Park News

Great Basin National Park
National Park Service
U.S. Department of the Interior

The Midden

The Resource Management Newsletter of Great Basin National Park

Tagging Bats in Great Basin National Park

By Dylan Rhea-Fournier, Biological Science Technician, Bryan Hamilton, Wildlife Biologist, and Meg Horner, Biologist

Photo by Jenny Hamilton

Park biologists, in cooperation with partners from state agencies and academia, have learned a variety of cutting edge bat survey techniques, such as radio telemetry and PIT tagging. These methods would be applied to understand the landscape ecology of cavernicolous bats such as this Townsend big-eared bat (*Corynorhinus townsendii*), prior to the predicted arrival of WNS in the Pacific West region by 2021.

Bats are incredibly valuable to humans in terms of ecosystem services. As suppressors of agricultural pests they provide an estimated $40 to $53 billion worth of pest control services per year in the US alone. Yet bats are threatened by a variety of anthropogenic factors. The most pressing issue facing bats in North American is disease. White-nose Syndrome (WNS) has killed millions of bats in the northeastern US in the last decade. Unprecedented levels of mortality have led to the listing of several bat species under the Endangered Species Act.

WNS is predicted to reach White Pine County, NV, in which Great Basin National Park (GRBA) is located, within 10 years. In light of these predictions, the need for baseline information on species presence across the range of habitats, locally available roosts, and bat seasonal activity in the park are imperative. Cave dwelling (cavernicolous) colonial bats, several species of which occur in GRBA, are most susceptible to WNS due to the climate within caves and close proximity of individuals within colonies, making them of special concern.

The study of bats can often present several unique challenges. Their adaptations to nocturnal activity make them difficult to observe, and their ability to fly allows them to cross large landscapes in relatively short times, which along with their behavior of roosting out of plain sight make them difficult to track. However, advancements in wildlife research technology and the growing range of applicability of such equipment is providing researchers with new, highly useful tools.

Passive integrated transponder (PIT) tags are a form of radio-frequency identification (RFID) technology. A transponder is a device that receives an 'interrogation' radio signal and immediately responds with a different signal. We may be more familiar with this technology in everyday life in its use to 'micro-chip' our pet dogs and cats to help identify them if they end up with animal control, electronic payment methods such as for public toll roads, electronic locks such as at hotels, or the new high-tech ski passes that permit them to be scanned in your pocket on a cold day.

PIT tags were developed in the 1980s by fish biologists to track the migration of their subject species, mostly in freshwater systems.

Continued on Page 2

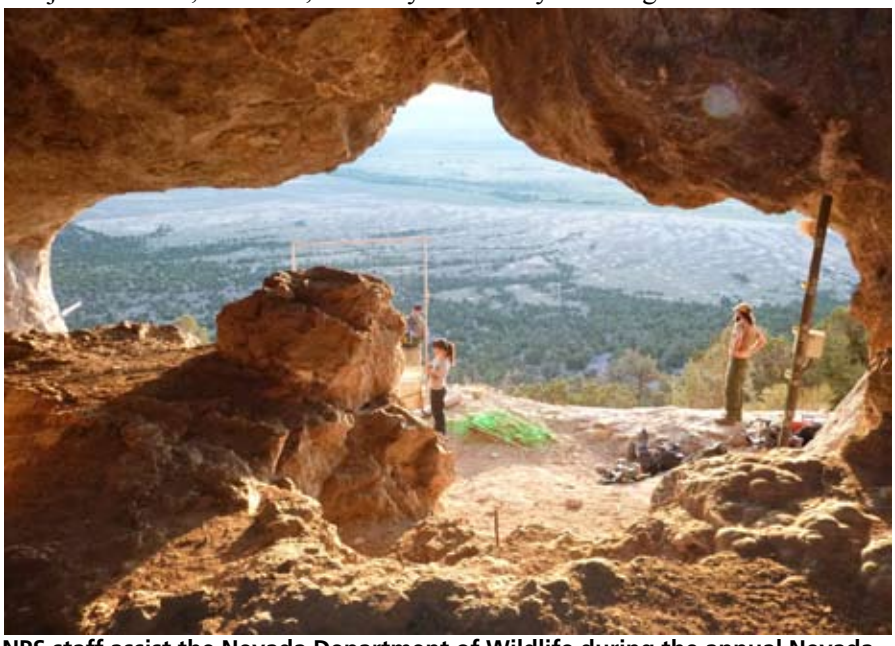
In This Issue

Tagging Bats (continued)

The tag consists of an electronic microchip enclosed in glass. While still a fairly new technology for use in bats, PIT tags have proven to be a valid method of collecting vital ecological data for fish and other vertebrates with no adverse effects on growth or survival. The tags are inert, carrying no battery of their own, but instead are excited by the electromagnetic field of a reader or antennae designed for reading PIT tags (hence, passive) that activates the tag and induces an immediate response of an alphanumeric code. PIT tags offer a very reliable unique identifying number similar to a barcode, for the lifetime of the individual, and analysis of the data can provide information on sex ratios and age structure at the population level.

The utility of PIT tags in studying bats is enormous. External tags or other methods of marking are useful in other studies and with other subject animals; however, for hairy mammals like bats that periodically molt and have the ability to groom themselves or roost mates, the chance of tags attached to the fur or skin to be easily removed is high. PIT tagging can be especially useful for the study of cave dwelling bats as tag readers can be attached to an antenna that encircles the opening/exit to the cave, allowing the unique ID of each tagged bat to be read each time it exits or enters the cave.

In July, park biologists attended a workshop in Colorado with experienced Colorado Parks and Wildlife staff to learn the methods of inserting the tags subcutaneously in bats. In GRBA a total of 207 bats comprising seven different species were PIT tagged this summer at nine different sites. Several individuals were recaptured during subsequent trapping sessions. Researchers were able to confirm the ability of the bats to recover and cope with the implanting of the tag, with many bats barely showing external evidence of the insertion within a month of first capture.



NPS Photo by Gretchen Baker

NPS staff assist the Nevada Department of Wildlife during the annual Nevada Batweek, an event designed to gather data about bats in an area. In 2015 it was held in and near Great Basin National Park.

Our focal species this summer was the Townsend's Big-eared bat (*Corynorhinus townsendii*), a cave and mine obligate and the most abundant species in Lehman Cave. This species is both difficult to trap in mist nets at foraging sites and difficult to pick up acoustically, the two methods most often utilized by bat researchers. However, trapping them at their roosts as they exited proved successful and over 150 *C.townsendii* individuals were tagged this summer.

A PIT tag reader and antenna have been installed at the Lehman Cave natural entrance, with installations planned for several other caves known to be roosts. These PIT tag arrays will provide the park with useful information: the number of bats using each cave, what time of year bats use certain caves, what level of roost fidelity is exhibited, sex ratio of bats using monitored caves at different times of the year (maternity roost identification), and if multiple species of bat are using monitored caves at the same time. With the number of bats tagged at Lehman Cave and other sites this summer, park researchers and managers hope to gain life history and behavioral information from these individuals over the next decade.

This project was made possible by money from the NPS Natural Resource Stewardship and Science WNS response funding in both 2014 and 2015. The park's Natural Resources team would like to thank all park staff that participated in capture events and for those expressing interest in the research and conservation of bats in our park.

Figuring out How the Southern Snake Range Formed

By Sarah Evans, University of Nevada, Las Vegas

New geologic research shows that the mountains of Great Basin National Park took millions of years to form. The southern Snake Range, the mountain range at the core of the park, was formed over the past 50 million years due to periods of intense stretching or extension of the Earth's crust. The extension of the crust created many faults, or breaks along which rocks move up and down within the Earth. These faults pulled up rocks from below to the surface, and with the help of rain, snow, ice, and wind eventually produced the southern Snake Range we see today.

Photo submitted by the author

Researcher Sarah Evans doing fieldwork in the Highland Ridge Wilderness, south of Great Basin National Park in the southern Snake Range

Prior to this new research, it was not totally clear to geologists if the mountain range was produced during a single period of stretching or multiple periods. To figure this out, we used computer modeling, new laboratory analyses on rocks from the park, and similar laboratory analyses from other researchers to understand exactly when faulting occurred in the past. The computer modeling and laboratory analyses show that stretching occurred in multiple episodes, rather than a single period of stretching.

The first episode started at about 50 million years ago and continued for around 12 million years. A second episode of faulting began about 33 million years ago and lasted until about 23 million years ago. This second episode was accompanied by intense and most likely explosive volcanic activity in east-central Nevada and west-central Utah. Volcanic rocks from this period can be seen just south of the park in portions of the Highland Ridge Wilderness Area. A third episode of extension began around 23 million years and lasted up until 8 million years ago.

Currently, stretching is still occurring on faults in and near Great Basin National Park. Although it can be difficult to comprehend how long the landscape has existed, this new research has helped geologists to understand a little bit more about how this mountain range formed.

Sarah Evan's newly published paper is listed in the Recent Publications *on page 9. Learn more about her here.*

SAVE THE DATE! MAY 20-22, 2016 GREAT BASIN NATIONAL PARK BIRD BIOBLITZ

The 2016 BioBlitz will focus on Birds. It will be held May 20-22, 2016 to coincide with World Biodiversity Day and the National Park Service Centennial campaign to have BioBlitzes in over 100 parks.
For more info, contact Gretchen_Baker@nps.gov.

Stay tuned for the next issue, which will have lots more information about the many species, genera, and even families added to the park taxa list during the 2015 Stream Insects BioBlitz.

Searching for Beetles in Great Basin National Park

By Riva Madan, Frank Hsu, and Kip Will, University of California-Berkeley

Carabidae is family of beetles that have a cosmopolitan distribution and are often very common in the United States. Surprisingly, the number of published records of carabid species from Nevada is staggeringly low. In fact, of all the US states, Nevada, with only 242 species, has the second smallest list of recorded species (Bousquet 2013). The smallest list for any US state is Delaware, with 206. However, Delaware covers only a little over 6,400 square kilometres, while Nevada includes more than 286,000 square kilometers. It seems clear that there is a deficiency in our knowledge of Nevada carabids.

Our mission: *To create an updated checklist of the carabid fauna in Nevada that better reflects the diversity that exists there.* Together with work on specimens from museum collections, we decided that we would collect beetles at Great Basin National Park in order to contribute to the Park's efforts to document its biodiversity and to look for carabid beetles to add to the list of species that have been previously documented for Nevada.

June 10, 2015 (by Riva)
We arrived at Great Basin National Park and were greeted by Gretchen Baker, an ecologist at the park, who gave us a map to get us around the park and told us a bit about the area, some highlights to look for (like the awesome starry nights), access, and habitats.

Photo by Kip Will

The makeshift lab at the picnic table. Over 60 carabid beetle species were added to Nevada's taxa list during this trip.

After setting up in the Baker Creek Campground, on his first adventure out to find the toilets, Kip found a *Rhadine* (a genus of fairly uncommonly collected beetles that includes some well-known species that are cave dwellers) inside the restroom. As the night moved in, we donned our headlamps, fired up our vials, and brandished our tools and headed out collecting on a trail close to our camp. Since it was right after the "*Rhadine* hype," we were all anxious to find more; however, we found mainly *Pterostichus protractus*, which turned out to be one of the most dominant species in the park. While peeling bark to look for beetles, we accidentally revealed a group of sleepy hornets hiding under the bark. Luckily, they were all inactive so they didn't react much, but we got a nice adrenaline rush. We carefully tucked them back under the piece of bark and moved away as quickly as possible. We enjoyed seeing bats flying around us until one almost collided with Frank's headlamp as he looked up to see what was making the fluttering noises. The night was cut short by cold drizzle. We headed back to camp to retire for the night; it was then when Frank and I realized: 1. how bad our tent was, and 2. how much we sucked at erecting tents. Water started to ooze in from the seams and drip from the roof. We could only think about how wet this night might get.

June 11, 2015 (by Riva and Frank)
After more or less drying off our gear and re-erecting the tent with Kip's help, our first order of business was to set up light traps that might capture night-flying carabids and other insects. We set up three UV-light traps, one each at Baker Lake Trail, Grey Cliffs, and Lehman Creek. Then we deployed our ramp traps at various locations and different elevations.

We laid out our handcrafted pipette-box-ramp traps at Snake Creek, along NF road 446, near the

Continued on Page 5

Searching for Beetles (continued)

Strawberry Creek trailhead, and down in Osceola ditch trail. At the NF road 446 site, Kip found a deer skull that had been picked clean by insects and other animals. We were surprised at how white and clean the skull looked.

June 12, 2015 (by Riva)
Today was our trip to the higher elevations, reaching about 11,000 ft. It is an easy drive to the trail head at Wheeler Peak Campground and from there we hiked to Teresa Lake. Along the way up the trail, we collected beetles near the melting edges of the snow patches. We were expecting to find *Bembidion* and *Trachypachus* here, but at first we didn't find any beetles at all and started to get worried. As we continued to get to higher elevation, we started to find the beetles we were looking for. Being so small and fast, it was difficult for me to catch them at first even with an aspirator (aka pooter). Luckily, I quickly got the hang of it and started to find many beetles under the rocks by the lake.

In the stream running into the lake, we found some interesting cold water beetles that Frank and I hadn't seen before. After having picnic lunch by the lake, we headed back down to the park maintenance headquarters and washed up in the first and only shower for the trip.

Photo by Kip Will

Frank sifting for beetles

Once the sun set, we went to Snake Creek and set up a mercury vapor light sheet to do hand collecting. We were again finding many scarabs and Tenebrionidae, but we did get a few interesting things; Kip and I each collected handsome *Carabus taedatus*. Some *Amara*, small harpalines, and some *Bmbidion* and *Pterostichus* were found in the mostly dry creek bed. Though the collecting was slow, our list of species was growing.

June 13, 2015 (by Riva)
Our last day going out in the field at GBNP. We started off by picking up all the traps we had put out. Unfortunately, with the fairly cool weather and scattered rains, many of our ramp traps weren't that successful; in some we got nothing, others only a bunch of ants. The only common beetles were more *Pterostichus,* lots of *Calathus*, and Tenebrionidae.

After all our trap samples were picked up we went on an adventurous hike to Dead Lake, a small lake well off the main trails and one that we were told nearly dries up in the summer. I admit I was unimpressed with the little pond at the end of the big hike. Luckily, it was worth the effort. We found many additional beetle species here and they were abundant. When we were done collecting around the lake, we picked up the flagged trail that would more easily take us back down.
Despite what seemed like very threatening weather, with thunder and some moments of rain, we collected on the way back. We made frequent stops to look under the bark of dead, fallen trees. At one deadfall suddenly Kip was very excited thinking that he may have found the rare "stink beetle," *Nomius pygmaeus*, (we have never seen him that excited before). Sadly, when he checked it under the microscope, it was only the common smelly beetle *Psydrus piceus*. But at least it was another species to add to our list for the GBNP.

Photo by Kip Will

Dead Lake didn't look like much, but many additional beetle species were found here.

June 14, 2015
Packed up and headed home! The trip back to California was uneventful, but our work on the project continues. Samples to sort, specimens to pin, and lists to make. Between our trip and, mostly from specimens we have looked at in museum collections, we have easily more than 60 species to add to the list of carabids of Nevada.

Editor's Note: read the entire story of this trip at: https://pterostichini.wordpress.com/2015/10/26/

Stories of Early Lehman Cave Visitors

By David Harwood, researcher

Editor's note: Part 1 of this story, Sign In: The Writing on the Wall *appeared in the Summer 2015 issue of* The Midden.

Nearly 2200 signatures and initials in Lehman Cave have been photographed and recorded to date. Many of the signatures are duplicates, marking repeated visits by the individual(s) or various locations visited during the same trip. For instance, William R. Bassett's name or initials have been recorded 14 times. His first visit to the cave appears to be on September 12, 1885, within five months of the exploration of the cave. At that time, he was accompanied by his wife, Georgie, his stepdaughter, Miss Edna Bryant, and James H. Harris (who owned the Capital Saloon in Ely by 1890). A year later, Miss Bryant married J.B. Simpson, a deputy sheriff, livery stable owner, and mine investor. The young couple then honeymooned at Lehman Cave and she signed her name as Mrs. Edna Bryant (her husband's name does not appear to be part of the cave record).

Let's take a closer look at the lives of some of the early visitors of Lehman Cave. William R. Bassett and Mrs. W. R. Bassett were the head of the Bassett family who lived in Steptoe Valley, White Pine County in 1885. Mr. Bassett is first mentioned as a gambler, owning a saloon and racetrack in the mining town of Ward, NV. His card games attracted people from Cherry Creek, Hamilton, and Eureka, NV, and when the game finally ended the ground out in front of his saloon would be covered with playing cards. He was elected on the Republican ticket as sheriff of White Pine County in 1884. By 1885, he owned a livery stable in Taylor, NV and soon opened a restaurant in Ward. In the summer of 1887, he opened a new saloon in Ely with a Bengal Tiger on display to attract customers. Bassett was re-elected sheriff in 1888. During this period, the Bassett family was apparently doing quite well, as William Bassett was assessed $3,580 on real estate in 1889. The last time the Bassett name appeared in the cave with a date associated with it was in 1918.

Edwin W. Clay, a contemporary of the Bassetts, is also well documented both inside and outside of the cave. His surname appears at least 30 times inside Lehman Cave. Clay, along with those previously mentioned, lays claim to being one of the first explorers of the cave. E. W. Clay first came into the Snake Valley region with horses that he had purchased in California to sell to the local ranchers. He stayed in the area and eventually married Margaret "Maggie" Burbank in 1884.

Clay's recollections of the cave, which were recorded in an interview done in Salt Lake City in 1932 when he was 75 years old, are as follows:

'. . . the seven of us had only three candles to light our way. We also had our pockets full of pieces of charcoal and as we walked along we would stop every little ways and mark on the walls of the cave with charcoal an arrow, which pointed to the opening of the cave. This was to be our guide in getting out of the cave. Finally we came to a round hole just large enough for us to crawl through, with the exception of Ab Lehman and he was too fat, he couldn't make it, so had to sit and wait nearby for us to return. Well, we five men and this boy entered this hole; it was like crawling through a tunnel. As we entered the open space there was sort of a shelf above us. We explored around for about one mile. There were beautiful sights of staghtites (sic) and Stahgelmite (sic), but when we tried to return to where Abs (sic) Lehman was we found ourselves lost. It was impossible, try as we may, to find the hold (sic) by which we entered. We groped around, hunted and hunted, but no hole was in sight; finally we decided we had better just burn one candle at a time in order to conserve our light, as it was sure dark in there. One said, "Well, Lehman is near the entrance and he will

Continued on Page 7

NPS Photo by Gretchen Baker

Researcher David Harwood photographs signatures left beind in a vertically-challenged passsageway at the bottom of the Talus Room in Lehman Cave.

Stories of Lehman Cave Visitors (continued)

surely help us to get out of here." While we were sitting on the ledges debating and wondering what our fate would be, Ed Lake, the then 10 year old boy was peeping around a little and happened to see the hole by which we entered. Well, I thought we would knock that wall down trying to all crawl through that hole at once...We were in that cave 7 hours, lost most of the time."

Edwin and Maggie Clay had four children, sons named Leslie, Burton, Clarence "Stanley," and Edwin junior. All four of the children names appear in the cave, but no dates are recorded near them. We know that Edwin Jr.'s name was recorded prior to 1907 because he drowned in Lake Creek Reservoir in that year. Likewise, his brother Stanley died a few years later, trampled while herding horses. Times were not easy on the Clays either inside or outside the cave.

There are many stories yet to be told of the visitors to Lehman Caves. They include tales of murder, horse thieves, adultery, WWII espionage, and more, but in truth, most visitors lived out their lives as ranchers, farmers, doctors, pharmacists, miners, shop keepers, saloon owners, etc. The stories behind the names in the cave are the stories both of people who came and went from White Pine County and those who stayed and whose descendants are still living in the surrounding towns in Nevada and Utah.

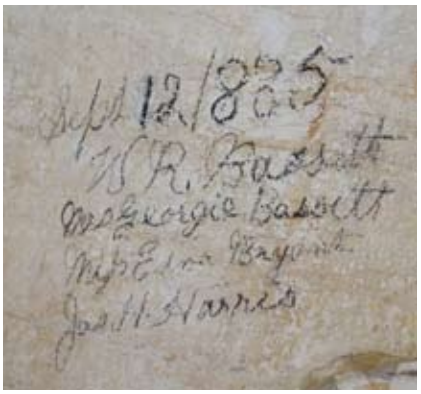


Photo by David Harwood

1885 Signatures by the Bassetts and others

Overview of Resource Management's SNPLMA Projects

By Tod Williams, Chief of Resource Management

The White Pine County Conservation, Recreation and Development Act of 2006 allowed the Resource Management (RM) Division at Great Basin National Park (GRBA) to compete for Southern Nevada Public Lands Management Act (SNPLMA) funds made available from the sales of public lands located in the Las Vegas Valley.

SNPLMA has numerous funding programs; the most commonly used by the RM Division are Conservation Initiative, which provides funds for activities which promote conservation on federal lands including natural and cultural resource protection, habitat restoration, species management, environmental education, and site stewardship; and the Eastern Nevada Landscape Restoration Program (ENLRP), which provides funds for activities that promote healthy ecosystems within the Great Basin with an emphasis on treating shrub-steppe, pinyon-juniper and riparian ecosystems. The following is an overview of project successes at GRBA:

SNPLMA Round 8
Conservation Initiative – Restore Natural Processes and Cave Floor in Lehman Cave. Funded for $233,850 in 2008. This project restored 4,700 square feet of cave floor in Lehman Cave to a pre-disturbance condition by removing an abandoned trail and its associated lighting system. The physical deterioration of the trail and chemical decomposition of the abandoned lighting system threatened cave resources. Project and closeout completed.

SNPLMA Round 9a & b
Conservation Initiative – Implementing the Nevada Conservation Agreement for Bonneville Cutthroat Trout (BCT). Funded for $977,738 in 2009. The project fully implemented the goals, objectives and strategies of the Conservation Agreement to manage for 14 conservation populations and eliminate threats to BCT that may warrant future listing under the Endangered Species Act. Project and closeout completed.

ENLRP – Landscape Level Vegetation Planning. Funded for $486,348 in 2009. The project completed six tasks necessary to develop a landscape level vegetation management plan: fire regime condition map; current and potential natural vegetation map; wildlife inventory for species of management concern; desired future conditions for vegetative resources; interactive management models; and aspen stand condition assessments. Project and closeout completed.

ENLRP – Snake Valley Invasive Weeds: Inventory, Treatment & Restoration. Funded for $665,041 in 2010. Project strengthens

Continued on Page 8

SNPLMA Projects (continued)

cooperative weed management actions in Snake Valley across all land ownerships to include inventory, treatment, and education. This was a multiagency proposal with GRBA as lead agency. Project and closeout completed.

SNPLMA Round 11
ENLRP – Sagebrush Steppe and Aspen Restoration in the South Snake Range. Funded for $542,230 in 2011. The project restored 500 acres of sagebrush habitat, riparian aspen, and upland aspen. These restoration actions benefited shrub dependent wildlife species of management concern with the goal of restoring connectivity between habitat patches and allowing populations to expand into suitable but vacant habitat. Project and closeout completed.

SNPLMA Round 13
Conservation Initiative – Johnson Lake Mine Historic District Stabilization. Funded for $511,991 in 2013. The project is conducting archeological research, stabilizing historic structures, and improving safety near open audits. The district was listed on the National Register of Historic Places and is a Historic Landscape. Project is ongoing and has partnered with the Vanishing Treasures program.

ENLRP – Soap Creek Sagebrush Steppe and Aspen Restoration. Funded for $231,500 in 2013. This project is implementing vegetation treatments on up to 226 acres in the Soap Creek watershed to restore montane sagebrush habitat, improve riparian and aspen areas, reduce fuel loading, and increase the quality and quantity of wildlife habitat for shrub dependent wildlife species of management concern. Project is ongoing.

SNPLMA Round 14
Conservation Initiative – Recovery and Restoration of BCT in the Snake Creek Watershed. Funded for $403,436 in 2014. Snake Creek is one of twelve streams called out in the BCT Conservation Agreement to be maintained as a BCT stream. The current BCT population was compromised by the introduction of brook trout. The project will construct a fish barrier, conduct a treatment to remove all non-native fish from the watershed above the barrier, and reintroduce BCT to historic habitat. Project is ongoing.

ENLRP – Strawberry Creek Fuels Reduction & Sagebrush Steppe/ Aspen Restoration. Funded for $241,650in 2014. This project will implement vegetation treatments on 206 acres to restore sagebrush steppe, upland aspen, and riparian ecosystems. It will also increase the quality and quantity of habitat for several NPS wildlife species of management concern. Project is ongoing.

SNPLMA Round 15
Conservation Initiative - Restoration of Wetland Habitat to Support Sensitive Wildlife Species. Project requested $389,550.00 to restore 8 acres of wetland habitat and 0.5 miles of riparian stream habitat. Proposed actions will remove roads, culverts, and ditches adversely impacting wetland communities and restore natural stream flow patterns and vegetation. Project is located in the Lehman Creek drainage. Project has been approved and is awaiting funds release.

ENLRP - Improving Restoration and Fuels Reduction through Adaptive Management. Project requested $299,215.00 in funding to manage fuels and change vegetation structure on 258 acres of sagebrush, aspen, and riparian ecosystems. Action will also reduce fire probability, spread, and intensity. Restoration sites are located in a strategically placed fuel break to serve as an anchor point for suppression in the Lehman creek watershed. Project has been approved and is awaiting funds release.

NPS Photo

SNPLMA funding has allowed Resource Management to do many projects in the park, including this aspen restoration project in Can Young Canyon.

Recent Publications about Great Basin National Park

Christensen, J. N., P. Weiss-Penzias, R. Fine, C. E. McDade, K. Trzepla, S. T. Brown, and M. S. Gustin. 2015. Unraveling the sources of ground level ozone in the Intermountain Western United States using Pb isotopes. Science of the Total Environment 530-31: 519-525.

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Evans, S. L., R. H. Styron, M. C. Soest, K. V. Hodges, and A. D. Hanson. 2015. Zircon and apatite (U-Th)/He evidence for Paleogene and Neogene extension in the Southern Snake Range, Nevada, USA. Tectonics DOI: 10.1002/2015TC003913.

Fine, R., M. B. Miller, and M. S. Gustin. 2015. Development of a statistical model to identify spatial and meteorological drivers of elevated O 3 in Nevada and its application to other rural mountainous regions. Science of the Total Environment 530-31: 526-533.

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Steponaitis, E., A. Andrews, D. McGee, J. Quade, Y. Hsieh, W. S. Broecker, B. N. Shuman, S. J. Burns, and H. Cheng. 2015. Mid-Holocene drying of the US Great Basin recorded in Nevada speleothems. Quaternary Science Reviews 127: 174-185.

VanCuren, R. T., and M. S. Gustin. 2015. Identification of sources contributing to PM 2.5 and ozone at elevated sites in the western US by receptor analysis: Lassen Volcanic National Park, California, and Great Basin National Park, Nevada. Science of the Total Environment 530-531: 505-518.

Vitale, A. P. 2015. Near-surface air temperature in complex terrain: Daily predictions of fine-scale (30 m) temperature in the Snake Range, Nevada, USA. PhD dissertation, University of Nevada, Reno.

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The Midden is the Resource Management newsletter for Great Basin National Park.

A spring/summer and fall/winter issue are printed each year. *The Midden* is also available on the Park's website at www.nps.gov/grba.

We welcome submissions of articles or drawings relating to natural and cultural resource management and research in the park. They can be sent to:
Resource Management,
Great Basin National Park,
Baker, NV 89311
Or call us at: (775) 234-7331

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What's a midden?

A midden is a fancy name for a pile of trash, often left by pack rats. Pack rats leave middens near their nests, which may be continuously occupied for hundreds, or even thousands, of years. Each layer of trash contains twigs, seeds, animal bones and other material, which is cemented together by urine. Over time, the midden becomes a treasure trove of information for plant ecologists, climate change scientists and others who want to learn about past climatic conditions and vegetation patterns dating back as far as 25,000 years. Great Basin National Park contains numerous middens.

Great Basin National Park

National Environmental Policy Act (NEPA)

By Beth Cristobal, Environmental Protection Specialist

Mention your work involves the National Environmental Policy Act (NEPA) and likely the first response from the other person is "yuck" or "I feel sorry for you." But it really is not that bad. Many people do not understand what the acronym NEPA refers to or just assume because your work involves NEPA your job is to create a barrier to their project's success. However, that is far from being true.

The National Environmental Policy Act of 1969, as amended, was an act to establish a national policy for the environment. According to the 2015 NPS NEPA Handbook, the act was also created to encourage harmony between people and their environment, to prevent or eliminate damage to the environment, to stimulate the health and welfare of people, to enrich the understanding of ecological systems and natural resources important to the Nation, and to provide for establishing the Council of Environmental Quality, which oversees the NEPA process.

The NEPA process requires federal agencies to consider the proposed action or project and its effects on the environment before a decision is made. The NEPA process does not drive the decision to be made, it is merely a process which must be followed to inform interested and affected parties in the decision making process.

In the NPS, there are four paths of analysis:

- Categorical exclusion for which No Documentation is required.
- Categorical Exclusion for which Documentation is required.
- Environmental Assessment
- Environmental Impact Statement

Anyone can learn about or comment on the projects parks are proposing by going to the Planning, Environment & Public Comment website at: http://parkplanning.nps.gov/

Upcoming Events:

Throughout year, Winchester Rifle Exhibit: See the Winchester rifle that was found leaning against a tree and add your idea to the stories of how it was left there; check at visitor center for more information or call 775-234-7331

March 23, Lunar Eclipse: visible at moonset from the park

May 6-7, Eta Aquarids Meteor Shower: one of the better meteor showers, especially in places with dark skies like Great Basin National Park!

May 9, Rare Transit of Mercury across the Sun: check out this rare phenomenon through the park's solar telescope

May 20-22, 2016 Bird BioBlitz: Look for, document, and photograph birds during the eighth annual BioBlitz open to professionals and citizen scientists. Contact Gretchen_Baker@nps.gov.