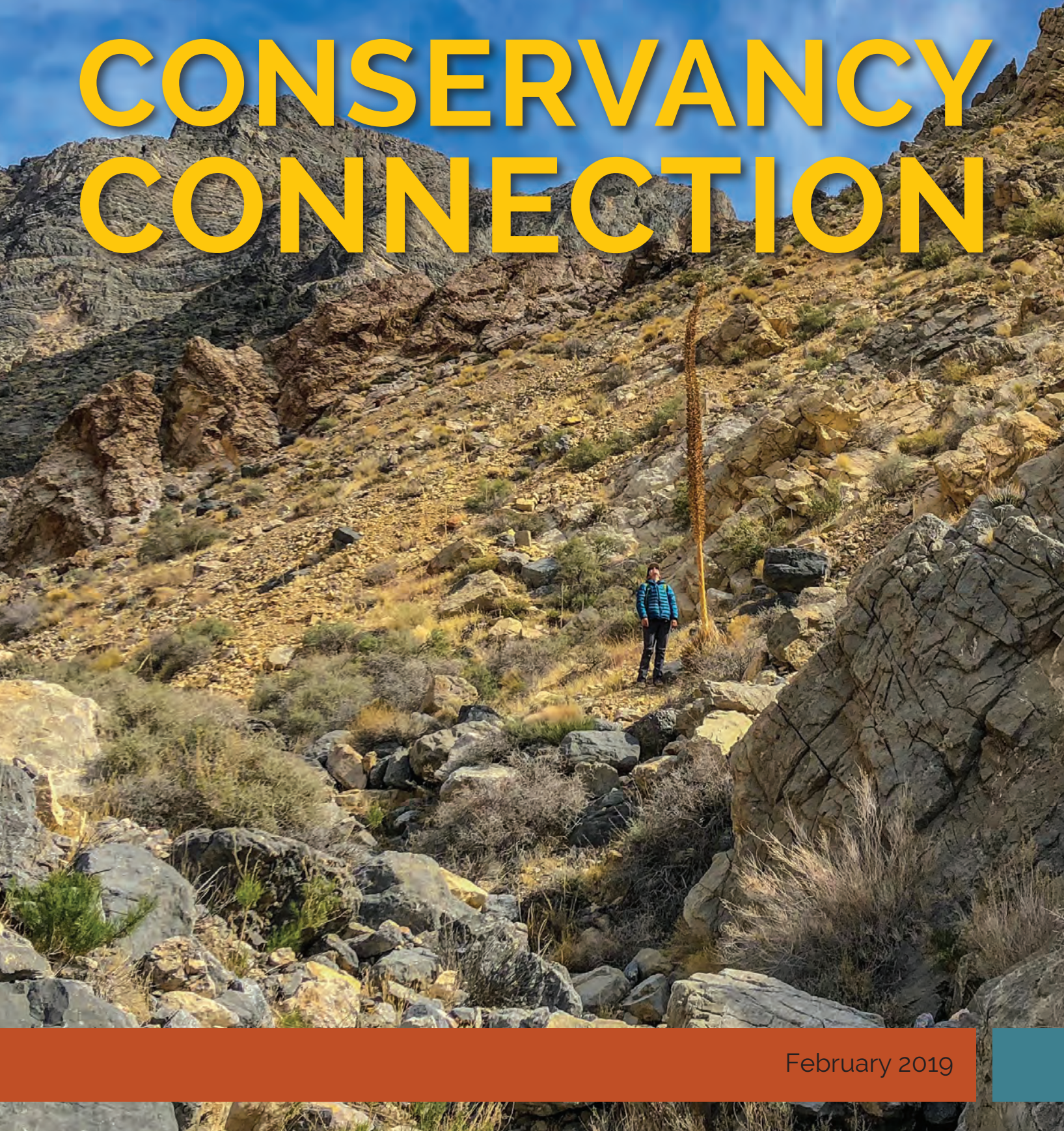




CONSERVANCY CONNECTION



February 2019

Conservancy Connections

Dear Amargosa Conservancy Members and Friends,

I am excited about so many of the goings on with the Amargosa Conservancy. Holly Alpert is taking a well-earned break from serving as President of the Board. The good news is that she is maintaining her ties with the Amargosa Conservancy and will continue on as a Board Member. Jane Gillam, who has been a dynamo Board Member since 2015 and has more recently served as Vice President, is assuming the Presidency. I know I speak for the Board and Staff in publicly thanking Holly for her four years of tremendous service and looking forward to working with Jane to build on the many successes we have achieved with Holly. An excellent opportunity to get to know Jane better will be at this year's 'Meet the Amargosa' on October 26th through 27th, 2019. I too look forward to mingling with you all and getting to know each of you better at what is sure to be another fantastic event.

There are a multitude of resources and issues in the Amargosa Basin. As such, it is our pleasure and obligation to help keep you informed and this newsletter, offered twice annually, is such a vehicle. Our staff is continuing to accomplish much work to further protect some of the rarest resources in the Basin, as summarized in the updates regarding volunteer and stewardship efforts (pages 2 and 3). As there are always emerging issues and challenges, I encourage you to read the Conservation Alerts section and take part in the action (page 4). Bill Neill, a geologist who has roamed the desert for decades, shares his knowledge on the



2019 Amargosa Conservancy Board and Staff

geology of Salt Creek Hills in an article that I think you will find interesting and enlightening (pages 7 and 8). Read on to hear from Dr. Naomi Fraga, an expert on the area's vegetation, as she shares her enthusiasm and love for the Amargosa Niterwort, one of our very own rare plant species (page 9). So, we hope you read this newsletter from cover to cover.

This edition of Conservancy Connection is only one aspect of our efforts to keep our readers and supporters informed and connected. We invite you to stop by our office in Shoshone, where we have a variety of informative pamphlets and reading materials. Our website, amargosaconservancy.org, is a treasure chest of information about the organization, the resources of the Amargosa Basin, and the conservation issues we are facing. I love the photo of and the article on the Amargosa Vole! For those of you who also wish to receive news from us via email,

head to our website to sign up on our email list - feel free to make a donation while you are there! For those of you more technologically adept than I, our Instagram (@amargosaconserv) and Facebook pages are also terrific ways to stay in touch.

The successes of the Amargosa Conservancy are contingent on your continued support. I am excited to share that this past year our membership has more than doubled, as have our donations. This support is crucial and much appreciated. I have always believed that an active, involved, and supportive membership is critical to the continued health of our organization. So, thank you to each of you for your interest and continued support. Enjoy this newsletter! 🌿

All the best,

Chris Roholt

Board Vice President



BOARD OF DIRECTORS

Jane Gillam • President
Chris Roholt • Vice President
Naomi Fraga • Treasurer
Bill Neill • Secretary
Holly Alpert, John Hiatt,
and Abby Mattson

ADVISORS

Bill Christian
David Lamfrom
Andy Zdon

STAFF

Tanya Henderson
Executive Director

Julie Vargo
Director of Finance
and Operations

Students visit and volunteer in the Basin

In November, we welcomed students from Whitman College's Semester in the West group to Shoshone and were glad to have their help with some of our ongoing restoration projects.

The students helped erase some OHV tracks near Tecopa on one of their volunteer days.

On another day, the group worked with us in the Shoshone Vole Habitat, which continues to

expand. Thanks to the efforts of many volunteers, including the Semester in the West group, the newest section of the bulrush has caught up to the rest!

Over the last few years the habitat has become such a welcoming place. It was always top-notch habitat for the birds (including the Least Bell's Vireo) and it was where the remanent Shoshone pupfish found refuge - but now it has become a relaxing retreat

for us two-leggeds as well. And with the area re-decorated in bulrush, we hope the voles can move in and find it hospitable as well!

That doesn't mean that the work is done: cattails have a way of sneaking in - so every once in a while we have to go in and clean them out.

For more information on the Semester in the West group, visit <http://semesterinthewest.org/> 🌿



Semester in the West students working in the field to erase OHV tracks



Vole habitat area in March 2018



Vole habitat area in December 2018, after restoration work

Amargosa Canyon Canopy Enhancement

While we have yet to see the fruits of our labors on this project, we are seeing the leaves! Willow pole cuttings planted last spring are just growing up so fast!

This project began in the fall of 2017, with the majority of the work in spring of 2018. After clearing out the first successional species like arrowweed and phragmites, we planted willow poles in areas with enough water to keep the bases wet. By clearing out the colonizing species, we hope to give the willows a competitive advantage to grow tall enough to develop the high, dense canopy of pre-fire conditions.

We will plant additional willow poles this spring, with the goal of fortifying a ribbon of trees along the river's edge. Like much of what we do, this is for the birds! 🌿



Grow willow grow! One of our planted willow poles growing successfully.



Some areas grew fast and tall with willow poles over 6' high, and some had more limited success, as seen here.

Sperry Wash Route Project

Working with a plethora of partners and volunteers over the years, we've made parts of the Amargosa Canyon accessible and were able to protect other, more sensitive areas of the river. Though restoration and signage we hope we have provided better route clarity and historical and ecological importance for our 4WD

enthusiasts taking a Sunday drive.

Just about a year ago, we finished up a state-funded project along the Sperry Wash route as it heads north from the Dumont Dunes. In the coming years, we intend to expand on this project to make sure that the sensitive and restricted areas are clearly marked and protected. 🌿



China Ranch Trail Update

If you haven't been out to China Ranch in the last couple years, it's time to make the trek!

On a fine day in December, five volunteers joined us for several hours to help tidy up and set some

directional and interpretive signs. While we weren't able to keep the 1903 building from tumbling down, now you will be able to know a little more about why the building was there in the first place. 🌿

Upcoming Conservancy Events

Mark your calendars for the service days coming up this winter and spring! Meet up at 8:30am. The AC will provide gloves, water and snacks. We ask that you come with closed toed shoes, a water bottle, and proper sun/weather protection.

Meet up locations are listed, as are projects, if known. Project work is

subject to change based on weather and other conditions.

More information at amargosaconservancy.org/events, or on our Facebook page.

If you are interested in volunteering outside of scheduled service days or if you have other other questions, email tanya@amargosaconservancy.org. 🌿



Volunteers getting ready for the work day.

SPRING EVENTS

Feb 15 (Friday)

Amargosa Conservancy Office. Restoration work.

Mar 10 (Sunday)

Amargosa Conservancy Office. Willow planting in Amargosa Canyon.

Apr 14 (Sunday)

Amargosa Conservancy Office. Restoration work.

May 4 (Saturday)

Beatty Chamber of Commerce. Pocket Park clean-up.

LOCAL SPRINGS THREATENED

Above: Cattle damage at Crystal Springs Riparian Area

At a boundary between rock types in the Kingston Range, clear water flows out of the ground in a small grotto. A shallow pool collects the water, and the overflow creates a short creek. Crystal Spring provides water for a small riparian area – a few thousand square feet of cottonwood trees and herbaceous, water-loving plants. The water is important to herds of Bighorn sheep that inhabit the range.

The area is also subject to a BLM-issued grazing allotment.

BLM's plan for the Kingston Range grazing allotment requires the spring head and riparian area around Crystal Spring to be protected by exclusion fencing to keep livestock out of these areas. The Kingston Range Area of Critical Environmental Concern (ACEC) was established in 1980 under the California Desert Conservation Act (CDCA). In 1991 the BLM released the Kingston Range Natural Area Management Plan. BLM is required under 43 CFR 4180 to implement remedial action that would make progress towards achievement of riparian health standards.

Amargosa Conservancy staff visit Crystal Spring regularly as part of a water study and we have documented deteriorating conditions at the spring. Over the last year, the Crystal Spring riparian area has badly disintegrated as a result of cutting the exclusion fence, which allows cattle inside the area.

This is not a new problem. Crystal spring and three other springs

threatened by cattle had fences built around them by the BLM. Each exclusion fence has been illegally and repeatedly cut or removed, with the result of cattle gaining access to spring heads and riparian zones where they trample and decimate the small area of lush, herbaceous plants. Crystal Spring in particular has a history of being encroached. Despite efforts of the BLM over the past decade to construct and maintain a fence to keep the cattle out of the sensitive area, the fence has been regularly cut and removed.

Our January, 2019, report depicts the sad state of conditions at Crystal Spring :

1. The fences are continually removed. As of January 2019, at Crystal Spring the exclusion is gone on two of four sides;
2. The meadow area down at the bottom of the spring outflow is now dry; cattle trampling has disturbed the soil to the extent that water now no longer reaches the riparian zone;
3. The spring source (adit entrance) has been scraped lower in grade to allow more outflow. Pipes have been illegally installed.
4. Much wood has been cut.
5. Chicken wire has been installed at the entrance to the adit, to exclude other animals, including bighorn sheep. Livestock access to water would not be affected by this type of wire.

BLM previously approved construction of a water trough outside of the exclusion area so that cattle can have access to water. However, construction of this trough has been delayed again and again.

The Amargosa Conservancy will have a volunteer day to help with construction of the trough when the BLM is ready for the work to begin - though this date has been delayed by the recent government shutdown.

Rare riparian areas like Crystal Spring, as well as others in the Kingston Range, such as Tule Spring, must be protected if they are continue to support native plants and animals like the Bighorn sheep. See our website for more information and help us to write letters to the Needles and Barstow Field Offices regarding the health of these springs. 🌿



Cut fencing at Crystal Springs

AMARGOSA SHUTDOWN WOES

You've probably heard the tales of national parks being under siege from un-supervised use during the 2018-19 federal government shutdown. Joshua Tree National Park has had a lot of attention, but our neighbors and partners in Death Valley National Park are also dealing with trash, illegal campsites, off-road driving, and even human feces in parking lots.

Our parks and public lands are the responsibility of the public trust, to be maintained and managed by our federal government. As a tax-paying nation, we rely on the government to provide certain services that will benefit every person in this country. One such service is the stewardship of our National Parks.

Throughout the shutdown, leagues of concerned citizens and public land lovers have come together to help clean up and maintain these places in lieu of National Park Service employees. We commend these actions, yet cringe at their necessity.

The Ethics of Visiting Closed Public Lands

On the opposite end, it is disgraceful to see the recent behavior of many visitors in these public lands. Visitors who are fully aware that no staff are present to protect these resources are choosing to visit the parks and leave their mess for someone else to deal with later. Regretfully, some visitors are blatantly violating the law by creating new

The Center for Outdoor Ethics published guidelines for using public lands during the shutdown. These guidelines also apply well to every visit to public lands and should be considered at all times:

- **Develop a Plan B:** Choose an alternative to national parks and other federal lands if at all possible. The country has many vast and sweeping state parks and municipal lands, many adjacent or nearby. So if you can, give our national lands a breather.
- **Pack It Out:** Plan ahead and prepare takes on an elevated meaning during the shutdown. Make sure that you equip yourself with extra bags for any

potential trash that you generate and plan to remove all of it from the park. Pack out trash left behind by others to lessen potential impacts on wildlife, waterways, and the environment in general.

- **It's Time To Try:** Given that many restroom facilities on federal lands are closed or already compromised, the use of biodegradable, disposable toilet-in-a-bag-type products is essential. Even if it has never been in your repertory, this is tremendously important commitment you must make to protect wildlife, water sources and fellow users. Contact your local outdoor retailer and ask if they have Restop, Clean Waste, Biffy Bags or comparable products so you can pack out your human waste.

roads and cutting down Joshua Trees. Others are simply neglecting to act with respect for the land by using unmaintained bathroom facilities and leaving behind their trash. These impacts will be lasting and costly.

We as a culture need to raise our standard of ethics when using public lands. See the info box for guidelines from the Center for Outdoor Ethics regarding recreating ethically on public lands during government shutdowns.

Long Term Effects in the Amargosa Basin

Much of the work done by federal agencies requires local offices to find project funding since their base operational budget just doesn't cover the costs of what it takes to responsibly take care of our lands. Many of these funding sources are cyclical and local offices will miss grant deadlines for local project work, setting conservation efforts back a



Public Lands of the American West: Where Balloons Die

- **Share Well With Others:** With a lack of critical personnel on site at areas, many visitors will not receive important Leave No Trace information they would otherwise absorb from rangers. Share Leave No Trace far and wide with those around you. You may find that people are very receptive to hearing from you during the shutdown.

Obtained 1/31/19 from <https://lnt.org/blog/leave-no-trace-guidance-during-government-shutdown>

To add a few of our own recommendations:

- **Write a note or call your representatives** while you are at home instead of out recreating on our public lands. Seriously, it makes a difference.

- **Talk to your friends** about the impacts of their visits to public lands. Whether during the shutdown or not, we need to respect these places and follow Leave No Trace (LNT) principles. By talking about LNT and land ethics, you will show others that people care and are paying attention to their own actions.
- **Public lands will suffer from the shutdown for a long time.** Post shutdown, spend some time volunteering on the land, or make a donation to a group (like us!) that can get out there and do the work.

Thank you. Your public lands need your help now more than ever.

whole year's rotation. This means Non-Governmental Organizations (like us!) are trying to shoulder the load, with much smaller internal infrastructures and even fewer financial resources.

Our role should be to remind our BLM offices to ensure that science and conservation are in the forefront of management decisions and not lost in the multiple-use and sustained yield aspects of the BLM mission.

And yet, even before the

shutdown, NGOs find ourselves doing more - creating and finding funding for groundwater research, trail construction, resource monitoring, restoration and education efforts.

We are happy to help our BLM partners, just as they have helped us get out working on the land in the past by taking care of resource clearances and other logistics. We are also grateful to have projects currently underway and permissions already in place to continue work on

the ground. But, we are concerned about delays in future projects and the resulting impediments to continued conservation. Due to the intertwined nature of much of our work with federal agency funding, the effects of these delays will linger long after the government shutdown has ended.

As our BLM stewards are allowed back on the job to play catch up, help us highlight some of the work to be done in the Amargosa by contacting the Barstow BLM office and voicing your concern about one or more of these pressing issues:

- Clearly marking the boundary of the Dumont Dunes open area
- Installing route markers on designated OHV routes throughout the basin
- Continuing invasive species control
- Writing the Wild and Scenic River Management Plan
- Reconsidering management at the Borehole Hot Springs adjacent to Amargosa vole habitat due to increased visitation and impact

**Bureau of Land Management
2601 Barstow Road
Barstow, CA 92311**

**BLM_CA_Web_BA@blm.gov
760-252-6000**

We appreciate your continued support as we do what we can to support our public lands. 🌱

GEOLOGY OF SALT CREEK HILLS

By Bill Neill

The Amargosa region has complex and beautifully exposed geology, and displays the geological history of much of western North America. A good place to start a conceptual tour is at Salt Creek Hills, located just off of Highway 127 midway between Baker and Shoshone.

The oldest rock unit at Salt Creek Hills is Paleozoic limestone, deposited from tropical seas on a slowly subsiding continental shelf. The continental margin of western North America formed and then subsided after a larger continent was split away by rifting. The separated mass now probably forms Australia or Antarctica. In places, the Paleozoic limestone abounds with fossil marine shells, which ancient animals evolved as armor for protection from predators.

In the Grand Canyon, Paleozoic limestone and sandstone layers of similar age are relatively thin and undeformed; whereas the units thicken to the west, forming a wedge-shape geometry, and are faulted and folded from later compressional impacts to the continental margin. These uplifted sedimentary layers underlie much of the Nopah and Resting Springs Ranges east of Shoshone, plus the mountain ranges bordering the north half of Death Valley.

About 450 million years after deposition, and after folding and faulting, the Paleozoic layers near the south end of Death Valley were intruded by molten rock – magma – that fed volcanoes at the surface. The magma crystallized slowly to form



This fossil shell fragment from limestone in the Nopah Range is a natural erosion-created cross-section of a marine gastropod called *Palliseria robusta*.

coarse-grained granite, light in color because its chemical composition was high in silica and low in iron. The granitic rock is of Jurassic age, somewhat older but similar in origin to granitic rock that underlies the Sierra Nevada. During this period, California resembled the current western edge of South America, where a major volcanic chain – the Andes – results from subduction of an oceanic tectonic plate offshore.

As the granitic magma crystallized,

hydrothermal fluids carried metals including iron and gold into the overlying limestone and formed a small gold ore deposit. In 1849, forty-niners headed west to the California Gold Rush via the southern route – the Old Spanish Trail from Utah – noticed gold specks in Kingston Wash and eventually started mining at the contact between granite and limestone. In 1851 a rock building called the Amargosa House was constructed nearby that is the oldest non-indigenous structure in



Above: Part of the riparian area of the Salt Creek Hills.

San Bernardino County. This history is described in the second chapter of Richard Lingenfelter's 1986 book "Death Valley & The Amargosa – A Land of Illusion".

Today the Salt Creek Hills are valuable ecologically as riparian wildlife habitat, where Kingston Wash cuts

through the granite hills and provides small amounts of surface water throughout the hot summers.

A small spring named Amargosa Spring and the adjacent gold mine area can be visited by a one-mile hike from the parking area near Highway 127. A well-marked trail crosses the narrow

wash with reeds, mesquite and a large Athel grove, then continues northward to the Amargosa House and remains of a 1880s stamp mill.

A field trip to Salt Creek Hills will be part of our Meet the Amargosa weekend next October 25-27 based in Shoshone. 🌿



Remains of Amargosa House, constructed in 1851 during initial phase of gold mining. The dark hill at upper right is Paleozoic limestone.



Gold diggings in reddish mineralized rock at contact between Jurassic granite and Paleozoic limestone.

NITERWORT: A LOVE STORY

By Naomi Fraga

Tis the season of love. I'm not one to get all mushy on Valentine's day, but I couldn't pass up the opportunity to express my love for someone who is very near and dear to my heart. When we are close, my heart goes pitter patter, and my knees get weak. I have felt this way for others, but this plant is extra special and is my current main squeeze. Here is my love story for the one, the only, Amargosa niterwort (*Nitrophila mohavensis*).

The Amargosa niterwort is a rare plant in the goosefoot family (Chenopodiaceae) and it has a lot of special requirements. It lives on salt flats near Death Valley, one of the hottest, driest places on earth, but surprisingly the niterwort is a water loving plant. It lives in an area with a high groundwater table that is relatively salty, but not too salty. This plant has very specific requirements, and that means a couple of things that relate to its rarity:

1. Its habitat is very limited because finding a wet place in the desert isn't easy, and
2. the places where the niterwort grows are under threat because when people find water in the desert they do not always use it responsibly. If the available water in its habitat is reduced, then that makes it more salty, and that is not good for the niterwort.

Some may liken the niterwort to a diva, like its requesting a bowl of M&M's with all the other colors removed except for blue. But the niterwort has lived in the Amargosa Basin for millennia, so I think the best

we can do is to ensure that it can stick around for many more millennia.

My relationship with the niterwort runs deep. I visit it every month to monitor its growth, and that means I have a fairly good understanding of the extreme environment it lives in. From 50 MPH winds to over 120 degree F heat, this plant rolls with the punches. It is also federally listed as endangered which means it needs our help. I am excited that I was recently awarded a grant to give this plant and other rare plants in the region a boost towards recovery.

I am one of the few people that knows the niterwort best, but it still holds secrets and mysteries that I am trying to unfold. In all my time studying the niterwort (since 2012), I have never seen it make a lot of seed. I have managed to find a few seeds here and there, but they are hard to find.

I know it reproduces by underground stems or rhizomes, but is sexual reproduction important to the longevity of this species? Also, what the heck pollinates it? Some have speculated ants, but we don't know for sure. Do we know the extent of its habitat? Are there some plants hiding out there that we haven't found yet? These are some of the questions that I hope to answer over the next few years.

Ultimately, I've made it my life's mission to save the niterwort from the threats it faces. It is a labor of love to save this incredibly unique plant. There are only two species of *Nitrophila* in the world and this one lives in a tiny corner

of the Mojave Desert. It is a relict from a wetter time, but it is still holding on because this part of the desert has water, and that is a special thing.

I have intimate relationships with many plants, but the niterwort holds a very special place in my heart. With each plant relationship I develop, my commitment to them grows deeper. I do my best to say it loud and proud, but plants matter, and I live my life by that motto. They are a gift to be treasured and cared for by everyone. 🌱



Amargosa Niterwort
(*Nitrophila mohavensis*)

Naomi Fraga is Director of Conservation Programs at Rancho Santa Ana Botanic Garden. Her research focuses on floristics of western North America and monkeyflowers. She has been studying plants of the Mojave desert for over 15 years and she wouldn't trade it for the world.

MEET THE AMARGOSA

Join us for this two-day event to learn about and experience the Amargosa Basin!

SAVE THE DATE: OCTOBER 26-27

Mark your calendars for **October 26th and 27th** to join us in Tecopa, CA, for the third annual Meet the Amargosa event.

We want you to have a chance to visit and experience the wonders of the Amargosa Basin. Come out for

tours on the land, presentations, and community.

Come take a tour, learn some new things, and experience this incredible place with us!

The primary theme this year will be geology, though we will have other types

of sessions as well. Are you interested in leading a session? Drop us a note at info@amargosaconservancy.org.

Details, registration, and costs will come in the next several months. Watch our website and emails for more. 🌿



For Valentine's Day this year, how about pointing out to your loved ones that you can't, in fact, spell L-O-V-E without V-O-L-E.

Make a donation to the Amargosa Conservancy dedicated to someone

you love! We'll send a Vole Love Note to your loved one and to you, and publish your dedication on our website (unless you opt out).

Help us get the word out about this cute little endangered mammal with a mustache. Donate online at amargosaconservancy.org/volelove

To mail in your Vole Love donation, simply fill out the form to the right, cut out this half page, and mail it with your check to:

Amargosa Conservancy
PO Box 63
Shoshone, CA 92384

You Can't Spell

LOVE **without** **VOLE**

Your Name: _____

Address: _____

Phone: _____

My Vole Love gift is in honor of: _____

Honoree address: _____

Message to honoree: _____





Wildflower season is coming!

The Amargosa Basin has had several instances of rain this winter, with a big event in early January. While we aren't expecting anything on the level of "super-bloom", there should be some great pockets of flowers to enjoy this spring. Save some time in your schedule to visit and go seek out these amazing pockets of color!