Eastern Nevada Landscape Coalition

LANDSCAPE NEWS

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The Gregory G. Gust Herbarium: Preserving Nature, One Plant at a Time

Hans Hallman, ENLC Botanist

Eastern Nevada Landscape Coalition's (ENLC) herbarium began in 2007 as a modest handful of plant specimens stored on open metal shelving units in a back closet of our offices. Started by Greg Gust, this repository was meant to aid in teaching seasonal field ecology workers about plant identification in the Great Basin and Mojave deserts. Today, thanks to Greg's and dozens of seasonal workers' and volunteers' efforts over 16+ years, ENLC now holds over 6,500 specimens, most of which represent the flora of Nevada, and in particular focus on the Great Basin and Mojave deserts and their intergradation. Among our collections are Seeds of Success vouchers, specimens from targeted floristic inventories, noxious and invasive weed surveys, and specimens of conservation concern. Our holdings represent 1,323 species, and 1,788 unique taxa, including subspecies and varieties.

An isotype specimen of *Penstemon keckii* from 1936.

As part of the Intermountain Region Herbarium Network, hosted by SEInet Portal Network within Symbiota, open-source biodiversity management software, all of ENLC's herbarium data are accessible to the public. Please see https://intermountainbiota.org/portal/collections/misc/collprofiles.php?collid=120 for more information or to search our collections.

So What All Is a Herbarium?

A herbarium is much more than just a collection of dried plants pressed between sheets of paper—it's a vital scientific resource, an historical archive, and a key to understanding the natural world. Found in universities, museums, botanical gardens, and research institutions across the globe, herbaria play a critical role in plant science, conservation, and education.

A *herbarium* (plural: *herbaria*) is a systematically arranged collection of preserved plant specimens. These specimens, which may include flowers, leaves, stems, seeds, and even bark or roots, are carefully dried, mounted on sheets, labeled with detailed information, and stored in climate-controlled cabinets to prevent deterioration.

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Eastern Nevada Landscape Coalition

Our Mission

The mission of the Eastern Nevada Landscape Coalition is to restore the dynamic, diverse, resilient landscapes of the arid and semi-arid West for present and future generations through education, research, advocacy, partnerships, and the implementation of on-the-ground projects.

Our Vision

We envision a future where the ecosystems of the arid and semi-arid West thrive. Functioning, diverse ecosystems will be the result of restoration achieved and maintained with naturally occurring disturbances such as fire, in combination with other management prescriptions, including traditional uses. The Eastern Nevada Landscape Coalition, a 501(c)(3) non-profit, will be a recognized contributor and leader in this effort for future generations of Americans.

Board of Directors

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Not Old, Not New

John Watt,
Executive Director

As the Eastern Nevada Landscape Coalition enters its 25th year of existence, it can no longer be considered new, nor should it be considered old. As I enter my second year as ENLC's Executive Director I could on one hand be considered "new," especially in this role, however I am not new to ENLC. I worked part and full time for ENLC starting in 2003 through 2015, filling various roles at times but primarily as a mine exploration/reclamation specialist. I left ENLC to return to Alaska for six months of the year to pursue commercial fish tendering vessel dreams for the next 10 years. I'd like to think that this does not put me in the category of "old," especially when it comes to ENLC's lifespan so far.

I grew up in a farming community in central Minnesota and worked within the agriculture and food processing industry, from field to processing, during my years there. I came to Ely from Alaska where I worked in the commercial fishing industry. While working in Alaska in the springs and summers, I also spent falls in Colorado working as an elk hunting guide and operating a backcountry winter camp within a Colorado State Park. My love of the mountains, of the west, and the public lands that exist there made Ely a perfect place to settle down when my wife and I found our way here for her work as a school teacher. Initially, I taught as a substitute teacher for five years in Ely while spending summers in Alaska and falls in Colorado. Soon, leaving Ely for the beautiful summer season became difficult and I found work as a Wilderness Ranger for the Forest Service for one summer. This exposed me to the growing season of the Basin and Range and also the many mining sites, working and abandoned, that dot this country. The chance to work with ENLC in joint efforts to rehabilitate/reclaim disturbed land was the perfect opportunity to unite my understanding of the value of the commercial use of natural resources with my love of the natural beauty of the west and the desire to see that beauty preserved.

In the fall of 2024, the opportunity to return to ENLC in a new role within the Coalition was great timing for me and I believe for ENLC. I had retired from guiding in Colorado and despite my love for Alaska and its natural resources, the passion I have for the Great Basin and its natural resources made the decision easy for me. In my new role I strive to maintain and further ENLC's goals of advancing ecosystem health and rehabilitation through changing times and challenges. My new role will be to make sure ENLC grows older.

Herbarium

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It all starts with collecting a plant and recording location and habitat data. A typical label on a herbarium specimen contains the following data:

- The plant's scientific name
- The location and date of collection
- The name of the collector
- Notes about the plant's habitat, growing conditions, and appearance
- Associated species of plants in the immediate vicinity

This meticulous documentation makes herbarium specimens valuable scientific records.

A Glimpse Into the Past

Some herbaria are centuries old. The oldest known herbarium, created by Italian botanist Gherardo Cibo, dates back to the 16th century. These historical specimens allow scientists to study plant life as it existed hundreds of years ago, offering insight into how species have changed over time due to factors like climate change, habitat loss, and human activity. ENLC's oldest records, type specimens of *Penstemon keckii* and *Castilleja clokeyi*, date back to 1936.

Why Are Herbaria Important?

Herbaria support a wide range of scientific, educational, and conservation-related efforts:

1. Taxonomy and Identification: Botanists use herbarium specimens to classify plants, discover new species, and confirm identifications. Comparing physical features of plants side-by-side helps distinguish between closely related species.

2. Climate Change Research: By examining where and when plants were collected, scientists can track changes in species distributions over time. This data provides evidence of shifting climates and helps predict future changes in biodiversity.

3. Conservation Efforts: Herbaria can identify rare or endangered plants, helping prioritize species and habitats for protection. They also act as genetic banks, storing samples that may one day aid in species restoration.

4. Education and Outreach: Herbaria are also teaching tools. Students and amateur botanists can learn plant identification, specimen preparation, and ecological relationships by working hands-on with collections.

Herbaria: Bringing Nature Online

Approximately 1,300 of ENLC's specimens have been imaged, and my goal is to complete this work as budgets and time allow. These high-resolution images, searchable databases, and geolocation tools allow people to explore plant biodiversity from their computers.

In essence, a herbarium is a quiet powerhouse of knowledge—a place where science, history, and nature converge. As we face global environmental challenges, these collections remind us of the planet's botanical richness and the importance of preserving it. Whether you're a scientist, student, or nature lover, herbaria offer a window into the green world around us—past, present, and future.

Calendar of Events

November 3-6	**The North American Invasive Species Management Association (NAISMA) 2025 Annual Conference, ENLC Booth – Lake Tahoe**
November 4	**Railroad Valley CWMA Meeting – Currant, NV; White River Valley CWMA Meeting – Lund, NV**
November 20	**Newark/Long Valley CWMA Meeting – Eureka, NV; Steptoe Valley CWMA Meeting – Ely, NV**
November 24	**Spring Valley CWMA Meeting – Yelland Ranch; Snake Valley CWMA Meeting – Baker, NV**
December 2	**Upper Meadow Valley CWMA Meeting – Ursine, NV; Pahranagat Valley CWMA Meeting – Alamo, NV**
December 24	**Deadline for Pre-Registration Prices for ENLC's Invasive Species Conference**
January 14-15, 2026	**20th Annual Invasive Species Conference (ENLC) – Ely, NV**

Healing T Creek: Restoring a Lifeline in the Marys River Country

By John Haddock, Aquatic Natural Resources Specialist

Beaver dam analog near top of project area.

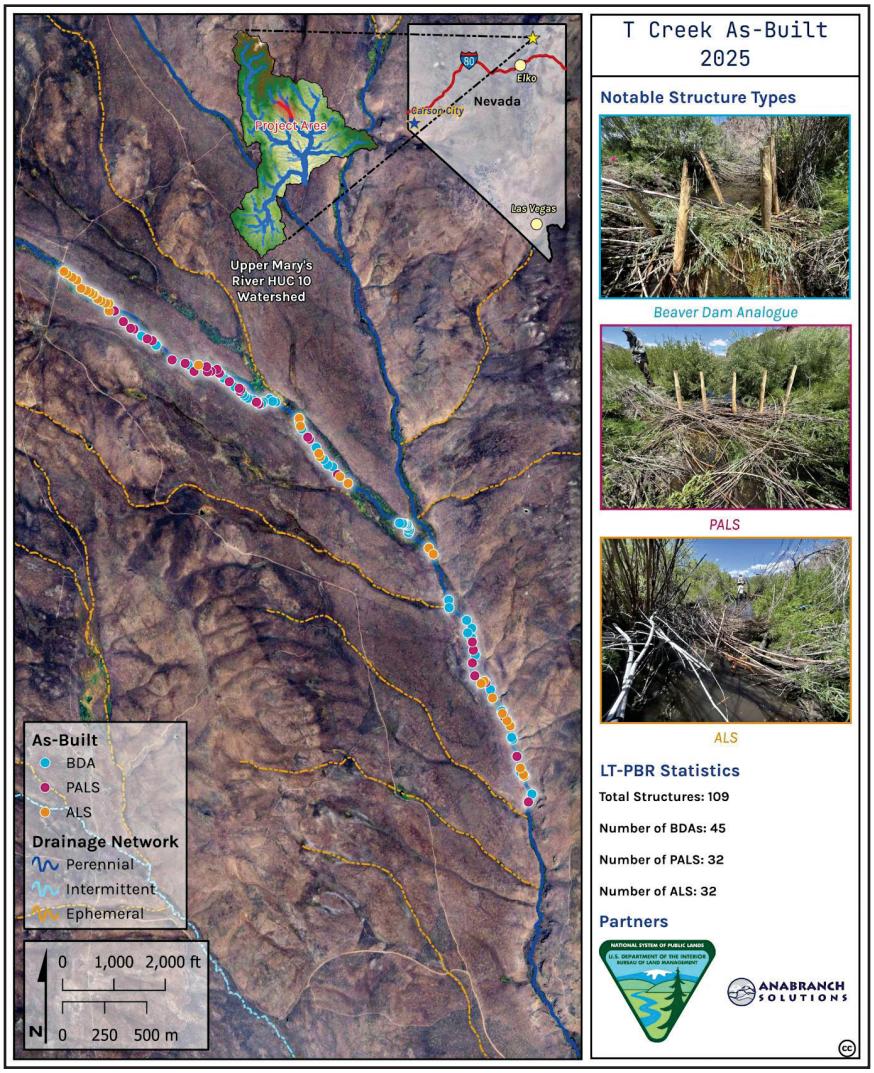
In the high sagebrush country of northeastern Nevada, T Creek winds quietly through aspen pockets and willow-lined draws before joining the Marys River. To the casual eye it might look like just another desert stream, but for wildlife and people alike it is a lifeline. T Creek supports some of the last remaining fluvial populations of Lahontan cutthroat trout, fish that still migrate between the cool mountain headwaters and the broader lower valleys of the Marys River drainage. The creek is also an important area for sage grouse rearing, a travel corridor for mule deer, and home to a few resident moose that browse the willow flats through much of the year.

After the 2022 Wildcat Fire burned a large part of the upper watershed, that balance began to shift. The fire stripped vegetation from the hillslopes destabilized streambanks and sent heavy loads of ash and sediment downstream. Already degraded from years of incision, the creek began to erode more quickly. Banks slumped, the floodplain dried, and the fish and wildlife habitat declined. Recognizing the need for quick action, the Bureau of Land Management partnered with Anabranch Solutions to design and implement a restoration effort that would help the stream recover naturally.

Rebuilding a Stream the Low-Tech Way

The T Creek Post-Fire Stream Stabilization Project used simple, low-cost methods that work with the stream instead of against it. Rather than large equipment or concrete, crews relied on natural materials such as willows, sagebrush, wooden posts, and downed timber gathered on site. In June 2025, workers built 109 small, hand-crafted structures along three miles of T Creek, including beaver dam analogs and post-assisted log structures. These features slow water, trap sediment, and raise the streambed, helping water spread across the floodplain again. Over time the stream begins to rebuild its own channels and meadows, restoring moisture and stability to the valley bottom.

Each structure had a clear purpose. The beaver dam analogs hold water to form deep pools that give trout cool-water refuge and create habitat for beavers. The log structures redirect flow, push water into old side channels, and reconnect the stream to its floodplain. Others were placed to stop headcuts, small vertical drops in the streambed that can migrate upstream and drain groundwater if left untreated. Together, these small, natural features are helping to reverse decades of erosion and jump-start the natural processes that once shaped T Creek.



Project Map

A Refuge for Native Trout and Wildlife

For Lahontan cutthroat trout, these improvements mean survival. Once widespread across the ancient Lake Lahontan basin, most populations are now isolated in small headwater creeks. The Marys River drainage is one of the last places where these fish can still live a fluvial life, moving between the main river and tributary headwaters as conditions change through the seasons. Restoring T Creek's hydrology and floodplain connection expands this vital habitat, ensuring access to spawning gravels and cold pools during the heat of summer.

The benefits extend far beyond fish. A healthy riparian corridor provides lush summer forage for mule deer and secure nesting and brood-rearing habitat for sage grouse, which depend on wet meadow edges to raise their chicks. The same willows that stabilize streambanks also provide browse and cover for the moose that frequent this part of the Marys River country. As T Creek regains its natural patterns of flooding and drying, it supports the mix of wetlands, meadows, and sagebrush flats that define this region's ecological richness.

Looking Ahead

The 2025 work marks an important beginning. Because the low-tech process-based restoration method depends on natural flows, each spring runoff acts as part of the construction process. Sediment will continue to accumulate behind the structures, groundwater levels will rise, and vegetation will spread outward. Monitoring after the 2026 runoff will show which structures performed well, which need reinforcement, and where new ones might be added. Encouragingly, crews observed an active beaver colony within the project area. As the beavers expand their activity, they will build on the work already started and create even more habitat and water storage on their own.

A Model for the Future

The T Creek project is part of a broader effort across the West to use simple, natural materials to restore degraded streams. These projects show that resilience can be built without large budgets or heavy equipment. In a landscape where ranching, wildlife, and water all depend on the same stream systems, this approach offers a practical model for coexistence—working with natural processes instead of trying to control them.

For Lahontan cutthroat trout, sage grouse, mule deer, and moose, the work at T Creek represents a hopeful turning point. As vegetation greens the banks and the sound of running water returns, the creek is once again becoming what it was meant to be: a living, connected part of the Marys River watershed.

Basin and Range National Monument Bat Inventory

Kelsey Danielson, ENLC Ecologist

ENLC is collaborating with the Bureau of Land Management (BLM), Nevada Department of Wildlife (NDOW), Bat Conservation International (BCI), and the North American Bat Monitoring Program (NABat) on a five-year project to inventory bat species within Basin and Range National Monument (BARNM).

The goal of this project is to provide baseline data of bat species present in the monument and their use of these public lands. With threats such as habitat loss and white-nose syndrome (WNS), these data will help us better understand and conserve bats in BARNM.

This project involves long-term, passive acoustic monitoring of echolocation calls using bat detectors deployed throughout the monument. These bat detectors, like the Anabat Swift that we use, are specialized equipment that can record the ultrasonic frequencies of bats that are too high for humans to hear unassisted. Each bat species has unique calls that can be recorded and visualized on a spectrogram (Figure 1). While bat echolocation calls are not as distinct as bird calls, trained researchers like our partners at BCI can still use them to identify the bat species in the area.

ENLC's Ecologist, Kelsey Danielson, deploying a bat detector in BARNM, with the ultrasonic microphone affixed to a tall painter's pole.

Data collection began in June 2023, and detectors have been deployed seasonally (approximately March - November) each year since then. The results from the first year of monitoring (2023) show that 12 species were detected. In the second year, 2024, we were able to detect an additional two species, for 14 total species (Table 1). We are currently collecting data for 2025 and are excited to see what the results of this year show.

In addition to acoustic monitoring, we have also conducted bat trapping surveys on three occasions. We joined both the 2023 and 2025 BioBlitzes that BARNM staff put on, and the Nevada Bat Working Group held their annual Bat Blitz at the monument in 2024. Capture surveys like these help us collect additional data that we couldn't get with acoustics alone- including demographic data and genetic samples. Furthermore, identifying bats in-hand can help to verify our acoustic detections.

During the 2023 BioBlitz, we conducted one night of trapping

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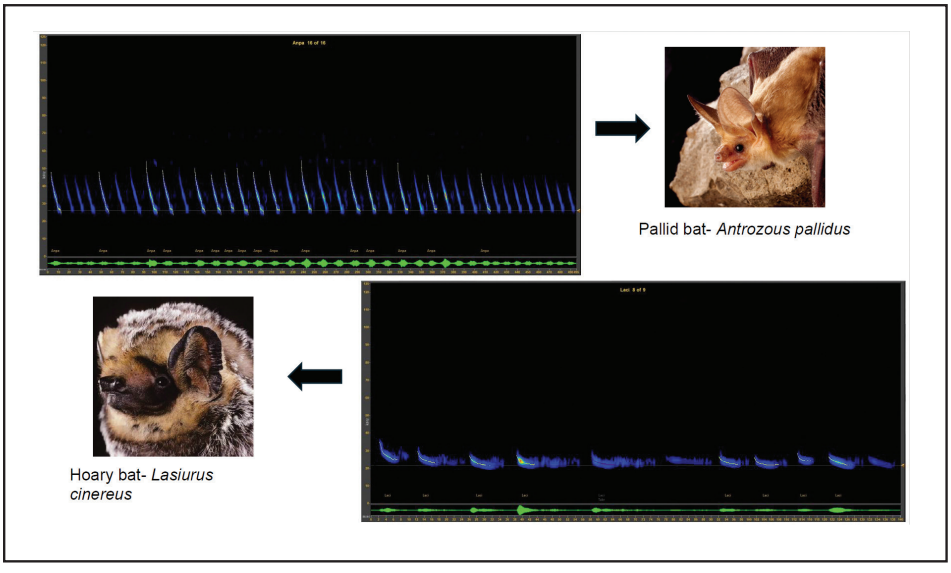

Figure 1. Examples of echolocation call spectograms as visualized in Sonobat analysis software and the bat species they represent. Y-axis is frequency and X-axis is time. Pallid bat photo by Michael Durham/ Minden Pictures; Hoary bat photo by Merlin Tuttle.

Bat Inventory

Continued from previous page

and caught two individual small-footed myotis. Beyond the value of the additional data, events like this are a good opportunity for bat outreach with the public.

At the 2024 NV Bat Blitz, we captured 111 individuals of eight different species, and with our simultaneous acoustic monitoring included, we detected 12 species total over four nights. Additionally, we collected genetic samples for the region-wide Myotis protocol to help refine bat ID keys.

And finally, we participated in the 2025 BioBlitz and trapped for two nights. We captured 36 individuals of five species, and with acoustics, we detected 11 species in total. All species captured throughout these multiple blitzes match up with acoustically detected species from the long-term monitoring.

While bats are often misunderstood and even vilified, they are a hugely important part of the habitat of BARNM and elsewhere. Bats provide vital ecosystem services around the world including pest control and pollination, while facing numerous threats like WNS, habitat loss, climate change, and more. To conserve populations effectively, it is crucial to have baseline data to compare to. We also hope to spread the word via outreach that bats are not creepy or scary, but instead helpful, interesting, and even cute!

	Scientific Name	Common Name	2023	2024
1	*Antrozous pallidus*	Pallid Bat	✓	✓
2	*Corynorhinus townsendii*	Western/ Townsend's Big-eared Bat	✓	✓
3	*Eptesicus fuscus*	Big Brown Bat	✓	✓
4	*Euderma maculatum*	Spotted Bat		✓
5	*Lasionycteris noctivagans*	Silver-haired bat		✓
6	*Lasiurus cinereus*	Hoary Bat	✓	✓
7	*Myotis californicus*	California Myotis	✓	✓
8	*Myotis ciliolabrum*	Western Small-footed Myotis	✓	✓
9	*Myotis evotis*	Long-eared Myotis	✓	✓
10	*Myotis lucifugus*	Little Brown Bat	✓	✓
11	*Myotis thysanodes*	Fringed Myotis	✓	✓
12	*Myotis volans*	Long-legged Myotis	✓	✓
13	*Parastrellus hesperus*	Canyon Bat	✓	✓
14	*Tadarida brasiliensis*	Mexican Free-tailed Bat	✓	✓

Table 1

ENLC Gets a New Sign!

ENLC's old sign, while still well-loved, was beginning to show its age. ENLC's new sign (above) features our logo and local flora and fauna, installed in February 2025.

After many years standing sentinel at our front door, the old ENLC sign has been retired and replaced. Former executive director, Susi Algrim, collaborated with local artist Jamie Vincek to design a new entrance sign featuring some of Nevada's beautiful native flora and fauna, which was painted and installed by Jamie and her sister, Brandie Vincek.

We are proud to display this artwork and hope it welcomes many visitors into our office for years to come.

Eastern Nevada Landscape Coalition

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ENLC Membership Reminder

Our annual ENLC membership renewal will occur this fall. By supporting ENLC as a member, you are also supporting our annual programs and workshops. Events like our Annual Invasive Species Conference aren't covered by projects or agreements, so your memberships are what keep these events going!

Thank you for supporting the Eastern Nevada Landscape Coalition and remember **your support is much more than a charity; it's an investment in the future of the health of the Great Basin ecoregion and beyond. Thank you again for your generosity!**

If you have any questions, please don't hesitate to contact John Watt, ENLC's executive director, at 775-289-7974.

ENLC Membership

Name _____

Business/Organization _____

Address _____

City _____ **State** _____ **Zip Code** _____

Phone _____

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Membership contributions are tax deductible as allowed by law. ENLC's tax ID number is: 33-1001664.

Send your check and this form to:

ENLC
PO Box 150266
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Student	**$ 25**
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Platinum	**$2,000**
Corporate	
Bronze	**$500**
Silver	**$1,000**
Gold	**$1,500**
Platinum	**$2,500**