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

Cave Bioinventory: New Discoveries and Ongoing Research

By Steve Taylor, Illinois Natural History Survey

A team of cave biologists from Illinois, Arkansas, and Texas came to the park in May 2007 to assist park staff with a study of the fauna of several caves. We are documenting the fauna of each cave as well as gaining an understanding of microhabitats used by the most frequently encountered taxa. Microhabitat data include details of substrate, temperature, moisture, and humidity. In addition, a long-term monitoring project in Lehman Caves, the most accessible and heavily visited of the caves in the park, seeks to shed light on possible impacts of differing levels of visitation on the abundance and diversity of life in the cave. That monitoring program also provides an opportunity for volunteers to assist park service personnel in conducting field research in the cave.

Most of the invertebrates living in caves of Great Basin National Park are tiny and take considerable patience, a bit of training, and a good eye to discover. But two of the most remarkable animals in these caves are relatively large (larger than the eraser of a pencil), and fascinating. These are the Lehman Caves pseudoscorpion, *Microcreagris grandis* Muchmore, and the Model Cave harvestman, *Cryptobunus ungulatus ungulatus* Briggs—both known since the late 1960s or early 1970s. These two species exhibit some of the classic characteristics of cave-adapted organisms. The Lehman Caves pseudoscorpion is very large (for a pseusdoscorpion!) and has long, thin appendages. Because it is a predator, its presence in the caves is indicative of a healthy population of much smaller organisms, and thus, a source of energy for these smaller creatures. The Model Cave harvestman has lost much of its pigment, and appears pale white to orange in color – it is a real treat to encounter one of these harvestmen crawling along with slow, deliberate motions, feeling about in its darkened surroundings.

Photo by Jean Krejca.

The Model Cave harvestman, *Cryptobunus ungulatus.*

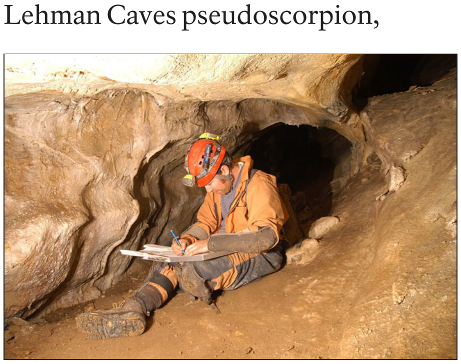

Photo by Jean Krejca.

Cave biologist Mike Slay (The Nature Conservancy) records field data during the bioinventory of Lehman Caves.

The ongoing research at Great Basin National Park continues to yield exciting discoveries. In the last issue of the Midden (Vol. 6[1]), photos accompanying an article by Gretchen Baker show a cave millipede and a globular springtail (*Arrhopalites* sp.). Since that time, we have confirmed that both of these species, plus a second type of millipede, are new to science. They are currently being described by taxonomic experts on these groups. The presence of undescribed species in the caves reveals just how little we really know about cave faunas in the western United States. Findings from this study have applicability to management of cave resources at Great Basin National Park, and also have relevance to other land managers in the basin and range area of Utah and Nevada. The isolation of the numerous small mountain ranges gives hope that more species are waiting to be discovered.

In 2007 we will complete field work, first visiting several caves in the dead of winter when their passages are not filled with snowmelt waters, and then visiting several high altitude caves, none of which previously have been visited by cave biologists.

Photo by Jean Krejca.

The Lehman Caves pseudoscorpion.

In This Issue

What's Eating Our Trees?

By Meg Horner, Great Basin National Park

Great Basin National Park is a prime example of the forested, mountain 'islands' that rise out of the Great Basin region in eastern Utah and Nevada. These heavily forested mountain ranges support diverse species of plants and animals. In Great Basin National Park, there are almost one thousand different species of plants. Several of these species including white fir, piñon pine, narrow-leaf cottonwood, and chokecherry have been infested and even killed by a few, small, persistent species of insect that rely on these trees for survival.

Photo by M. Homer, NPS.

Fall webworm tent in a live cottonwood.

One kind of bark beetle, the fir engraver beetle, is making itself at home in white fir and pinyon pine trees. Bark beetles live in and feed on the inner bark of dead and living trees. Because they can infect living trees, they are causing damage to drought weakened conifers in the park and across the western United States. Bark beetles are brownish or black and range between six and eight mm long. They fly in large, synchronized groups that arrive at a tree and overwhelm it with their large numbers. The bark beetles' invasion does not actually kill the tree. The tree eventually dies from a fungus that is introduced and spread by the beetles which clogs the tree's water transport system. Two park watersheds, Baker Creek and Strawberry Creek, have been noticeably affected by bark beetles. Taking a walk or a drive up either one of these drainages will reveal standing, dead white firs that were weakened by drought and then killed by invading bark beetles.

Fall webworm is a more conspicuous insect that is affecting several plant species in Great Basin National Park. Webworms are caterpillars that feed on many types of deciduous trees. Within the park, fall webworms make their homes on cottonwoods and chokecherry. The caterpillars emerge in August and September and immediately begin feeding on leaves. They also begin constructing a silken web or tent in the branches of their host tree that surrounds the foliage they will consume. The tent is used as a feeding area and a resting place for the caterpillars and is made larger to include more foliage to accommodate the growing caterpillars.

Fall webworms can totally defoliate a tree which may impair the tree's ability to grow but rarely kills it. This past summer in Snake Creek, fall webworm caterpillars defoliated many of the cottonwoods leaving bare branches and their silken webs which can still be seen hanging in many of the trees. Some of the chokecherry bushes that line Baker Creek Road above the campground have also been affected by fall webworm, with their webs still visible to a passerby. The caterpillars will spend the winter in a pupal stage hidden under tree bark, soil, or leaf litter and will emerge next spring as moths ready to produce another generation of webworms.

Photo by M. Homer, NPS.

In a short period of time, the caterpillars completely strip the tree of vegetation.

See past issues of *The Midden* online at http://www.nps.gov/grba/parknews/midden.htm

Getting the Pulse of the Trees

By Dr. Franco Biondi, DendroLab, University of Nevada-Reno

When does single-leaf piñon begin growing every year? When does it stop? How is stem size changing from day to night, and in response to weather events? Although a lot of people think they know the answer to these simple questions about one of Nevada's state trees, a quick search of the scientific literature reveals that there are in fact no direct measurements on these topics. Electronic, automated instruments called dendrometers can monitor the size of a tree stem with great accuracy,

Photo by DendroLab.

Chewing damage to the dendrometer cables.

but until recently such measurements of piñon growth only existed for the southwestern kind (*Pinus edulis*), and not for the Great Basin species (*Pinus monophylla*). New, ongoing research at Great Basin National Park is filling this gap.


Photo by DendroLab.

Point dendrometer installed on a piñon tree trunk.

Students and researchers from the University of Nevada, Reno, DendroLab this summer installed automated dendrometers on 8 piñon trees within the Park. The instruments measure stem size at half-hour intervals and will provide accurate information on the length of the growing season, as well as on the relationship between radial growth and weather. This project is part of a larger study about the relationship between climate, wildfire, and species dynamics in Great Basin woodlands, which is being carried out by the DendroLab with support from the National Science Foundation.

Getting the pulse of the trees is not an easy task. The instruments, installed in May 2006, will need to continuously operate for at least a few years in order to provide reliable data on year- to - year variability. As in other monitoring efforts, a longer period of observation corresponds to better information, and to a more refined understanding of environmental change. Although designed to last in difficult outdoor conditions, automated dendrometers can be damaged by several factors, from lightning strikes to animal tampering. In September, for instance, a couple of dendrometers had to be repaired because of chewing damage to the wires. Still, other instruments kept recording, so the first year's data were not lost.

DendroLab Website: http://woods.geography.unr.edu

Published Research about Great Basin NP since 2000

Beever, Erik and David A. Pyke. 2004. Integrated monitoring of hydrogeomorphic, vegetative, and edaphic conditions in riparian ecosystems of Great Basin National Park, Nevada. U.S. Geological Survey, Scientific Investigations Report 2004-5185. 88 p. http://fresc.usgs.gov/products/papers/gbnp.pdf.

Beever, Erik A., David A. Pyke, Jeanne C. Chambers, Fred Landau, and Stanley D. Smith. 2005. Monitoring temporal change in riparian vegetation of Great Basin National Park. Western North American Naturalist 65(3), pp. 382–402.

Elliott, P.E., D.A. Beck, and D.E. Prudic. 2006. Characterization of surface-water resources in the Great Basin National Park area and their susceptibility to ground- water withdrawals in adjacent valleys, White Pine County, Nevada. U.S. Geological Survey Scientific Investigations Report 2006-5099. http://pubs.water.usgs.gov/sir2006-5099.

Medin, Dean E., Bruce L. Welch, and Warren P. Clary. 2000. Bird habitat relationships along a Great Basin elevational gradient. Research Paper RMRS-RP-23. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 22 p.

Siepielski, A. M., and C. W. Benkman. 2007. Convergent patterns in the selection mosaic for two North American bird-dispersed pines. Ecological Monographs, in press.

Woodyard, John, Melissa Renfro, Bruce L. Welch, and Kristina Heister. 2003. A 20-year recount of bird populations along a Great Basin elevational gradient. Research Paper RMRS-RP-43. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 10 p.

Data Mining in Great Basin National Park

By Jon Hurst and Ryan Thomas, Great Basin National Park

In September 2006, two data miners began work at Great Basin National Park. Data mining involves sifting through scientific articles, reports, and other documents to find information that is important for the management of park natural resources.

The data miners are members of an eight-person data mining team stationed in the Mojave Network—a group of parks including Death Valley, Great Basin, and Joshua Tree National Parks, Lake Mead National Recreation Area, Manzanar National Historic Site, Parashant National Monument and Mojave National Preserve. The Mojave Network is one of 32 networks in the Park Service's Inventory & Monitoring program, and data mining is part of the program's mission of improving park management through greater reliance on scientific knowledge.

Once important documents are found, they are cataloged in the Park Service's master bibliography, NatureBib, where the references are available to all park personnel. The data miners' initial focus is to find all documents within the park pertaining to vertebrate animals and vascular plants. Documents that refer to plants and animals are also cross-referenced to NPSpecies, the Park Service's biodiversity database.

Once data mining has been completed, NatureBib and NPSpecies together allow park scientists to find all information relating to particular management concerns.

The data miners at Great Basin have been mining for almost a month and have added over 100 new references to NatureBib and over 100 new entries to NPSpecies. They sometimes find very interesting documents: one report details the fossil remains of extinct ice age animals found in a cave, including saber-toothed cat, horse or zebra, camel, large-headed llama, and woodland musk ox.

Mapping Lehman Caves with Great Accuracy

by Steve Deveny, Southern Nevada Grotto

In May 2003, the Southern Nevada Grotto began a volunteer survey of Lehman Caves to produce a high accuracy map. To date, the Grotto has completed the profile survey (looking at the cave from a side view). This consists of a surface survey of the natural ground elevations directly above the cave, the elevation of the ceiling of the cave, and floor elevations of the cave.

The surface survey was completed using a Trimble 4700 GPS Receiver Base Station using a Trimble L1/L2 Geodetic Antenna with ground plane and a Trimble 4700 Rover receiver with Trimble L1/L2 Geodetic Antenna. The GPS survey was calibrated to the conventional survey and a natural ground elevation was taken above every station outside of the cave.

The measurement of the ceiling elevations inside the cave required three different techniques. We first chose to measure high ceiling elevations floating helium-filled mylar balloons and measuring the string

Using survey gear usually seen on the surface to make an extremely accurate map of Lehman Caves.

needed. In the Talus Room we found that we could not reach the ceiling in certain areas because a strong air current would take the balloons for a ride to the rear of the cave. To solve this problem, we purchased a Leica Disto Lite5 which uses an infrared beam to measure the distance. In most areas of the cave we could use a tape measure above each station to acquire the ceiling elevation.

The plan survey (looking at the cave from a top view) is approximately 1/3 of the way complete. The Talus Room, from the entrance tunnel to the Gothic Palace, the exit tunnel, and approximately 1/2 of the West Room have been completed. To conduct this survey, we use very accurate survey gear and a method called the Total Station with 75 control locations. The calculated horizontal accuracy of this control network is approximately one foot of error in every 10,000 feet surveyed.

Our Grotto has completed 828.5 hours of survey time, 271 hours of drive time, 55.5 hours of survey calculations, and 64 hours of drafting time for a total of 1,219 hours of volunteer work. Our only nemesis so far has been the price of gas and the 10 hours of drive time to reach the project's area.

If you are interested in exploring the underground world please contact us by way of the Southern Nevada Grotto's website at http://www.guanopage.com or the National Speleological Society at http://www.caves.org.

Interactions between Nutcrackers, Squirrels, and Pines

by Adam Siepielski, University of New Mexico

The presence of Clark's nutcrackers (*Nucifraga columbiana*) and the absence of pine squirrels (*Tamiasciurus* spp.) have influenced seed dispersal of limber pine (*Pinus flexilis*) via their evolutionary effects on limber pine cone structure at Great Basin National Park. The way that plants disperse their seeds is important in their life histories. When seeds are moved away from the immediate vicinity of the parent plant, the plant usually benefits due to less competition. Most pine trees have a wing on the seed which allow them to be dispersed by the wind. However, about 20 pine species, including limber pine, have their seeds dispersed by birds, namely Clark's nutcrackers.

Photo by A. Siepielski, UNM.

A photograph of a limber pine cone from the Rocky Mountains/Sierra Nevada (left side), where pine squirrels are present, and a limber pine cone from the Great Basin (right side), where pine squirrels are absent.

Clark's Nutcracker.

Nutcrackers use their bills to shred the tough cone scales or reach between open cone scales of limber pine to remove and eventually bury the seeds in the ground. During the fall an individual nutcracker will bury up to an estimated 98,000 seeds a year! A nutcracker will return to the seed caches throughout the next year, even digging through the snow to reach them. However, many buried seeds are not retrieved by nutcrackers and some may germinate into new trees beginning the cycle anew.

The interaction between nutcrackers and limber pine is an example of mutualism. Both nutcrackers and the trees benefit from the interaction. Trees provide nutcrackers with nutritious food while the nutcrackers disperse the seeds. Nutcrackers, however, are not the only animals that eat the seeds of limber pine. In fact, the most important seed predators of limber pine are likely the pine squirrels, which are common to coniferous areas throughout the Rockies and Sierra Nevada. Like nutcrackers, squirrels remove large numbers of seeds annually from limber pine and other conifers. Unlike nutcrackers, however, squirrels are a seed predator, not a seed disperser—the pines do not benefit from having their cones harvested by squirrels. Because squirrels do not provide a benefit like nutcrackers, this creates a conflict of interest where both nutcrackers and squirrels coexist with these conifers.

Trees that minimize the number of pinecones harvested by pine squirrels while maximizing seed harvest by nutcrackers will produce the most seedlings. These trees have a reproductive advantage and therefore their attributes are shown in future generations.

One of the most important functions of conifer cones is to protect seeds, so areas that contain pine squirrels can be expected to have larger cones to defend their seeds. Where pine squirrels are absent, such well-defended seeds are not necessary, and the tree can spend less energy making cones and more energy making seeds. I have measured tree preferences of both pine squirrels and nutcrackers, which is a method to measure natural selection exerted by these animals, and not surprisingly they both strongly prefer to forage on trees with less-defended cones.

If you look at limber pine cones from mountain ranges in the Great Basin (including the Snake Range, NV) where pine squirrels have been absent for 10,000 or more years, and compare these cones to limber pine from throughout the Rockies or Sierra Nevada, where squirrels are present, you will notice they are very different (see photo). As expected, cones in the Great Basin are much smaller, with thinner cone scales than cones in the Rockies or in the Sierra Nevada, but even though the cones are smaller they have twice as many seeds. This is an excellent example of how natural selection influences conifer cone structure.

This work highlights the importance of taking a broad perspective on how organisms interact in nature. It also emphasizes why protection of numerous areas is important, because the ways organisms interact with each other do not occur in the same way in every location, and this interaction diversity is important to conservation.

Contemporary Climate History and Impacts Study

By Bryan Mark, Jason Box, & David Porinchu,
Ohio State University

As three junior professors from the Ohio State University (OSU) Department of Geography and Atmospheric Sciences, we have initiated a study in Great Basin National Park to better understand contemporary Park climatology and hydrology. During two week-long visits to the park during the summers of 2005 and 2006, we have begun to catalogue aspects of Park climatology, meteorology, limnology, and hydrogeochemistry.

Our project features three components: (1) a meteorological network to assess recent climate variability throughout the Park; (2) lake sediment cores to develop a more detailed climate history; and (3) an evaluation of climate impacts to hydrology using hydrochemical and temperature sampling of surface waters, and digital photogrammetry of rock glaciers. In 2006, we were joined in the field by an undergraduate and a graduate student. In future annual visits we hope to establish a long-term, multidisciplinary scientific research and education project featuring regular field experiences for students and faculty to study the myriad aspects of physical - human geography.

We are motivated to conduct this work by ongoing climate changes that will impact the vertically diverse ecosystems and hydrology of the Great Basin. Our preliminary research indicates that water temperatures in sub-alpine lakes in the park have increased during the post-1980 period and that the rate of warming during this interval exceeds anytime during the 20th century.

Air temperatures in the Intermountain West of the United States are expected to continue rising in response to the increased atmospheric loading of greenhouse gases. The magnitude, pattern, and rate of future warming will likely have significant effect on park ecology, lake biota, lake biological productivity, and nutrient fluxes, alter aquatic ecosystem dynamics, and negatively impact the stability of fish populations in Baker Lake. Additionally, if the contribution of glacial melt-water from the Wheeler and Baker rock glaciers is reduced, dramatic increases in stream and lake temperatures will result, further impacting stream and lake biota.

Photo by Ohio State University.

Collecting a core sample from one of the alpine lakes.

Small Mammals in a Changing Landscape

By Bryan Hamilton, Great Basin National Park

Currently many areas in the Great Basin have shifted from sagebrush communities to woodlands with very little shrub, grass, and forb cover. These shifts are due to a combination of fire suppression and climate change and have resulted in a reduction in habitat for several species of wildlife such as sage grouse, pronghorn, sagebrush voles, and kangaroo rats.

Lehman Flat located in Great Basin National Park is one such area. Historic evidence indicates that this area has shifted. To better understand the ecological implications of piñon/juniper encroachment, we examined the effects of this habitat shift on small mammals.

Small mammals, such as mice, rats, voles, chipmunks, ground squirrels and shrews, are useful indicators of ecosystem change because each individual species occupies a unique niche. This niche is closely related to habitat and vegetation. Park staff predicted that piñon/juniper encroachment has caused shifts in diversity and abundance of small mammal communities.

To test for these shifts, we set up trapping grids in both sagebrush and piñon/juniper encroached habitats using Sherman live traps. The study was over a three year period (2004- 2006) for a total of 7,767 trap nights. The traps captured 1,258 individual small mammals of twelve different species. The most abundant species caught were deer mice followed by cliff chipmunks, piñon mice, montane voles, vagrant shrews, Great Basin pocket mice, long-tailed voles, harvest mice, least chipmunks, Uinta chipmunks, desert woodrats, and long tailed pocket mice.

The sampling effort showed a dramatic difference between sagebrush habitats and piñon/juniper encroached habitat. Species diversity

Small Mammals, continued

was much higher in sagebrush habitat. Perhaps most dramatic were differences in density. Sagebrush habitats averaged 36 small mammals per hectare while piñon juniper encroached habitats averaged 15 small mammals per hectare (Figure 1). Four species (Long-tailed voles, desert woodrats, harvest mice, and least chipmunks) were only found in sagebrush, while only one species, the Uinta chipmunk, was found only in piñon/juniper encroached habitat.

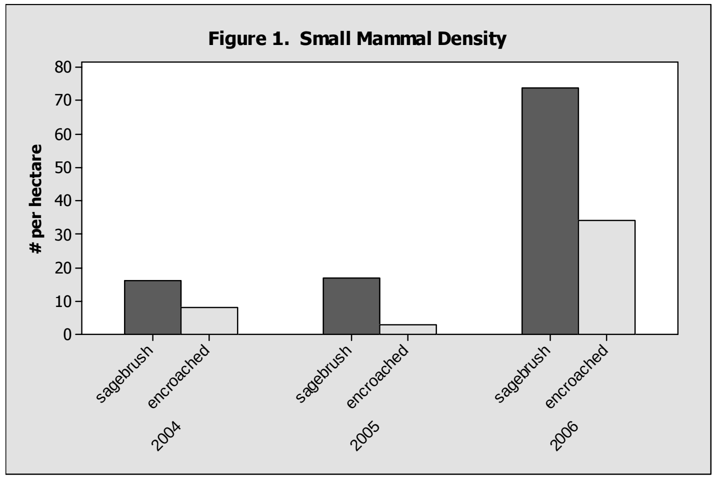

Figure 1. Small mammal density has been higher in sagebrush than in encroached piñon/juniper habitat each of the three years studied.

Small mammals are valuable prey for many raptors, reptiles, and carnivores, and are important seed dispersers. Several valuable plant species, such as Indian Rice grass and Antelope bitterbrush, are dependent on small mammals for successful germination.

We are actively restoring sagebrush through a combination of tools such as prescribed fire, tree removal, and native plant restoration. If you see or hear crews working with chainsaws, think about piñon/juniper encroachment and small mammal communities and their value to Great Basin ecosystems.

Alpine Habitat May Shrink Due to Climate Warming

By Neal Darby, Great Basin National Park

Ever wonder how the vegetation of Great Basin National Park would change under global warming? Resources Management has. Using a Geographic Information Systems (GIS) and some findings from research around the world we were able to model the change of vegetation communities in response to increased average air temperatures.

Alpine areas would show the most noticeable changes. Subalpine and alpine areas on the south Snake Range would be reduced 97 percent if the average summer temperature raised 3° C. That is a reduction from 11,200 acres to 316 acres (Figure 1). In the central Great Basin, alpine areas would persist only on the south Snake Range under the above scenario, no other mountain ranges in the area would have alpine habitat. If average summer temperatures increased 5° C, alpine areas would be completely lost. Such increases in temperatures such as these could occur in the next 50 years.

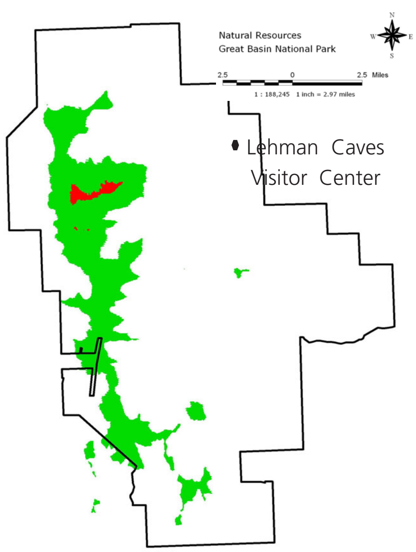

Figure 1. Current and projected extent of alpine areas. Green areas show current alpine habitat, and red areas show alpine habitat with a 3 degree C increase in average summer temperature.

Evidence is mounting that this scenario is already starting. Leif Kullman, a research scientist from Sweden, has documented increases in average temperature, upward advances in tree lines, invasion by lower elevation plants and alteration of alpine vegetation communities in the Swedish Scandes Mountains. Closer to home, Erik Beever documented a 10 year 150 meters upward retreat of Englemann spruce (*Picea englemannii*) in low elevation riparian areas within Great Basin National Park, far exceeding that predicted for trees in the Swiss Alps.

What vegetation would replace the current alpine flora would depend on precipitation patterns, and current projections are uncertain. Most likely forest will cover all except Wheeler Peak if precipitation stays the same or increases. If precipitation decreases, alpine areas could become shrub and grasslands.

So get out your cameras and capture on film the extent of Great Basin National Park's alpine areas.

Thanks to our wonderful volunteers who have donated over 800 hours this last year! Projects included surveys for fish, cave biota, small mammals, snakes, carnivore tracks, and cave mapping.

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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

Fish Populations Increase

By Gretchen Baker, Ecologist

Results from five fish population surveys in 2006 indicate that fish populations are doing extremely well after two good water years. Each creek has at least three age classes and large numbers of fish.

Each survey used the three-pass depletion method, electrofishing a 100 meter section of stream three times. All fish were measured, weighed, and then released back into the stream at the end of the survey. All surveys were done in late August and early September since water levels were low and no fish were spawning.

Lehman Creek was sampled near Lower Lehman campground, where an estimated 644 brown trout/mile, 708 rainbow/mile, 837 brook/mile, and 909 young-of-the year/mile live. This amounts to more than 3,000 fish per mile, the most ever found in a Lehman Creek survey, even when the creek was being stocked. About 13% of the fish were greater than 200 mm (8 in) in length.

Baker Creek's survey was near the campground, but due to a lightning storm only one pass was completed. Nevertheless, a minimum estimate is

Photo by G. Baker, NPS.

This young Bonneville cutthroat trout is important to keeping the stream population healthy.

580 brown/mile, 177 rainbow/mile, 348 brook/mile, and 692 young-of-the-year/mile. Approximately 28% of the fish caught were greater than 200 mm in length.

Lower Snake Creek near the second campsite was sampled, and we were amazed at the number of fish. We estimate an astounding 3155/brown trout per mile, another record, with 23% over 200 mm.

Strawberry Creek's Bonneville cutthroat trout population continues to grow, with an estimated 853 Bonneville/mile, with the survey conducted about a mile from the park boundary. About 17% of the fish were greater than 200 mm in length.

Finally, we fought through the brush to check on South Fork Big Wash, which was the orginial stream for Bonneville cutthroat trout restoration in 2000. An estimated 692 Bonneville/mile with 14% over 200 mm in length live in the creek.

Upcoming Events:

Dec 15: Christmas Bird Count, Baker, NV Area Help collect data for the longest running ornithological database, begun on December 25, 1900. Contact Melissa Renfro at 234-7154.

Mar 03: Lunar Eclipse More information at sunearth.gsfc.nasa.gov/eclipse/eclipse.html.

Throughout Winter, Great Basin National Park Volunteer opportunities with Resource Management to help set up remote cameras, conduct animal track surveys, and work on other projects. Contact us at 234-7331.

Lehman Cave Tours daily at 9 AM, 11 AM, 1 PM, and 3 PM.

Visitor Centers open from 8 AM to 4:30 PM daily except Thanksgiving, December 25, and January 1.