

Apply now: NDNH seasonal botanists

The Nevada Division of Natural Heritage is looking to hire two seasonal technicians and one crew lead to assist with rare plant monitoring and seed collection for the 2025 field season. Crews will survey, map, and collect seeds for rare and critically imperiled plant species across Nevada in different ecosystems and habitat types. These are entirely field-based positions and camping and traveling to remote sites via 4x4 vehicles is required. The positions are based out of Carson City, Nevada, and begin no later than April 1st, 2025. The job postings with instructions to apply can be found at: heritage.nv.gov/jobs. Applications will be accepted through **January 6th, 2025**.

NVNPS store open! Winter's book coming soon

Our website's store is now open: nvnps.org/store Our field measurement rulers and 2025 Calendars are available for purchase now, and we hope to add Wildflowers of the Foothill Regions of Northeastern Nevada, by Mary Winter (7th Edition) very soon. The book has been printed and is currently being bound. We will let you know as soon as it hits the store! It will cost \$25 with an additional \$10 for shipping and handling.

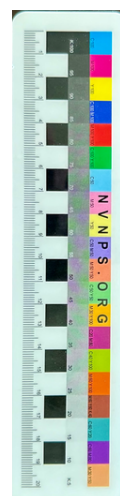
The 400+ page book is a "labor of love" by Mary Winter which has had several editions with very limited printings. These editions were primarily issued to accompany classes and field trips for Great Basin College classes. Sadly, Mary is no longer with us, however she left us a gift in the form of a chance to publish one last edition of her book.

The book was inspired by her love of home: "The high desert landscape of northern Nevada spreads out before you, a canvas of subtly changing color. Sagebrush grays deepen as clouds move swiftly in advance of a storm. Tawny brown willows change to crimson as fall turns to winter, winter-white aspen to green as geese and sandhill cranes return to hayfields in the spring. But walk the canvas - across rolling hills to the base of palisade cliffs, or from rock outlook to river banks below, and the wanderer finds brilliance and diversity where once an endless sea was imagined.

As one such wanderer, a day came when I

realized that each plant in this wonderful landscape had a name. I decided then to set out with camera in hand to see if it were possible to learn them. This became a great project and this book is an answer, a record of discovery, and a celebration of the vibrant world I call home."

"The layout of this book was designed to meet the interests of casual visitors, outdoorsmen, and resource professionals. Each entry includes a photograph, description, notes on habitat, and general comments. Plants are presented and arranged by family, with the pages of each family color coded to aid with general book navigation. For those with a botanical interest, the section titled "From the Keys" has been included [with]... taxonomic characteristics for each species."



Snapshots of the ruler and 2025 calendar for sale

NVNPS field trip report: Mojave cactus site by Marcus Hooker

On November 16th, ten plant-lovers from southern Nevada took a trip near Indian Springs to a site rich with cactus diversity. Laura Cunningham led the effort by showing us a beautiful location lying between the Spring Mountains (to the south) and the Spotted Range (to the north) that is at risk of being developed by the Bonanza Solar Project. In a relatively small area, we observed beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmannii*), and golden cholla (*Cylindropuntia echinocarpa*), but the stars of the show were the club cholla (*Grusonia parishii*), and an unusual pencil cholla (*Cylindropuntia ramosissima*).

You would think that with ten plant-lovers searching, we would have easily found the club cholla, but most of us walked right past a large patch of it before Hermi Hiatt noticed it. The club cholla can be distinguished from a true cholla by its flattened spines and by the spine sheaths which only shed from the tips of the spine. There are two species of club cholla in Nevada, *G. parishii* is more common in

southern Nevada and western Arizona. It has yellow, generally spineless fruits and rough-feeling spines. The other species is *G. pulchella*, which is more common in central Nevada and western Utah, it has red, spiny fruits and smooth spines. The pencil cholla at this site also had a range of unusual characteristics; the plants were spineless and grew as short mats only a few inches high. The population was not in flower when we visited it, but these plants have light yellow flowers instead of the expected reddish flowers of



View of club cholla's flattened spines ©Laura Cunningham



A beautiful day for botanizing in southern Nevada ©Laura Cunningham

most pencil chollas. With so much cactus diversity, as well as being excellent desert tortoise habitat, Laura and others are hoping

to get the site designated as an Area of Critical Environmental Concern (ACEC).



A spineless pencil cholla growing right next to a spiny one ©Marcus Hooker

Reprint: All the plants we cannot see

by Karen Mockler from the Revelator

When Kathryn Parsley taught biology to undergrads, she sometimes talked about Australia's stinging tree, which is among the world's most venomous plants — and can cause months of excruciating pain for anyone who approaches it. "It's incredibly dangerous," she says. "If you even get close, its trichomes can get on you and it feels like your skin is on fire." The sensation has been compared to being burned with hot acid and electrocuted at the same time.

The stinging tree got her students' attention, and that was Parsley's aim. Many people consider plants benign and boring, if they consider them at all. Most plants don't exist for them as distinct species; instead they compose what some botanists call "a green curtain"— a generic backdrop for more interesting creatures, namely animals, preferably vertebrates, ultimately humans.

What Is Plant Blindness?

Parsley wrote her dissertation on the

subject of [plant blindness](#), a term coined in 1999 by American botanists James Wandersee and Elisabeth Schussler, who defined it as "the inability to see or notice the plants in one's own environment." Several studies — including one Parsley conducted — have documented a difference in the visual attention people pay to animals compared to plants. When shown images in rapid succession, university students were better able to detect the animals and recalled more animal than plant names. There's even evidence that some students didn't perceive plants as being alive...

In terms of sheer volume, plants dwarf the rest of life on Earth's surface. Plant biomass is estimated to be [450 gigatons](#) on land, while animals account for only 2 gigatons. Plant-blind humans simply discard most of the plant information their eye-brain systems take in, processing information about something else instead. Wandersee and Schussler attributed some of that apathy to the fact that plants,

don't have a face. Nor can they move or threaten us the way animals can...

Why Is Plant Blindness a Problem?

Plants supply the oxygen we breathe and the food we eat, serving as the base of the food chain. Yet many of our plants are faring poorly, and climate change makes them even more vulnerable. A 2023 report from Kew Royal Botanical Gardens estimates that 100,000 plant species have yet to be scientifically identified, and says [3 in 4 of these undescribed vascular plant species are already threatened with extinction](#). But is this attributable to plant blindness? Kristine Callis-Duehl thinks so. She is the executive director of Education Research and Outreach at the Donald Danforth Plant Science Center in St. Louis, and she sees plant blindness on the rise.

"First and foremost, our habitat consists of plants," she says. "Yet the general public largely doesn't notice plants in their environment and therefore don't appreciate how important they are to the biosphere and society, let alone how to identify a specific plant. People are failing to prioritize conservation or protect local areas because they don't see the plants as important."

When humans overlook plants, they also overlook their importance to human affairs, from food security to cultural preservation to the source of most medicines we use today, says Callis-Duehl. "If you can't identify the role of these plants, you aren't seeing biodiversity. You're just seeing a sea of green and not preserving what's crucial to safeguard our ecosystem..."

Can Plant Love Be Taught?

"The best way I've seen to overcome plant blindness is to have somebody really passionate about plants teach you," Parsley says. "If you have a teacher in fifth grade who makes you do a leaf collection, like I did, then you're more likely to have more plant awareness. If you don't get exposed to them through school at the K-12 level, you may never be exposed to them or develop much

plant awareness."

Our K-12 education system centers [on] animals far more than plants, Parsley argues. If a biology textbook is choosing between an example of a plant or animal to illustrate a concept, it almost invariably goes for the animal. And [very few college students study plants](#) either.

When Parsley taught biology to college students, plant blindness was pervasive. "It's almost become a running joke in the botany community, with each new crop of undergraduates complaining, 'I don't know why we have to learn about plants.' Those anecdotes are a dime a dozen." Yet when she told students about an extraordinary plant such as the fierce stinging tree, "they were like, 'oh, this is so cool, I didn't know it could do that.'"

Outside of the education system, there are other opportunities for people to connect with plants. Parsley thinks botanical gardens are great, if you're lucky enough to live near one. But those often lure plant enthusiasts — in other words, they're preaching to the choir. And while many Americans garden, many focus on a few select plants like tomatoes, which are grown in 86% of home gardens in the United States.

Still, Parsley grants that not every person who loves plants hails from a plant-oriented culture. "We don't know why some people get the plant bug," she says... [We think] childhood events matter, from visiting an apple farm or a forest to picking strawberries...."

Other factors contribute to plant blindness. The world is a far more urban place than it [used to be]. But as Bergren points out, plants exist in cities too, from weeds in sidewalk cracks to potted plants on a fire escape... Bergren is doing her part to combat plant blindness. This semester, for the first time, she's asking her [literature] students to pick a plant on Trinity's tree-filled campus, write about it each week, and see it.

Editor's note: This article was submitted by Rose Strickland. For the full article, please follow [this link to The Revelator](#).

Conservation news:

Balancing fuels reduction and environmental health in our forests

by Alison Agneray and Rose Strickland

The Humboldt-Toiyabe National Forest (HTNF) is the largest US National Forest in the lower 48 and has been facing catastrophic wildfires that are reshaping our landscapes and prompting urgent responses from federal agencies. Recently, two major fuels reduction projects proposed by the HTNF have reached the public scoping stage. Both projects aim to reduce wildfire risk and restore ecological balance, but they raise questions about the long-term impacts of intervention and the role of public input in shaping sustainable outcomes.

As an advocate for Nevada's native plants, participating in these scoping processes is an invaluable opportunity to influence decisions that affect our forests. Consider joining the Conservation Committee if you want to join our group's effort to contribute comments on a regular basis on behalf of the NVNPS.

Carson Ranger District: Truckee Watershed Fuels Reduction Project

From the notice: "The Carson Ranger District of the HTNF proposes to reduce fire hazard and improve forest health using mechanical methods, manual methods and/or prescribed fire. The primary objectives of this project are to reduce tree density, reduce fuel loading (live and dead), and reduce ladder fuels on National Forest System (NFS) lands because stands in the Truckee Watershed project are departed from their natural ecological characteristics. Those characteristics include fuel composition, fire frequency, fire severity, fire pattern, and forest health.

The analysis area for the Truckee Watershed Project encompasses approximately 23,508 acres of NFS land south of Highway 80, just west of Reno, Nevada. A large portion of the project area is coniferous, with Lodgepole pine

(*Pinus contorta*) and white fir (*Abies concolor*) being the two most common overstory species. Drought and increased competition due to high tree densities has resulted in a landscape that is susceptible to large-scale disturbance. Mountain pine beetles are extremely active within the project area and have caused widespread mortality within many of the Lodgepole pine stands. The resulting dead and dying trees have led to increased fire danger from heavy fuel loading. Furthermore, there is a large presence of small diameter trees in the project area, creating a high risk of catastrophic wildfire due to ladder fuels increasing chances of transferring a ground fire to the canopy." Learn more and access the [project details here](#).

East Humboldt and Ruby Mountains Fuels Reduction and Landscape Resilience Project

Summarized from the notice: The HTNF is preparing an Environmental Assessment (EA) for the East Humboldt and Ruby Mountains Fuels and Landscape Resilience Project to reduce wildfire risk and improve ecosystem resilience. This initiative includes approximately 245,437 acres to be considered for treatment within the Elko Front WCS landscape, excluding another 95,000 acres of wilderness and research natural areas within the larger area originally considered.

The Project area includes the East Humboldt and the Ruby Mountains ranges; the southern portion of the East Humboldt Range is approximately 32 miles due east of the city of Elko, Nevada, and the Ruby Mountains Range is approximately 18 miles southeast of the city of Elko. Elevation within the Project area ranges from approximately 6,000 feet on the valley floor around both mountain ranges to 11,387 feet at the summit of Ruby Dome in the Ruby

Mountains. Public comments are now invited to help refine the EA's scope and identify additional resource protection measures.

The deadline for comments is December 5, 2024, and [project details are available here](#).

New research: Metals in Wildfire Suppressants

Efforts to combat wildfires often include applying fire suppressants like long-term fire retardants, water enhancers, and Class A foams. However, a recent study published in *Environmental Science & Technology Letters* on October 30, 2024, highlights the environmental implications of these products. The open-access study reveals that long-term fire retardants contain 4 - 2,880 times greater concentrations than drinking water limits of toxic metals such as arsenic, cadmium, and lead, sometimes exceeding aquatic toxicity thresholds.

While the USFS must approve these products before use on wildfires, up to 20% of their formulations are considered trade secrets and not included on publicly available Material Safety Data Sheets. Between 2009 and 2021, the authors estimate fire retardant application alone released approximately 380,000 kilograms of toxic metals across the western U.S. While water enhancers and Class A foams contain lower concentrations of metals, these findings raise critical questions about how fire suppression strategies interact with

ecosystems already under stress from wildfires.

The article is [available online for free here](#)

Citation: Schammel, M. H., Gold, S. J., & McCurry, D. L. (2024). Metals in Wildfire Suppressants. *Environmental Science & Technology Letters*.

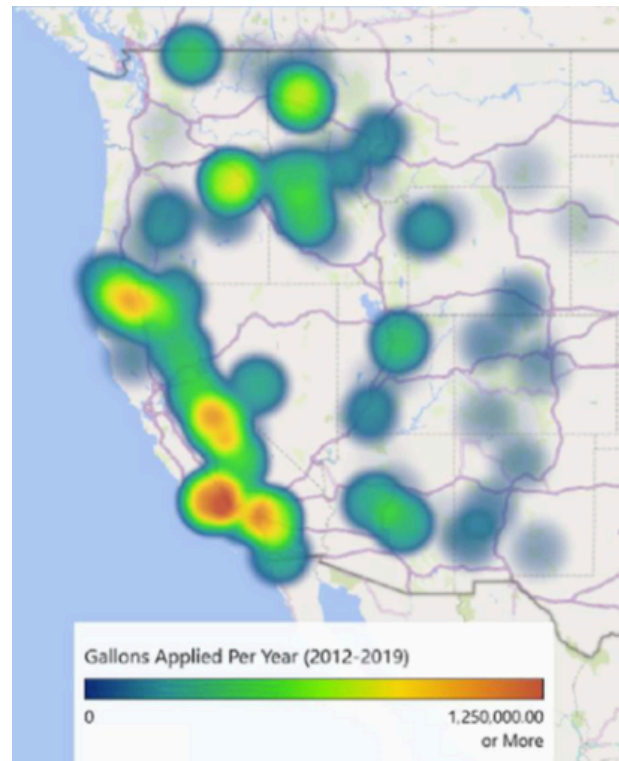


Figure. Application of long-term fire retardants to the western United States between 2012 and 2019.

Reprint: Nevada lithium mine approved despite possible harm to endangered wildflower

from The Guardian and Associated Press

For the first time under Joe Biden, a federal permit for a new lithium mine has been approved for a Nevada project essential to his clean energy agenda, despite conservationists' vows to sue over the plan, which they say will drive an endangered wildflower to extinction. Loneer Ltd's mine will help expedite production of a key mineral in the manufacturing of batteries for electric vehicles at the center of the president's push to cut greenhouse gas

emissions, administration officials said [October 24th] in Reno. Acting deputy interior secretary Laura Daniel-Davis said it's "essential to advancing the clean energy transition and powering the economy of the future"...

In the works for six years, construction of the Rhyolite Ridge mine should start next year in the high desert halfway between Reno and Las Vegas, the Australia-based Loneer said. Production is scheduled to begin in 2028 at

the mine, which should produce enough lithium for 370,000 vehicles annually for more than two decades, officials said. Worldwide demand for lithium is projected to have grown six times by 2030 compared with 2020...

The Interior Department's Bureau of Land Management issued the permit after the US Fish and Wildlife Service (USFWS) concluded, in consultation with the Bureau required under the Endangered Species Act, that the mine would not jeopardize the survival of Tiehm's buckwheat.

The Service added the 6in tall (15cm tall) wildflower with yellow and cream-colored blooms to the list of US endangered species on 14 December 2022, citing mining as the biggest threat to its survival. The Bureau initiated the mine's permitting process five days later. The agencies say Loneer's subsequent changes to the mine's footprint alleviated concerns about potential harm to the flower.

Environmentalists said Thursday that the mine's final approval was a politically motivated violation of multiple US laws. The Center for Biological Diversity said in a statement: "Litigation is now the only way [to] stop the Rhyolite Ridge Mine."

"We need lithium for the energy transition, but it can't come with a price tag of extinction," said Patrick Donnelly, the center's Great Basin director. He said Biden's administration "is abandoning its duty to protect endangered species like Tiehm's buckwheat and it's making a mockery of the Endangered Species Act".

Fewer than 30,000 of the plants remain in Nevada at the only place they're known to exist in the world across eight sub-populations that combined cover 10 acres (4 hectares) – an area equal to the size of about eight football fields. USFWS said the project, including

the infrastructure and waste rock dump, will come within 15ft (5 meters) of the buckwheat and result in the loss of some of its designated critical habitat that is home to neighboring bees and other pollinators integral to its reproduction...

Opponents of the project say it's the latest example of Biden's administration running roughshod over US protections for native wildlife, rare species and sacred tribal lands in the name of slowing the climate crisis by reducing reliance on fossil fuels and bolstering national security by easing reliance on foreign sources of critical minerals... "We've been fighting to save Tiehm's buckwheat for six years and we're not giving up now," Donnelly said...

Editor's note: This article was submitted by Peter Stanton. For the full article, please follow [this link to The Guardian](#).



Tiehm's buckwheat blooming at Rhyolite Ridge in western Nevada, in 2019. ©Patrick Donnelly/AP

Featured book review: The War Below by Ernest Scheyder

by Emma Wynn

A couple months ago, Jerry asked me if I would like to borrow “The War Below: Lithium, Copper, and the Global Battle to Power Our Lives” by [Ernest Scheyder](#). I opened it and started to read the prologue: “A glint of light caught Jerry Tiehm’s eye late one afternoon as he drove through the cragged Nevada landscape and into the encroaching dark.” Of course I had to keep reading!

The book, written by Reuters reporter Ernest Scheyder, covers the clean energy transition and critical minerals needed to fuel it. To illustrate the demand for critical minerals, Scheyder lists the materials used to make the battery in an average Tesla Model 3, the most popular electric vehicle when the book was written.

- Lithium – 6 kilograms (kg)
- Nickel – 42 kg
- Cobalt – 8 kg
- Aluminum – 8 kg
- Graphite – 55 kg
- Copper – 17 kg
- Plus more than a mile of copper wiring elsewhere in the motor.

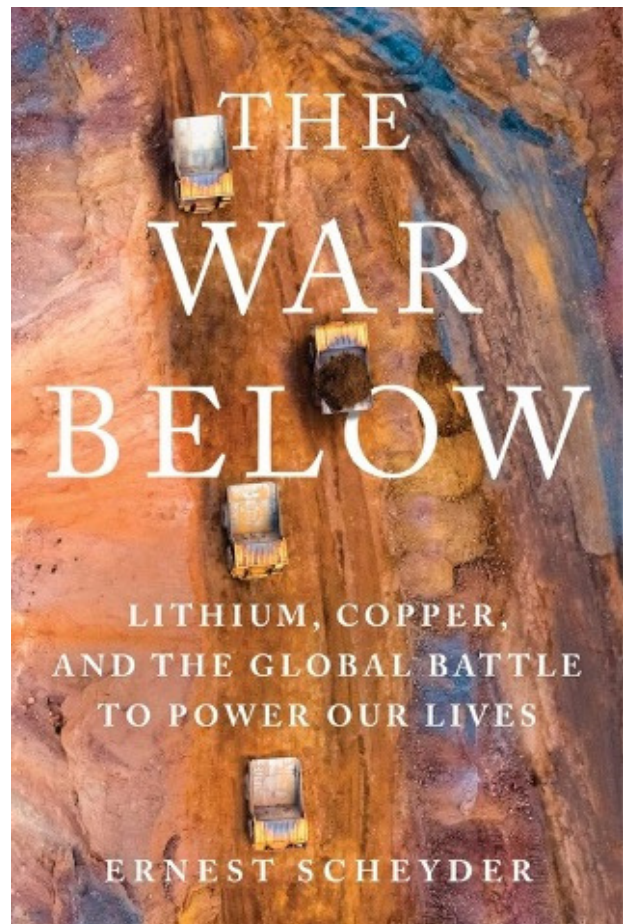
To produce all this raw material, the world needs to develop new mines. “The [International Energy Agency] found that between 2022 and 2030 the world needed to build fifty new lithium mines, sixty new nickel mines and at least seventeen cobalt mines.”

The book features many stories about mines, mining companies and their impact on communities and ecosystems around the world. The dispute between mining companies and environmentalists at Rhyolite Ridge and the fate of Tiehm’s buckwheat is one of the stories covered in great detail. Scheyder’s stories illustrate not only environmental issues but also cultural, religious and other areas of potential conflict about the siting of the mines needed to help us “go green.” Scheyder interviewed dozens of people and visited multiple

sites to illustrate the complexity of the issues facing as we try to balance the global need to transition off fossil fuels against the impact that mines or other industrial development will have on local ecosystems and communities.

I found the book to be readable and thought-provoking, I learned all sorts of interesting facts about lithium batteries, the players involved in mining the minerals needed for them, the domestic and global politics behind the decision about where to mine and why mine in a particular location.

The book begins and ends with Jerry and his eponymous buckwheat. As Scheyder says: “The bloom of the green energy revolution had made that plant emblematic of the choices and consequences facing our world as it struggles with how best to tackle the climate crisis.”





Close-up of Garrett's firechalice and Cody with a massive Joshua Tree ©Cody Ernst-Brock

Phenology corner: Mojave blooms

by Cody Ernst-Brock

On October 30th, I traveled across the Nevada border to the Kingston Range in California in search of *Epilobium canum* subsp. *garrettii* (Garrett's firechalice). Using an herbarium record from 2001 as my guide, I traveled up a canyon near Horse Thief Springs and was delighted when a flash of vibrant red caught my eye. Nestled in a sunlit crevice, surrounded by pale, weathered rock, was

Garrett's firechalice. Its tubular scarlet blossoms seemed to glow against the stark backdrop, a vivid reminder of the resilience and beauty of desert flora. On the way back home in Nevada, I was happily surprised to come across one of the largest Joshua trees I had ever laid eyes on. All in all, a good day in the field.

Society updates

Since our last newsletter in October, we have had two monthly meetings dedicated to the "Castillejinae Species of Nevada: Paintbrushes and Their Relatives Parts 1 and 2." Our presenter for both was Mark Egger, a Research Associate at the WTU Herbarium. Mark will complete Part 3 at our May 1, 2025 meeting. During these presentations, Mark is walking us through every single species in the subtribe of Castillejinae that occurs in

Nevada, from 21 species of the beloved *Castilleja* genus to the lesser known *Orthocarpus* species. For each species, Mark shared his wonderful plant photographs and stories from the field. Both Parts 1 and 2 were recorded on Zoom and you can email Charlie for copies of the recordings. Pro tip: if you register for the meeting in advance, you will be sent a copy of the recordings, even if you are unable to attend.

We are now on a brief hiatus from meetings during the holiday season. Our next monthly meeting will be on February 6th with in-person options at UNR in Reno and at the College of Southern Nevada in Henderson, plus the option to join remotely. For the latest updates, you can either check the calendar on the website nvnps.org/events; reach out to events@nvnps.org; or follow us on Facebook. We do not have any field trips currently planned, but if you are interested in leading any efforts for NVNPS, please reach out to Emma Wynn, president@nvnps.org or Shannon Swim, shannonswim@gmail.com.

Additionally, we held our annual election for the Board of Directors during our November meeting. We elected three new Board members (Esther Hwang for Secretary, Cory King and Cody Ernst-Brock for Members-at-Large) and Alison Agneray for Vice President after serving as a Member-at-Large for a year. Kris Kuyper and Janel Johnson will be stepping down from the Board starting in 2025 after years of service. John Weiser's three-year term as Member-at-Large also ended, but he will remain on the board as the Chair of the Horticulture committee. Thank

you everyone for all of your dedication to the Nevada Native Plant Society!

We also want to extend a special welcome to our 14 new members who joined in the last two months:

- Virginia Bary, Eagleville CA
- Wendy Callaway, Redding CA
- Dominic Cirillo, Reno NV
- Laura Cunningham, Beatty NV
- Mark Egger, Seattle WA
- Isaac Holyoak, Henderson NV
- CJ Kelley, Henderson NV
- Gwen Kittel, Boulder City NV
- Matt Lavin, Bozeman MT
- Claudia Garcia McIntosh, Dayton NV
- Isabella Remondini, Kings Beach CA
- Chad Skorich, Las Vegas NV
- Peter Stanton, Reno NV
- Christine Taylor, Las Vegas NV

If you are interested in having your work featured in the newsletter or if you have any comments, please reach out to Alison Agneray, Newsletter Editor. Newsletters are published six times per year in even-numbered months and distributed only to active NVNPS members.



Giant Red Indian Paintbrush (*Castilleja miniata*) growing outside of Spring Creek, NV ©Mountain West Birding Company, iNaturalist

Board of Directors

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- President Emeritus: Arnold Tiehm
- Vice President: Vacant
- Recording Secretary: Kris Kuyper, kristinkuyper@gmail.com or secretary@nvnp.org
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- Sarah Harrelson
- Hermi Hiatt
- Janel Johnson
- Janette Perry
- John Weiser

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- Events, Northern Nevada: Shannon Swim, events@nvnp.org
- 50th Anniversary: Sarah Kulpa
- Field Trips, N. Nevada: Christopher Mackessy
- Grants: Jim Morefield, grants@nvnp.org
- Horticulture: John Weiser
- Membership Coordinator: Gail Durham, membership@nvnp.org
- Newsletter Editor: Alison Agneray, aagneray@gmail.com
- Photography: Larry Lodwick
- Programs: Charlene Duncan (North), cirsium.down@gmail.com & Marcus Hooker (South) Marcus.Hooker@csn.edu
- Publications: Arnold (Jerry) Tiehm
- Rare Plants: Joshua Lovera, rareplants@nvnp.org
- Social media: Emma Wynn & Sarah Kulpa, social@nvnp.org
- Webmaster: Patrick Silbey, psilbey@gmail.com

Note Elections were held in November and changes won't be reflected until the new year when new appointments begin.

