Sivinski was already knowledgeable about the sites at DeHaven Ranch having prepared a biological assessment of the property in 2015 (http://dehavenpreserve.com/wp-content/uploads/2015/08/DeHaven-Biol-Assessment.pdf).

The other presenter, Dr. Mollie Walton, has worked on several restoration projects at DeHaven Ranch. She explained erosion mitigation processes that are being utilized, including Zuni bowls and one-rock dams. These reduce the energy in the downward flow of water in an effort to slow and spread water. She described the construction of these structures and illustrated the results at the various sites, including structures that needed repairs. Walton is a co-author of the publication "Characterization and Restoration of Slope Wetlands in New Mexico: A Guide of Understanding Slope Wetlands, Causes of Degradation and Treatment Options" which is available through the Quivira Coalition. (https://quiviracoalition.org/techguides/ includes a number of publications on erosion control and land restoration.)

Representatives of the Native Plant Society of New Mexico participated in this workshop. NPSNM President Tom Stuart and Albuquerque Chapter former President Diane Stevenson attended the day-long workshop and participated in the discus-

One of the workshop presenters, Dr Mollie Walton, is the second person pictured to the left in the photo explaining the 2015 conservation work performed by volunteers on this DeHaven Ranch vega. Please note the Sneezeweed in the foreground and the tall Prairie Sunflowers to the left and right in the photo. Image: Lester Swindle.



Workshop participants gather around one of the now heavily covered Zuni Bowls while presenter Molly Walton describes the health of the cienega/vega before the 2015 built rock structure started stabilizing the eroding head cut in the spring channel. Image: Bonnie Wood.

sions. Diane has written an article of her experience in the Albuquerque Chapter Fall 2021 Newsletter (https://www.npsnm.org/wp-content/uploads/2021/10/Autumn-2021-ABQ-NPS-Newsletter-FINAL.pdf.) Other participants included local ranchers, representatives of non-profit agencies, and government employees. The venue and topics resulted in open and frank communication about concerns as well as opportunities in the relationships between private landowners, non-profit agencies, and government. Despite the restrictions imposed due to Covid-19 concerns, the workshop was a success. Since all activities at the event were held outdoors, social distancing was easily maintained. Face masks were available. Hand sanitizers were provided at both meals.

Comments from participants on the Workshop Evaluation Form completed at the conclusion of the day included: "Ideal site for the topics of the workshop." "The mix of presenters and attendees contributed to a worthwhile experience." "Seeing the unique diversity of the system in conjunction with the hydrology restoration measures was fascinating and useful." In her Albuquerque Chapter Newsletter article, Diane concluded: "What struck me most about this workshop was the sense of community among the participants and the ability to listen to ideas and differing views. The goal here as land stewards is to preserve these unique wetland systems for all communities, current and future: human, livestock, wildlife." ❖

Additional information on topics such as identification of native versus invasive thistles may be found on the Native Plant Society of New Mexico website: https://www.npsnm.org . More information about ciénegas in New Mexico is available from https://www.env.nm.gov/wp-content/uploads/sites/25/2017/07/WAP-Arid-Land-Cienegas-NM-2018-Final-For-Printing.pdf.

A Familiar Friend Far from Home

by Kathleen Hall, Albuquerque Chapter

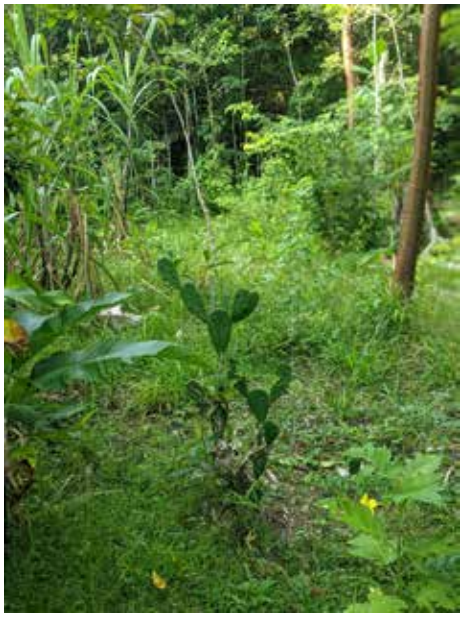
The dirt road to Tunich Ha Reserve and Ecological Center crosses fallow agricultural fields of chest-high mixed grasses before bumping into a thirty-acre stand of mixed broadleaf trees. A track bordered in thick whorls of fragrant Red Ginger shrubs (*Alpinia purpurata*) continues into the sun-laced rainforest. Between the shrubs, glimpses of palm and cacao seedlings, grasses and cactus… wait, is that really a prickly pear? Yes, tucked into this little preserve near Cattle Landing, Toledo District, at the southern end of Belize, Central America, are native trees, shrubs and forbs, including a paddle-stemmed cactus.

Opuntia cochenillifera, locally called Nopal or Tuna (Spanish) or Pa'kam (Mayan), is widespread throughout Mexico and Central America, adapting to acidic soil and rainforest humidity as well as more arid climates. The species, named for its use as a host of cochineal insects (*Dactylopius coccus*), has long been cultivated by the Maya for food, medicine and the source of red cochineal dye.

The rainforest nopal, partial-shade tolerant, is darker green and more glossy than species common to New Mexico. Its stems are thornless, but retain the small nodes bearing glochids, the "hairs" that will penetrate the skin if rubbed.

The red or yellow fruits, about half the size of tunas found in New Mexico markets, are peeled and eaten or crushed for juice; stems (pads) are chopped and added raw to salads, sauteed, or steamed. Traditional medicinal use includes splitting the stem open and pressing the gooey flesh onto skin for treatment of ulcers and fungal infections, and to cool a fever.

Always a pleasant surprise to meet a familiar genus in exotic territory. ❖



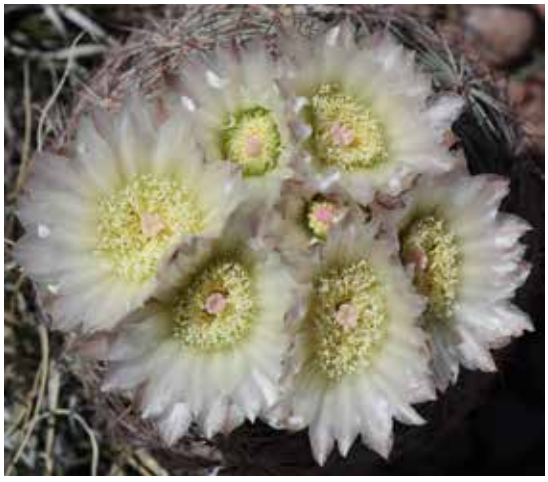
Front and center is an *Opuntia cochenillifera*, which is right at home in this beautiful rainforest. Image: Amy Erickson

Spring Comes Early for Some

by Jim Von Loh and Gordon Berman, Las Cruces Chapter

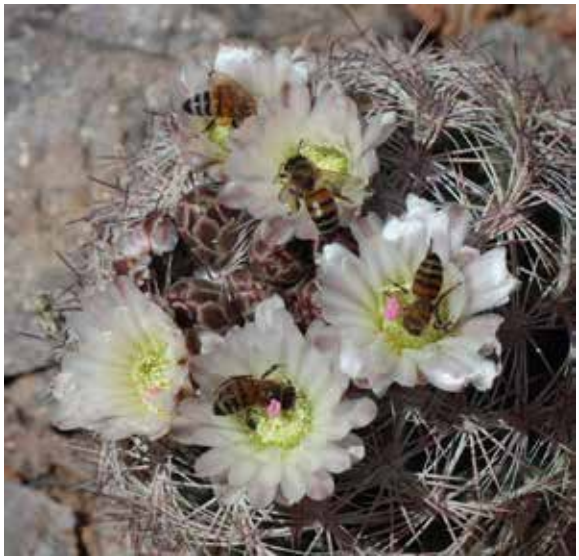
What's a winter season insect to eat? For some, it is the White Fishhook Cactus flowers. As is generally the case in plant-insect relations, it is likely the insects provide the cacti with pollination services in exchange for a meal. An especially important trade for early blooming flowers.

Western Chihuahuan Desert winters seem bleak, cold, windy, and tedious for many plant enthusiasts who happily welcome the large, white-to-pinkish flowers of *Echinomastus intertextus (Engelm.)* during February and March. Because of its distribution across portions of southern AZ, NM, TX, and adjacent northern Mexico, there are many common names, of which White Fishhook Cactus, Early Bloomer, and Chihuahuan Pineapple Cactus (CPC) are used locally; CPC resonates most with us due to the pineapple shape of large individuals.



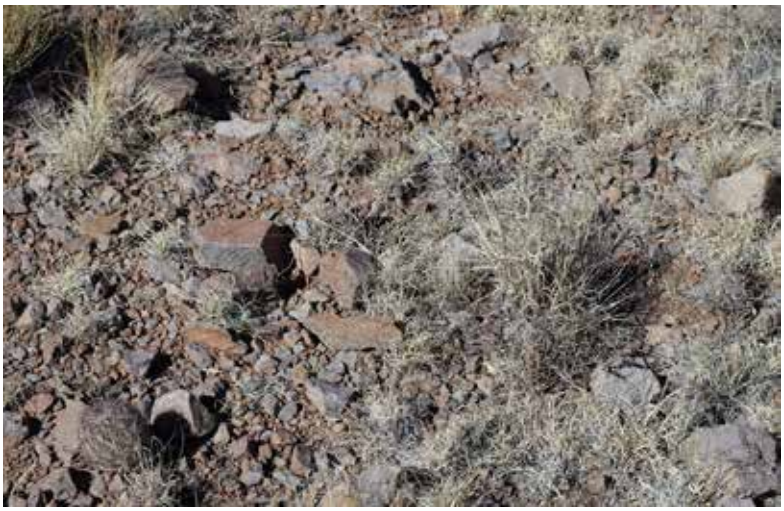
Seven CPC flowers open on the same day. Photographed 3/31/2020. Image: Jim Von Loh.

During early winter months, few insects are active and if so, typically emerge during the warmest part of the day. Where they occur, scattered CPC offer the only available flowers to the suite of insects using them for forage. During colder nights and cooler days, only one or two blossoms typically open per individual CPC plant at peak daytime temperature; when the temperature is warmer, as in mid- to late-March, all flower buds of an individual plant often open at the same time, by early afternoon.



Bees taking advantage of CPC pollen on 3/18/2021 in Bar Canyon. Image: Jim Von Loh.

In mid-February 2021 we had yet to observe CPC flower bud development, possibly attributable to drought throughout 2020 and beyond (note that a tremendous CPC bloom occurred during 2020). The situation had changed by about a month later, when the plants were in bloom and insects abounded. Note, for example, the bees in mid-March foraging in the flowers on the CPC on the left.



Grassland habitat on gravel and small cobble surface. See CPC in lower left corner. Photographed 2/09/2021. Image: Jim Von Loh.

Left: Medium sized CPC individual with a nearly round shape. Photographed 2/17/2020. Image: Jim Von Loh.

Our images document CPC habitat and the plant itself, as well as flowers with their pollinators. We hope you'll be able to use this information to look for these beautiful plants during the early months of the year.

We have observed from 1-8 shiny, white-to-pinkish flowers, on individual CPC plants that range in size from a golf ball to a small pineapple. Small CPC populations and scattered individuals have become established on volcanic gravel and cobble of west-to-south-facing slopes that support desert grassland stands interspersed with sparse short-shrubs.

Left: Large CPC individual with a shape reminiscent of a pineapple. Photographed 3/28/2020. Image: Jim Von Loh.

Right: Unusual cluster/mulit-stemmed CPC. Photographed 3/31/2020. Image: Jim Von Loh.

CPC insect flower visitors documented since 2018 occurred on five sites in the Organ Mountains (Achenbach, Bar, and Soledad canyons) and Dona Ana Mountains (Observation Hill).

The most common insect CPC flower visitors we observed were bees, predominantly western honey bees (WHB) (*Apis mellifera* Linnaeus, 1758), which were introduced to North America in the early 1600s. Rarely, digger bees (*Anthophora* sp.), a native solitary bee, and small metallic bees (likely halictid or sweat bees) also foraged on CPC flowers. A species of drone fly or flower fly (*Copestylum marginatum* Say, 1829), with a color pattern mimicking WHBs, foraged on CPC flowers alongside them. We also observed a small beetle and ants foraging on CPC flowers; the beetle was feeding on the edge of a tepal while the ants foraged on the tepals and into the stamens. It is doubtful that pollination results from either of these species activities. The tepals and stigmas were sometimes eaten from some CPC flowers, possibly by small mammals. It is also doubtful that pollination ensues due to this foraging behavior. ❖

Flower (drone) fly (left) and WHB (right) properly socially distance while foraging in separate CPC flowers. Photographed 2/18/2020. Image: Jim Von Loh.

A digger bee visiting a CPC flower. Photographed 3/31/2020. Image: Jim Von Loh.

Small, greenish-grey metallic seat bees forage from CPC flowers. Photographed 3/24/2020. Image: Jim Von Loh.

Ants foraging in CPC flower. Photographed 4/20/2018. Image: Jim Von Loh.

One flower was eaten resulting in removal of the tepals and stigma/style. Photographed 3/31/2020. Image: Jim Von Loh.

Small beetle foraging on CPC tepal. Photographed 3/22/2020. Image: Jim Von Loh.

Carter Conservation Fund Grant: Native Plant Demonstration Gardens

by John Farmer and Pam Wolfe, Santa Fe

Before: Fall 2020.
Image: Pam Wolfe.

Volunteers armoring the berm.
Image: Pam Wolfe.

Before: Fall 2020.
Image: Pam Wolfe.

A $1,500 grant from the NPSNM helped initiate the transformation of a parcel of compacted, nutrient-poor soil, populated sparsely by weeds, into a thriving plot of low-water native grasses and forbs. Watch its progress at the Native Plant Demonstration Gardens that the Santa Fe Native Plant Project (SNaPP), a Santa Fe Extension Master Gardeners (SFEMG) program that promotes the use of native plants in the local landscape, is creating. These gardens, which are open to the public, are located at the Santa Fe County Extension Office, 3229 Rodeo Road, at the Santa Fe County Fairgrounds.

Several years ago, the SFEMG Xeric Demonstration Garden in front of the Extension Office was destroyed when the building was remodeled. Tom Dominguez, New Mexico State University's Santa Fe County Extension Agriculture Agent, agreed to serve as project advisor for a new low-water native plant demonstration garden that SNaPP's project leaders, Helena van Heiningen and Joy Mandelbaum, proposed to cultivate in the old garden's place on the south side of the office. Pam Wolfe and Lesley Mansfield, SNaPP's current co-leaders, expanded the project to the west (reclaimed grassland) and east (pollinator patch). The project supports experimentation and education; the project leaders have designed protocols for generating hypotheses and collecting data on soil health, beneficial insect populations, and the effects of mycorrhizal inoculation. In fact, we see the gardens as a rich opportunity for experimentation. The SFEMG, the Friends of Santa Fe Master Gardeners, and the NPSNM's Carter Conservation Fund Grant have provided funding. With the collaboration of landscape professionals and volunteers, the gardens finally took shape in spring 2021.

A 10,000-square-foot area to the west of the building, described in the Carter Grant proposal, has been shaped into a terraced grassland sloping from the porch to an induced meander that channels storm runoff from the upper parking lot and excess rainwater from three cisterns. Aligned with the goals of the New Mexico Healthy Soil Act of 2019, it's inspired in part, Dominguez told us, by conservation measures at New Mexican ranches and forests to improve soil health. San Isidro Permaculture advised on reshaping the slope into three terraces secured by armored berms that SFEMG volunteers built. By slowing and redirecting water, these features improve infiltration and reduce erosion. The parking-lot runoff eventually reaches the meander, which Cullen Hallmark, project leader for the nearby Cactus Demonstration Garden, created from a ditch below the culvert. To prepare the soil for seeding, Madrid Engineering, LLC surveyed and shaped the terraces, then loosened the hardpack with a chisel plow. SFEMG volunteers incorporated 34 cubic yards of biosolids compost purchased from the city's Wastewater Management Division, installed a temporary irrigation system, scattered seeds for native grasses and forbs, and covered the seedbed with blue grama hay. About

half the area was sprinkled with a mulch binder. Within days the seeds began to germinate, and the new grassland emerged.

This landscape is an example of Plains-Mesa Grassland, which ranges over large parts of eastern and central New Mexico. The dominant grass is blue grama (*Bouteloua gracilis*), our state grass. A perennial, warm-season grass with fine leaves and blue-green seedheads, it's drought-resistant, cold-hardy, and tolerant of poor soil. And it provides habitat and food for numerous animal species. Other grass species in the seed mix include sideoats grama (*B. curtipendula*), little bluestem (*Schizachyrium scoparium*), galleta (*Pleauraphis jamesii*), alkali sacaton (*Sporobolus airoides*), sand dropseed (*S. cryptandrus*), and Indian ricegrass (A*chnatherum hymenoides*). Western wheatgrass (*Pascopyrum smithii*) was seeded along the induced meander. Viewed from the office's porch, this feathery carpet will also be an enticing subject for artists and photographers — particularly in fall and winter, when it fades to buff and is set off by snow.

In September 2021, volunteers planted two pollinator habitat kits donated by the Xerces Society for Invertebrate Conservation; 350 kits were distributed free to residents and local organizations in Santa Fe County. Plants from the low-to-medium water kit were placed in swales and spillways on the west side. The kit included 4 each of 8 perennial wildflower species and one three-leaf sumac (*Rhus trilobata*). Two weeks later volunteers added 30 seedlings from the New Mexico Forestry Division's Conservation Seedling Program: rocky mountain penstemon (*Penstemon strictus*), Palmer's penstemon (*Penstemon palmeri*), Gambel oak (*Quercus gambelii*), mountain mahogany (*Cercocarpus montanus*), three-leaf sumac, golden currant (*Ribes aureum*), winterfat (*Kraschninnikovia lanata*), rabbitbrush (*Ericameria nauseosa*), and four-wing saltbush (*Atriplex canescens*). The penstemons, three-leaf sumac, and saltbush occur naturally at the site.

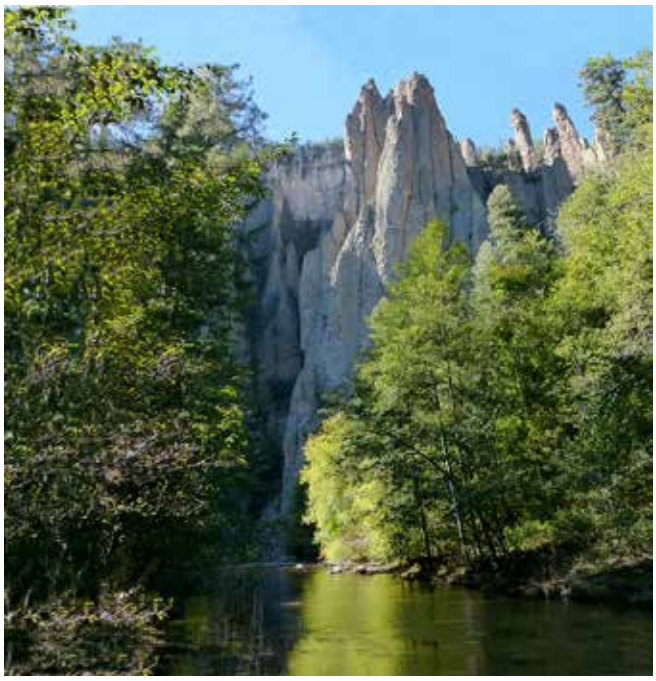
Watering the seedbed had the predictable effect of coaxing weeds from the seed bank — a fine opportunity for a "What's That Weed?" workshop. The volunteers earned continuing education credit and made short work of the goathead, kochia, and various amaranths that were thriving in the newly damp and fertile soil.

The Native Plant Demonstration Gardens complement the other demonstration gardens on the Extension Office campus. They show that gardens thoughtfully planted with a diverse community of native plants can improve soil health, attract pollinators, and enhance site aesthetics. We consider the project a "living classroom" and will host workshops there on native plants, weed management, soil testing, and beneficial insect monitoring. We also expect the progress made so far will inspire more reclamation and restoration efforts in the long term. ❖

Seed and plant lists for all three gardens are posted on the SFEMG website https://www.sfemg.org/snapp-native-plant-demonstration-garden.

Natural History of the Gila

by William (Bill) Norris, Gila Chapter



From the Natural History of the Gila Symposium website. Image: https://sites.google.com/view/gilasymposium/home

Plan to attend the 9th Natural History of the Gila Symposium on Wednesday, February 23 (PM) and Thursday, February 24 (all day) 2022. This hybrid event, co-sponsored by the Gila Chapter of the NPSNM, features presentations on scientific research, management projects, education initiatives, and policy discussions focused on the "Gila Region" of southwest NM and southeast AZ. It also features a "Creative Voice" session showcasing creative works (writing, photography, performance, etc.) focused on this region by local and regional artists. The deadline to submit a proposal to present is January 30, 2022.

The 9th Natural History of the Gila Symposium (face-to-face in the Western New Mexico University Global Resource Center, on-line via Zoom) is FREE to all participants and attendees. For more information about this event, visit the symposium website (https://wnmu.edu/gilasymposium). You may also download the Proceedings from the previous eight symposia on the website. ❖

Flower World Signs at Three Rivers

by Joan E. Price, 29 August 2021

A natural collaboration of archaeology, ethnographic records, and native plant expertise brought NPSNM members attending the annual conference to Three Rivers Petroglyph Site at the height of the flowering landscape and only days after the exit of an unusually generous and long monsoon season. This "cross-pollination" generated new information to add to the presentation I gave on the first day of the state conference in Alamogordo, New Mexico, for which I am very grateful!

As the tour guide after my PowerPoint, I pointed to a gorgeous flowering sage and was promptly informed by members of NPSNM that it was mariola (*Parthenium incanum*), a sunflower, and with the help of a handy field microscope, I was able to see the five points, equally spaced, dominating the ring of florets. Lauren Price, a Bureau of Land Management plant specialist, noted that the common western sagebrush is also in the sunflower family.

Detail of circle and cross with mariola in the foreground. Image: Joan Price.

My later research found its use among three Apache tribal groups as medicinally important. The pungent thick lobed leaves have a marvelous smell and taste of sage. For the indigenous cultures, these leaves are a very important part of myth and guidance for life's path with the plant world.

I also showed those on my tour the interaction of solar shadows moving across petroglyph circular motifs like solar clocks. The circle motifs at Three Rivers comprise fully 25% of the petroglyphs there and have been identified by many tribal visitors as "sun signs" and, thus, also part of the Flower world of sunflowers, ancient songs, and traditions.

Further research brought me to the famed archaeologist Emil Haury (1904-1994), who reported on a rubber ball made of guayule (mariola) found near Phoenix at a Hohokam site.

A sophisticated culture enduring for over 1000 years, the Hohokam were notable for ball courts found at sites in the American Southwest. The northern-most ball court was constructed at Wupatki National Monument and is associated with the shinny game of the Twin Warriors by a Hopi member of the Water and Corn clan (personal communication), the subject of my presentation!

The identification of abundant mariola was a great window to a greater native plant context for the sunflower, the Flower World and its human admirers. Thank-you. ❖

Yerba Mansa, *continued from page 5*

herb in fighting disease through natural means. The list of uses amongst Native Americans, curanderas, and Anglo herbalists alike is impressive: from the common cold to Lyme disease to pancreatitis.

A "legendary herb," Dara calls it, one that's characteristic of the biology and culture of this region. For Dara, the project has been a way to teach her students the reciprocal relationship of herbalism: the plants give and you give back. She's found that most people like taking care of the Bosque, and that it's been easy to garner support for the YMP from the community, governmental and non-governmental agencies alike. The project also serves as a way to show the greater community that controlling invasive species without the use of herbicides and other toxic chemicals is a possibility, with the right manpower and support. While the future of yerba mansa and plants like it may be precarious, the YMP's plans are not; they continue to show up and work for a plant that's done the same for us for generations on generations. ❖

Check out their website for upcoming events including talks and Bosque Restoration Work days: https://yerbamansaproject.org

Contributions to the Jack & Martha Carter Conservation Fund

The generous financial support from so many NPSNM members and nonmembers, along with the investment fund initiated by former Society president Jack Carter and friends, has made it possible for our board to award grants for the conservation and restoration of native plants and habitats, botanical research, botanical education, and our regional herbaria. Awards for Science Teacher of the Year and a Conservation Champion are also presented when appropriate.

Donations of any amount are greatly appreciated, either through our website or with a check made out to "Carter Conservation Fund" and sent to our main address (NPSNM, PO Box 35388, Albuquerque NM 87176). We also welcome applications for grants and your nominations for the teacher award. Details may be found on our website, www.npsnm.org. ❖

Membership in the NPSNM is open to anyone supporting our goals of promoting a greater appreciation of native plants and their environment and the preservation of endangered species. We encourage the use of suitable native plants in landscaping to preserve our state's unique character, to conserve water, and as a part of the regional ecosystem in support of native pollinators and other fauna. Members benefit from chapter presentations, field trips, plant and seed exchanges/sales, discounts on publications, a statewide conference, and a network of knowledgeable plant enthusiasts.

Joining is easy through our website, www.npsnm.org, or by mailing your contact information, local chapter preference (if any), and dues to our main address (NPSNM, PO Box 35388, Albuquerque NM 87176). Yearly dues and donations are tax deductible at $30 regular individual, $45 household, $60 friend of the Society, and $20 for youth (through 26 years) or PK-12 teacher. Higher supporting levels can be found on our website. ❖

Animals are something invented by plants to move seeds around. An extremely yang solution to a peculiar problem which they faced.

Terence McKenna

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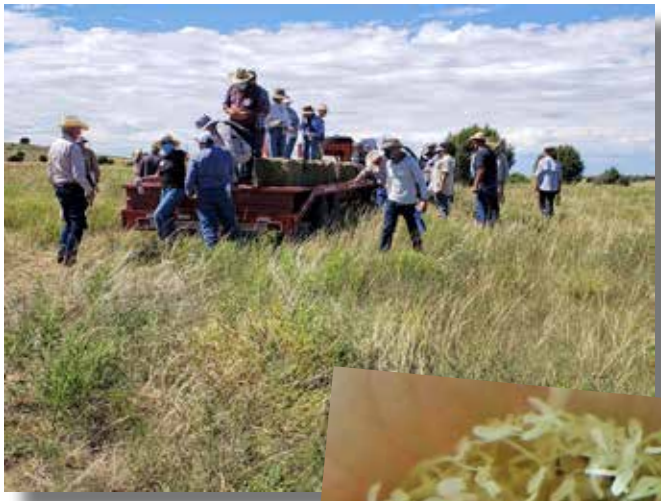
Download PDFs of this and recently archived issues at the NPSNM website:

www.npsnm.org

The Carter Conservation Fund Grants continue to enable New Mexicans to create, maintain, and improve sustainable landscapes. Learn about the work going on at DeHaven Ranch on page 8 and at the Santa Fe Extention Office on page 12!



Participants at the two-day workshop at DeHaven Ranch spread out to look at the different water collection methods being used to restore native short-grass prairie. Image: Lester Swindle.

Representative Chihuahuan Pineapple Cactus (*Echinomastus intertextus (Engelm.)* flower and buds; tepal colors are from white-to-light pink and stigma color is from white-to-bright pink; photographed 03/28/2020. Image: Jim Von Loh.

Digger bee foraging among stamens of CPC flower (note pollen grains attached. Photographed 3/23/2020. Image: Jim Von Loh.

Looking for an early blooming cactus on your walks in southern New Mexico? You'll have to share their beauty with some hungry insects! Read more about the plants, their habitat, and the fauna that feast on them beginning on page 10.