

Great Basin National Park

National Park Service  
U.S. Department of Interior

Great Basin National Park



# *Year In Review*



2020

## Dear Friends of Great Basin National Park,

The fall of 2019 started out with pleasant fall days and a dry winter, but we could not have planned for the spring and summer of 2020. Our team, at all levels, adapted to the new and ever-changing situation dictated by the COVID-19 Pandemic. Great Basin staff worked hard to provide the public as much access as possible to their national park as was allowed by federal, state and local guidelines.

Our team adapted to guidelines as they evolved and provided almost uninterrupted access to roads and trails. The park opened campgrounds in coordination with Nevada State Parks and provided visitor information at an outdoor “ranger station.” Field staff worked as individuals and in small groups to complete their work. Staff remained flexible to provide quality visitor experiences and continue to protect park resources and staff safely. We also want to thank all our partner organizations who helped us through these challenging times.

Superintendent, James Woolsey

*Caption: The image to the right displays a close-up view of the wood found in Bristlecone Pine trees. Due to the durable wood, exposed sections of Bristlecone pine trees do not typically rot, instead it weathers like stones. [Image by Becca Miller]*

*Caption Front Cover Image: Great Basin National Park host the oldest trees in the world, the Pinus longaeva Bristlecone Pine, alongside one of the darkest skies in the contiguous United States. [Image by Kim Bougas]*



## Park Hosted Women's Conservation Crew to Commemorate the 19th Amendment

Great Basin National Park partnered with Great Basin Institute (GBI) and the National Park Foundation to support an all-female Nevada Conservation Corps crew for the 2020 field season. The National Park Foundation grant proposal was initiated by GBI and inspired by the 100th anniversary of the ratification of the 19th Amendment which gave women the right to vote in 1920. The four-person Interdisciplinary Women's Resource Conservation Crew (IWoRCC), provided field support for several park projects. The IWoRCC assisted park staff with facility maintenance, conifer removal to improve sagebrush and riparian habitat and reduce fire risk, invasive plant treatment, bathymetry surveys, fence removal, backcountry campsite inventories, and trail work. Outreach with the conservation crew members included training and collections for the park's annual BioBlitz, an introduction to Great Basin rattlesnakes, use of remote game cameras to document park wildlife, and a tutorial on the onerous federal job application process.

The single-identity crew created a safe and inclusive space for crew members to explore conservation careers and build technical skills in the outdoors.

Interdisciplinary Women's Resource Conservation Crew leader Stephanie Greenwood said "being on an all-women's crew this summer meant I could not only feel comfortable in my womanhood, but also empowered to break gender roles on a daily basis. Being surrounded by such smart and capable women inspires me to work harder every day as a leader, and I feel very honored to lead this amazing women's crew."

***"Being on an all-women's crew this summer meant I could not only feel comfortable in my womanhood, but also empowered to break gender roles on a daily basis."  
- Stephanie Greenwood***



Great Basin National Park hopes that this opportunity will lead to careers in conservation or resource management and empower these young women to create positive change in their communities, public land management and their surrounding environment. We are certain these women will be a catalyst for change.

*Caption: An all-female Nevada Conservation Corps crew provided critical support to multiple projects like conifer removal, trail work, and cyclic maintenance. [From left to right: Stephanie Greenwood, Emily Dyer, Lily Khbati, and Carolyn Farley]*

## Using Florescent Dye to Solve the Case of the Missing Water

In October, a team of scientists from the United States Geological Survey's (USGS) Nevada Water Science Center and the University of Utah, with support from National Park Service biologists and other staff, initiated a dual bromide and fluorescein dye tracer study on a losing reach of Snake Creek. A losing reach is an area where the stream does not often flow on the surface but goes underground.

Currently, surface water in upper Snake Creek is diverted through an irrigation pipeline around this losing stream reach. When the pipeline is closed, Snake Creek loses a significant portion of its flow through the same permeable carbonate rocks that host many of the park's famous caves. Prior to this study, neither the terminal discharge areas nor the maximum rate of this water loss were well understood.

An initial, qualitative fluorescein dye tracer study conducted in 2019 confirmed that some fraction of Snake Creek streamflow lost to the groundwater re-emerged within two weeks at Squirrel and Spring Creek Springs, located 1.5 and 6 miles below the dye injection point and on opposite sides of the creek.

This fall, fluorescein dye and sodium bromide were mixed into Snake Creek about one hundred yards above the reach where the stream loses its flow to the underlying carbonate rock. Springs in the drainage below the dye injection point are being monitored into 2021 to identify how much of the stream loss is resurfacing within the Snake Creek drainage. A dual tracer strategy was implemented to take advantage of (1) the ease of detecting fluorescein dye and (2) the ability to quantify how much of the stream loss re-emerges at these downstream springs using bromide. Results of this study will provide valuable information on the natural fate of Snake Creek stream loss.

*Caption: Florescent green tracer dye helps the USGS and National Park Service staff discover where the water flows when it disappears underground.*





*Caption: Great Basin National Park staff rely on the work of volunteers, EMT's, and White Pine County workers to maintain a reliable safety network for when accidents happen, and visitors need our help.*

## Teamwork = Success

***“The Incident Commander (IC)... often has time to gather resources and information... but a possible, probable, or potential heart attack offers no time. It is only about getting to the patient”***

On August 23rd of 2020, a man contacted Lake Mead dispatch and said that he thought he was having a heart attack on the Wheeler Peak Summit trail. The incident commander (IC) for a search and rescue often has time to gather resources and information and then plan what to do next. But a possible, probable, or potential heart attack offers no time. It is only about getting to the patient.

Everything was done in route, and many people responded to the emergency. Interpretative rangers, resources rangers, law enforcement and maintenance all responded to the Summit trail parking lot for a litter carry-out of our patient. We were able to get to the patient within a half-hour of his 911 call and then got the patient to an advanced level of care within the hour. Great Basin National Park would like to thank everyone who responded to that call and for all their responses throughout the busy summer. It highlights how far we have come in organizing Search and Rescues (SARs), how we communicate over the radios, and show up to save lives.

## Visitors Enjoy the Dark

Two large projects, both funded by the Southern Nevada Public Lands Management Act (SNPLMA) were completed this past year. New exhibits were installed at the Lehman Caves Visitor Center and an Astronomy Amphitheater was constructed. The Lehman Caves Visitor Center has not had a comprehensive, thematic update for more than 30

years. The new exhibits were organized around the topic of darkness, specifically the darkness in the cave and night skies. The exhibits are 3-D sculpted displays, including a tunnel that feels like you are walking through a cave with sound effects like dripping water and

chirping bats. Many of the exhibits are interactive and hands on. Visitors learn about the darkness zones in the cave, what lives in the cave, and how the cave is protected. The exhibits also allowed the park to update the science on how the cave was formed. Want to learn more about the cave? Continue on to our [website](#) for more information.



*Caption: The red light preserves an individual's night vision, making it safer for them to walk around the new amphitheater to view the night sky.*

After a serious accident involving a volunteer at an Astronomy Program, a new site was designed to safely accommodate future programs. The Astronomy Amphitheater has been designed with standard seating and rows lit by red lights for access. All walkways are illuminated with red lights to preserve night vision for viewing the stars at a

telescope. There is ample seating, so visitors do not have to bring their own chairs, which reduces tripping hazards. A new shed serves as the screen for the ranger program and as storage for astronomy program supplies. With a larger view of the sky than the previous night sky program

location, this new Astronomy Amphitheater promises to continue the Great Basin National Park tradition of sharing the pristine dark skies with the public. Great Basin National Park plans to start Astronomy programs in the new location in the summer of 2021. For more information about Astronomy in the park, please visit our [website](#).

*Caption: The Great Basin Observatory the only Research-grade observatory on a National Park.*



## The First Hybrid Astronomy Festival

Great Basin National Park always strives to engage visitors in different ways that are more accessible and engaging. On this year, the 30th anniversary of the picture, "Pale Blue Dot", Great Basin hosted its first Hybrid Astronomy Festival. The festival offered both limited in-park programming and virtual programs hosted on the

park's [Youtube Chanel](#). The goal was to inspire people to learn more about the night sky that we all share. The park was able to provide programming to over 500 visitors in the span of the three-day festival. Through partnerships with the Space Telescope Science Institute, the Great Basin Observatory, and the International Dark-Sky Association, Great Basin National Park was able to produce seven virtual programs. These virtual programs covered many exciting and interesting subjects such as how to stargaze on your own, a stargazing guide for the festival, and talks from guest speakers. We welcomed scientists from the Space Telescope Science institute in an "Ask-the-Experts" virtual program where experts answered questions from visitors about the new James Webb and Nancy Grace Roman space telescopes. Great Basin National Park will strive to continue programming like this into the future, hoping to give visitors of all ages that "aha moment".



*Caption: "Ask-the-Experts", a virtual event during the Astronomy Festival where visitors were able to submit questions to experts from the Space Telescope Science Institute to be answered during the virtual festival presentation.*

***"The Helix Nebula, that was the first object I programed into a telescope and really saw something that was way out there. That was an 'aha moment' for me"***

***-Dr. Alexandra Lockwood***



## Behind the Lehman Caves Virtual Tour

Although Lehman Caves has been closed this summer due to the pandemic, now more people than ever can experience what the tour route is like via the Lehman Caves Virtual Tour.

This tour is a series of videos made from LiDAR scanning and photogrammetry completed in the cave over two weeks in February 2020. A team from Great Basin and other park units helped gather the data and develop the script, consulting with descendants of Takeshi Ban and the local Shoshone and Goshute Tribes.

The virtual tour contains information not available on regular cave tours, like background information on cave inscriptions, cave biology, and how the cave formed.

Access this cool new way to see the cave on our [website](#). It features subtitles in English and Spanish, as well as an audio description, making the cave accessible in new ways.



*Caption: Blase LaSala prepares for the LiDAR and color scanning of part of the Lehman Caves tour route. This 3D scanning resulted in a virtual tour of the cave, available on the Park's YouTube channel.*

## Volunteers at Great Basin National Park



*Caption: Longtime Astronomy Volunteer Edith Auchter gives a group of visitors attending the 2020 Astronomy Festival an overview of the Great Basin Observatory. [Image by Tom Auchter]*

The lifeblood of all National Parks is the caring and dedicated volunteers that give their time to help support their parks. Great Basin is no different. Over the last year, 54 volunteers gave over 3,000 hours to help serve the public and preserve the park. From cleaning lint out of Lehman Caves, to campground hosting, and to roving popular trails. Volunteers are vital team members at Great Basin. The park is thankful to all the volunteers that gave their time to make Great Basin National Park a better place. In the upcoming year the park looks forward to working with more talented and devoted volunteers and volunteer groups, many of whom are returning from years past.



## The Year of Plan-B

Our Interpretive staff deemed 2020, the year of Plan-B. Around the country, many park visitor centers closed their doors out of safety concerns for the public and their staff. At the Great Basin Visitor Center, we decided to try something new. We moved our 'Ranger Station' outside. Following safety measures, we rolled tables onto the patio and anchored maps and information leaflets under clear plastic tablecloths. We donned facemasks and used class-room pointer sticks for giving socially distanced directions. Maintenance supplied a goliath of an outdoor swamp cooler, making it bearable for the interpretive staff during the 100+ degree mid-summer heat. This outdoor wind swept ranger station enabled our Park Rangers to safely welcome and orient up to 500 visitors a day to Great Basin National Park.

Normally a Great Basin interpreter's summer is hectic with crowded visitor centers, presentations, and cave tours. But this year, rules against large gatherings condensed our visitor contacts to socially distanced greetings, either out on the park trails, or from behind our ranger table.



We were used to the nervous traveler, over-whelmed by the immensity and isolation of the Great Basin region.

But our interpretive staff was noticing a new unease, in ourselves and in the visitors, as we all moved through a world gone awry - masked and isolated against a pandemic; seeking breathable clean air, when wildfires smothered much of the west in smoke.

This is when we recognized a simple heart-felt welcome can offer great solace to a weary traveler. We didn't really say anything profound. We pointed out possible campsites. We described the brilliant night skies and the forest of ancient bristlecone pines. We shared our favorite trails. We swore-in new Junior Rangers. We told our stories. They listened. They told their stories. We listened. They crawled out of their tent at 3:00am to look at the Milky Way. They carried their toddler to the top of Wheeler Peak. They hoped their house was still standing when they got home.

After the welcomes and after the stories, we were all in this together.

Maybe the gift of the 'Year of Plan B' was remembering that as an interpretive park ranger we can't possibly help the visitor connect to the value and meaning of the park's resources, if we haven't first connected with the visitor.

Isn't that what being an interpreter, and being a human being, is all about?

*Caption: One of our park volunteers, Amy Bishton, welcomes visitors in a brand new way to coincide with new regulation from the Center for Disease Control (CDC).*

## Horses and Mules, and Fish! Oh My!

The first steps to a 5-year long project that hopes to restore native fish species to Great Basin National Park has begun. Thanks to funding provided by the Southern Nevada Public Lands Management Act (SNPLMA), Bonneville Cutthroat Trout (BCT) have been introduced to Johnson lake, and will be soon introduced to Baker lake in the high alpine region of Great Basin National Park. The purpose of this project is to create two new BCT conservation populations and to use these high elevation lakes as refugia in the face of our changing climate. Most of the work performed at Baker Lake was focused on initial scoping and planning but work at Johnson Lake moved forward. Great Basin National Park used its long-standing working relationships with the Nevada Department of Wildlife (NDOW) Ely Office and the Spring Creek Rearing Station to collect over 100 Bonneville from Hendry's Creek, located in the nearby North Snake Range. These Bonneville Cutthroat Trout were temporarily staged in Snake Creek while preparations were made to transport them to their final destination. Earlier in the year the park was lucky enough to be contacted by a volunteer group, the Back-Country Horsemen of Nevada (High Desert Chapter), who expressed interest in participating in the project. The group offered to provide the horses, mules, and personnel necessary to transport BCT to Johnson Lake, making the job much easier for park staff to transport the fish to the high alpine region.

On September 23rd, 2020, nine volunteers, nine horses, and three pack mules safely escorted 55 BCT the 3.8 miles and 2,500 feet of elevation gain from the Snake Creek Trailhead to their new home in Johnson Lake. The remaining BCT were released into Snake Creek and will likely be used to augment the newly formed Johnson Lake population in the years to come. One of the volunteers was a member of Trout Unlimited, a group that wished to show its support of our native trout conservation efforts by highlighting this project on their social media pages. We were happy to see interest and support from Trout Unlimited, a national group that promotes and restores healthy cold-water fisheries.

Great Basin National Park would like to thank everyone that made this project a success. Without the help of the NDOW Ely Office we would not have been able to collect the Bonneville Cutthroat Trout needed. With assistance from the Back-Country Horsemen, we were able to carry the BCT much more efficiently than we could by foot. Spring Creek Rearing Station also provided much needed assistance by providing their vehicles to transport BCT from Hendry's to Snake Creek. Not only was the Johnson Lake BCT move a huge success, but new partnerships were made with the Back-Country Horsemen and Trout Unlimited. The park looks forward to working with both groups again in the future.

*Caption: Park staff and Back Country Horsemen of Nevada with the special cases needed to carry the Bonneville Cutthroat Trout up to Johnston Lake. The cases provide temperature control keeping the fish cool on their overland journey.*



## Highlights of the Hemiptera BioBlitz

The 2020 BioBlitz focused on True Bugs (Hemiptera). Two experts from Utah State University, Amy Springer and Cody Holthouse, made 12 videos to help people learn more about this often-overlooked order of insects. “Not all Hemipterans are great...in fact most all of them suck,” said Cody Holthouse. That’s because Hemiptera are differentiated from other insects by having piercing/sucking mouthparts.

Hemipterans include stink bugs, bed bugs, chinch bugs, milkweed bugs, boxelder bugs, backswimmers, water striders, water boatmen, assassin bugs, spittlebugs, cicadas, leafhoppers, planthoppers, aphids, scales, mealy bugs, and more. Aphids are tiny Hemiptera, without legs, that put their piercing, sucking mouthparts right into the plant. They then drink lots of plant juices to get the protein, excreting the extra sugar as “honeydew,” which ants gladly eat. In return, the ants protect the aphids. Aphids were found on aspens, cottonwoods, and rabbitbrush in the region.

***“Not all Hemipterans are great... In fact most all of them suck”  
- Cody Holthouse***

Another cool find was white puffy spots on prickly pear cactus. It turns out this is a protective covering of the cochineal bug, which is harvested in many areas for the red dye it makes. You may be eating it in some of your foods or wearing it in your cosmetics or red-dyed clothes.

Participants assisted from near and far, with virtual and in-person options available. Thanks to all who helped!

Over 80 observations were made on iNaturalist, and you can see those along with the videos by visiting the Park’s BioBlitz [website](#).

*Caption: Ants are “farming” aphids, a true bug (order Hemiptera). The aphids use their piercing, sucking mouthparts to drink plant juices to get protein and excrete the extra sugar as “honeydew,” which the ants gladly eat. In return the ants protect the aphids.*



## Artist-in-Residence Hiking to New Heights

The Great Basin National Park Artist-in-Residence Program is alive and well. The jurors selected Susan Lenz, a self-taught, talented and exuberant fiber artist from Columbia, South Carolina. Susan drove across a masked and socially distanced country to join us in Baker Nevada, for three weeks. Her intent was to “spend as much time as possible on the trails photographing details that would be translated into embroidered and quilted artworks.” Susan also helped deliver an Art-in-the-Dark program for the Astronomy Festival, as well as inspired a local homeschool class with an art project.

Perhaps in response to this year of sequestration for so many, Susan explored every park trail and conquered the heights of Great Basin National Park, including 13,063-foot high Wheeler Peak. When asked to reflect on how her residency will support her future artwork, Susan shared her insights. “The year of 2020 has required we all learn new ways of seeing things and doing things,” said Susan. Like many, she has recognized the need for virtual communication and commerce. To continue her livelihood as an artist, she will need to embrace the necessary technology to reach her patronage via the internet. She explained, her residency at Great Basin National Park taught her that if she can climb Wheeler Peak, she can certainly learn how to operate her own online gallery.



*Caption: Susan Lenz stands with her creation, “Aspen”, an artwork created with fibers to depict the Aspen groves located in our alpine region.*



*Caption: Through partnerships this new bronze map will allow visitors to “see” inside the Wheeler Peak Cirque.*

## Wheeler Cirque Bronze Map

A beautiful 3-D map of the Wheeler Peak Cirque gives visitors a bird’s eye view of this geologic feature. Funding provided by the Fund for People in Parks and Great Basin National Park Foundation made it possible to complete this project that tells an important story not highlighted elsewhere in the park. In the map, the steep cliff face of Wheeler Peak, carved by the now much smaller Wheeler peak glacier, stands tall over the present-day glacier and rock glacier depicted in the map.

Park staff worked with artist Bridget Kimel to get the details into the sculpture. Visitors can now see and touch a landscape that some cannot visit, as it is only accessible via hiking trail.

## Documenting Diversity in Great Basin National Park

When Absolom Lehman found and opened the deeper caverns of Lehman Caves in 1885, he and others marked their adventures using carbide lamp smoke, charcoal, ink, pencils, and more to inscribe their names in the cave. Today they are the footnotes to history reflecting diversity in a changing world. Great Basin National Park archeological staff are documenting and researching the deeper past of human exploration in the cave.

During their documentation, one of the most interesting finds for park archeologists was something that wasn't anticipated. Japanese characters inked by Eiichi Muranaka, a labor agent working in nearby mine, and Takeshi Ban, an influential Christian minister, stand out from the plethora of over 2,000 names found in the cave. These Japanese immigrants visited the cave on the 23rd of June 1934. Both Muranaka and Ban were leaders in their Japanese-American communities in the country before, during, and after World War II. Events at Pearl Harbor on the 7th of December 1941, changed the world.

Ban and Muranaka were incarcerated by the U. S. Government because of their ancestry. The injustices done by this forced evacuation and incarceration of Japanese and Japanese-American civilians was finally recognized by Congress in 1988, and a formal apology along with reparations were enacted. These inscriptions are part of the local history of the Great Basin, echoing history of diversity and change in wartime of United States.

*Caption: The Southern Snake Range is shown in all its glory during sunset. [Image by Becca Miller]*

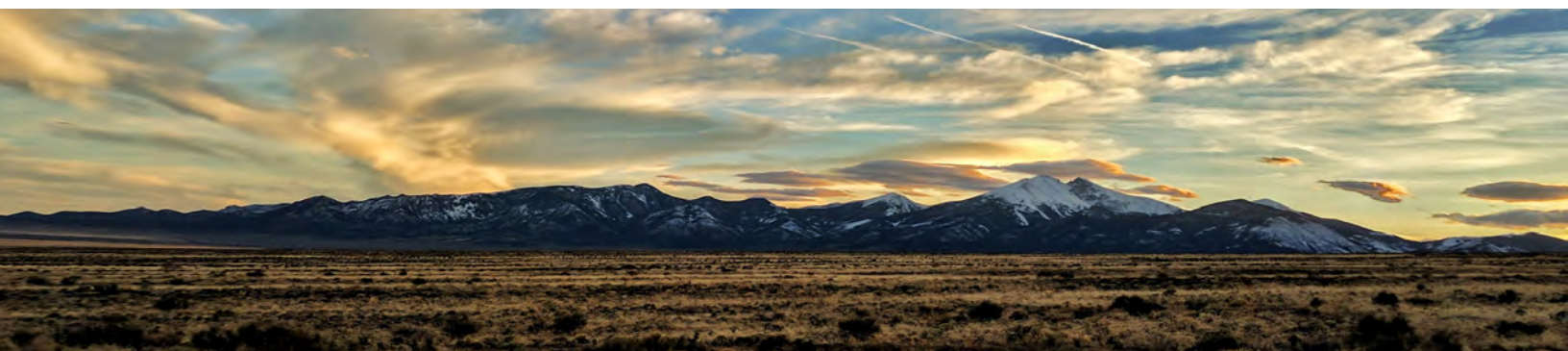
## 99 and Counting: Looking Forward to the Next Century of Adventure!

January 2021 marks the 99th anniversary of the creation of Lehman Caves National Monument by President Warren G. Harding. As we count down to the 100th Anniversary of the monument in 2022 we will be reflecting on the past and looking forward to the next century of adventure.

Watch for "Highlights of History" through 2021. Join us for the special centennial celebrations in 2022, including a rededication ceremony and flag raising on August 6th, 2022.



*Caption: The image above depicts the ceremonial raising of the U.S. Flag for the dedication ceremony of what once was Lehman Caves National Monument.*



## ***Coming in 2021!***

### **99th ANNIVERSARY OF LEHMAN CAVES NATIONAL MONUMENT**

**January 24, 2021**

Beginning with the 99th Anniversary leading to the 100th in 2022, Great Basin National Park will be celebrating the cave, the people, and highlighting the stories of the last 100 years.

### **VIRTUAL PROGRAMING VIA SOCIAL MEDIA AND OTHER PLATFORMS**

**Throughout 2021**

Great Basin National Park Staff and Great Basin National Park Foundation will continue to offer online videos to experience the park and resources right from home and offer virtual events.

### **WHEELER PEAK CAMPGROUND CLOSED UNTIL 2022**

**Summer 2021**

Work will continue to rehabilitate the Wheeler Peak Campground and should be completed by Summer 2022.

### **ANNUAL BIO BLITZ**

**SUMMER 2021**

Volunteer to help the park discover more about plants, animals, insects or other life that calls Great Basin home. For updated information and to sign-up, visit our [website](#).

### **5th ANNIVERSARY of the GREAT BASIN OBSERVATORY**

**August 14, 2021**

Celebrate five years of research, education and exploration via the only research grade telescope in a National Park.

### **12th ANNUAL ASTRONOMY FESTIVAL**

**September 9-11, 2021**

Come see some of the darkest skies in the country! Look for activities for kids, guest speakers, and night sky viewing both on site and via virtual events.

*Caption: Great Basin National Park is not only home to one of the deepest and longest known show cave's in the state of Nevada, but Lehman Caves also holds over 400 Cave Shield formations. The most photographed shield formation in Lehman Caves is the Parachute Shields, as seen on the left. [Image by Becca Miller]*

