



# The Midden



Great Basin National Park  
Resource Management Newsletter

## Delving into the Depths

By Krupa Patel

During the spring of 2002, the Resource Management branch will begin a three-year wild cave inventory and management project in the park. The project will consist of several different components including surveying and mapping, physical inventory, cave invertebrate and microbial surveys, human use monitoring, and bat surveys.

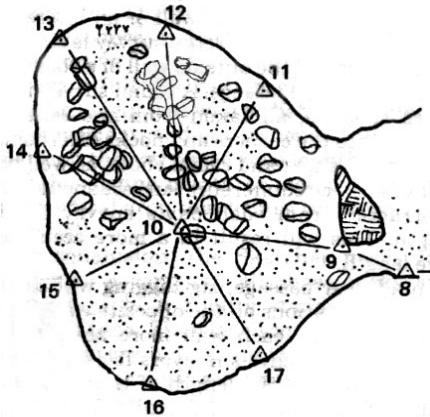
what kinds of hazards are present, whether or not there are cultural artifacts (such as pictographs, historical graffiti, etc.), and the types of geological and hydrological features that shape the cave.

Based on information from the physical inventory, we will establish Limits of Acceptable Change (LAC) monitoring points in the wild caves in the park. LAC monitoring consists of photo documentation points that will be duplicated each year to give us a visual representation of human use impacts on the cave resources over a long period of time.

There will also be a strong biological component to the cave inventory. Cave invertebrates will

be collected and identified by entomologists who will work in conjunction with Resource Management staff. Microbes will also be collected in sediment samples and sent to a lab for identification. Bat surveys will be conducted using mist-netting procedures and AnaBat software. AnaBat software is designed to identify free-flying bats by analyzing their echolocation calls and comparing them to a pre-recorded library of bat vocalizations.

Based on the information and understanding we gain from the cave inventories, we will create a comprehensive, science-based management plan for the wild caves in the park.



*Example of a simple cave map*

The initial cave mapping and surveying will give us insight into the structural framework of each cave. The next step will be to conduct a comprehensive physical inventory to determine the types of resources present in each cave. From the cave inventory, we will gain a knowledge of where sensitive formations are located



*Physical inventories will include cave formations like this soda straw.*



# Gone Fishing!

By Gretchen Schenk

During the 2001 field season, the fish crew at Great Basin NP focused on three streams. In the South Fork of Big Wash, we visually monitored Bonneville cutthroat trout that had been placed there in 2000 and found that they appear to have adapted to their new home.

In Strawberry Creek, monthly post-chemical treatment monitoring was conducted to determine if enough of the food base has returned so that fish can be reintroduced. The Buglab at Utah State University is identifying the macroinvertebrates and is expected to return results in December. Our visual estimates indicate that at least 75% of the number and diversity of pre-treatment macroinvertebrates have returned, thus we are anticipating reintroducing Bonneville cutthroat trout there in the summer of 2002.

In Snake Creek, pre-treatment monitoring was continued, including intensive surveys for

macroinvertebrates, mollusks, water quality and fish.

In order to prepare for the Snake Creek treatment in August of 2002, Resource Management staff held an interagency meeting outlining the plan in July. Attendees included personnel from the Nevada Division of Wildlife, Humboldt National Forest, the U.S. Fish and Wildlife Service, Trout Unlimited and the National Park Service. Information was shared about the antibiotic antimycin that will be used for the treatment and concerns were addressed. Meetings for the local community will be held in the spring and summer of 2002.

With the intention of getting some hands on experience with antimycin, Great Basin NP staff spent two weeks in Great Smoky Mountain NP assisting with their stream treatment.

We received good news in November. The genetics samples taken from Bonneville cutthroat on

Mill, Pine and Ridge Creeks showed that these populations are not hybridized, therefore they can serve as source streams for reintroduction efforts.

Additional work this summer included developing a recreational fisheries brochure, improving data collection and data entry, and conducting fire rehabilitation work on the Granite Fire in the South Fork of Big Wash.



*Clipping a Bonneville cutthroat trout fin for a genetics sample*

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# Disappearing Fences

By Brian Hamilton

The Resource Management branch helped to remove nine miles of obsolete fencing from the park near Lehman creek, Wheeler Peak campground, and Baker creek during the 2001 field season as part of the fencing removal project. The drift fences, in the interior of the

park, were originally installed for more effective management of livestock grazing. Most of this fencing is no longer needed since the grazing of domestic cattle was discontinued in the park in 2000.

The fence removal project will continue next year, with the elimination of approximately nine

more miles of fences from Snake Creek, Strawberry Creek, and Can Young Canyon. Historic wooden posts and braces will be allowed to remain to tell the story of the rich and varied grazing history of the Great Basin.



# Stabilizing a Burned Watershed

By Fred Gender

The Granite Fire started on August 18, 2001 in the southern Snake Range in Nevada. The most likely cause of the fire was lightning. The fire remained active for nearly three weeks and burned approximately 614 acres (248 ha), with 539 acres (218 ha) of the burn located within Great Basin National Park (GRBA). Included in the burn area are 170 acres (69 ha) of the South Fork of Big Wash watershed, with steep terrain and a high potential for severe erosion that could adversely impact the South Fork of Big Wash and its inhabitants.

The South Fork of Big Wash is home to one of only two known populations of Bonneville cutthroat trout within Great Basin NP. Bonneville cutthroat is a species of concern and has been recently reintroduced to the South Fork of Big Wash as part of a multi-agency, 10-year reintroduction program. There was a strong possibility of losing this population of fish in the aftermath of the fire, therefore an intensive remedy was required.

The Burned Area Emergency Rehabilitation (BAER) plan was initiated with the primary goal of protection and preservation of Bonneville cutthroat trout and its habitat in South Fork of Big Wash. Rehabilitation priorities were established using Geographical Information Systems (GIS) to map high intensity burn areas and intermittent drainages and to calculate drainage area. Erosion potential was assessed based on burn intensity and slope. Nearly all

drainages drain less than two acres (0.8 ha) with one notable exception. One drainage leading to Big Wash Creek drains an area of 69 acres (28 ha), some of which includes high intensity burn.

The first step in the rehabilitation of the fire site was to stabilize 42 acres (17 ha) of steep slopes within the high intensity burn areas up-slope of South Fork of Big Wash. The treatment used for this area was directional log felling. Directional log felling is when 6-12 inch (15-30 cm) diameter trees from the burn area are felled and anchored along the contour of the slope. The trees are arranged in a pattern similar to brick work, with several feet between logs and rows. The logs form a maze, not a dam, so that runoff is slowed allowing sediments

to settle out behind the logs.

The next step in the post-fire rehabilitation was to anchor erosion control netting, particularly biodegradable coir (shredded coconut) matting, in drainage channels to stabilize exposed soil and ash as well as collect sediments from up-slope areas. The coir matting was seeded using a native plant mix in order to promote revegetation and enhance future erosion control. Over 32,000 sq. ft. (2973 m<sup>2</sup>) of coir matting were installed on the fire site.

As of the beginning of November, the rehabilitation project is nearly complete. After two rain events, the treatments are working as planned, and we have confidence that the rehabilitation will be successful.



*Erosion Matting in South Fork of Big Wash Watershed*



# Documenting Life in the Desert

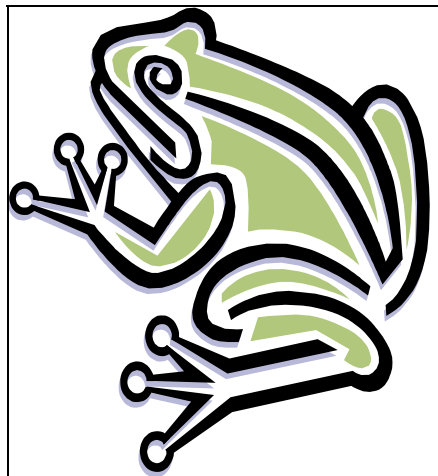
By Kris Heister

The Servicewide Inventory and Monitoring (I&M) Program was initiated by the National Park Service (NPS) in 1992 but moved along slowly until 1998. In recognition of the need for good scientific information on resources in the NPS, Congress passed the National Parks Omnibus Management Act in 1998, and mandated “a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition” of these resources. Current funding is directed at conducting inventories of vascular plants and vertebrates and vital signs monitoring.

The I&M program organized park units into Inventory and Monitoring Networks based on similarity of natural resource attributes. The Mojave Network consists of six NPS units in the Mojave and Great Basin biomes: Death Valley NP, Great Basin NP, Joshua Tree NP, Lake Mead NRA, Manzanar NHS, and Mojave NP. Parks in the Mojave Network represent a land base in excess of 7.3 million acres (3.0 million ha), range in elevation from -282 to 13,063 feet (-86 to 3982 m) above sea level, and include natural communities ranging from salt pans to rich riparian zones and alpine habitat.

The Mojave Network was allocated a total of \$780,669 to conduct vascular plant and vertebrate

inventories. In fiscal years 2000 and 2001, the network received some of this funding to conduct data mining activities. Data mining is an effort to collect and summarize all existing information related to vascular plants and vertebrates in network parks. Generally, parks hired seasonal employees to conduct library searches for existing scientific literature, search through park files and databases, search known and potential museum collections, and enter this information into standardized databases developed by the National I&M program.



*Amphibians are some of the animals that will be searched for in the park as part of the Inventory and Monitoring plan.*

Through this effort we were able to determine that the majority (70%) of vascular plant and vertebrate inventories in the Mojave Network are at least 50% complete. Sixty-six percent of inventories at Great Basin were at least 50% complete (birds: 52%, mammals: 59%, plants: 85%, and reptiles: 58%).

Only 46% of fish species potentially occurring at Great Basin have been documented and no amphibian species have been documented in the park.

In October 2001, the Mojave I&M Network Biological Inventory Study Plan for vascular plants and vertebrates was approved. Beginning in early 2002, researchers will be arriving at Great Basin to begin a two-year field effort to inventory mammals and amphibians in the park. Great Basin will attempt to design and carry out a reptile inventory using existing park staff and funds. The network has partnered with the Harry Reid Center at UNLV and the Desert Managers Group to manage data resulting from our field efforts.

## HOW CAN YOU HELP?

Unfortunately, the money received through the National I&M program is only enough to start the inventory process. You can help us to document species occurring in the park by keeping your eyes open for those critters that don't quite make it across the road, fence or whatever. If you see an animal that has been killed on the road in the park and is in good shape please contact Kris Heister at 234-7331 extension 227. This may be a species that we haven't documented yet and will help us to reach our goal of documenting at least 90% of all the amphibians, birds, fish, mammals, and reptiles occurring in the park!



# Christmas Bird Count

By Melissa Renfro

This year's Christmas Bird Count (CBC) will mark the second year of the second century that volunteers will count and record every individual bird and bird species encountered during one 24 hour calendar day. Volunteers count in all 50 states, every Canadian province, parts of Central and South America, the West Indies, and the Pacific islands.

Each count group has a designated circle 15 miles (24 km) in diameter, about 177 square miles (285 km<sup>2</sup>), where participants try to cover as much ground as possible. The Snake Valley Count Circle includes: Great Basin National Park Visitor Center, residential and picnic areas; Grey Cliffs; Pole, Can Young, Young, Snake, Big Wash, and Lexington drainages; the town of Baker; about one mile (1.6 km) up the short-cut road from Hwy 487; the fish hatchery; the town of Garrison; 4¾ miles (7.6 km) north on Utah 159 from Garrison towards the Border Inn, 2¾ (4.4 km) miles up the Ferguson Trail from Hwy 159; part of the Burbank Hills; and Pruess Reservoir.

The CBC tradition began on Christmas Day 1900, when 27 conservationists decided to protest the traditional holiday 'side hunt', in which teams competed to see who could shoot the most birds and animals in one day. Today there are almost 2000 count circles, with more than 50,000 people participating either in the field or watching feeders. The CBC is well

ensconced as THE ICON for the study of early winter bird distribution, and coverage now extends from above the Arctic Circle to southern South America. Beginning last year, all CBC results are handled via online data entry. Researchers and others can access the site at the BirdSource website <<http://www.birdsource.org>>, a cooperative project of the National Audubon Society and the Cornell Laboratory of Ornithology.

Last year, despite often inclement conditions, 54,788,215 birds of 689 species plus 39 forms were tallied in the U.S. and Canada. A total of 1796 species were tallied outside the US and Canada. Studies on CBC data will document long-term bird population trends, changes in species' distribution, long-term patterns of dispersal of invasive species, as well as the general health of our environment.

The data contained within the 102-year span of the Christmas Bird Count are the ultimate tool for both conservationists and ornithologists to learn the status of early winter bird populations on a continental level.

Just a few of the discoveries from last year's counts include the fact that Northern Bobwhite numbers continue to plummet while Wild Turkeys are reclaiming the continent with great vigor; for the first time in years, a California Condor was counted, at Silver Reef, Utah; and dry conditions in the west may have accounted for a movement into the lowlands and



eastward of some western species, such as Western Scrub-Jay, Pinyon Jay, and Black-headed Grosbeak.

As the longest running ornithological database, the Christmas Bird Count continues to grow in importance as a means to monitor the status of resident and migratory bird populations across the western hemisphere.

The seventh annual Snake Valley CBC is planned for 3 January 2002. Experienced AND INEXPERIENCED volunteers are needed! Participants over 18 contribute a \$5.00 fee to cover a small portion of the costs of management, data compilation, and publication of the CBC results. For a list of birds seen on previous Snake Valley CBCs, a map of the Snake Valley CBC circle, or further details about participating in the count this year, contact Melissa Renfro, Monday thru Wednesday at the Resource Management Division — 234-7331 ext 228, or at home at 234-7154. Bird lists for Great Basin National Park and vicinity, as well as wildlife lists and forms for reporting exciting sightings of any animal, can be obtained at the visitor center front desk.



# On the Lookout for Bighorn Sheep

By Neal Darby

Two major projects concerning Rocky Mountain Bighorn Sheep were completed this past field season. The first project consisted of classification counts to determine herd composition and lamb survival. This season, for the first time since the park was established, we conducted the second year of two consecutive years of classification counts.

We learned that the lone lamb from last year survived and is now a yearling ram. Overall nine

bighorn sheep were seen this year: three lambs, three ewes, a yearling ram, a two-year-old ram, and a mature ram with green eartags. This mature ram is at least 13 years old. Classification counts will continue next year with more of an emphasis on seasonal use areas such as lambing grounds.

The second project consisted of determining the extent of bighorn sheep habitat on the south Snake Range. This was done using Geographic Information Systems (GIS) modeling. We learned that the amount of overall suitable habitat is adequate for supporting a viable population of bighorn sheep. The problem is that dense forest cover fragments it, so instead of several large patches of habitat, which is preferable, we have many small patches. The dense forest between these patches of habitat could possibly create movement barriers.

However, we know that bighorn sheep move throughout the Snake Range including between Mount Moriah and Wheeler Peak, so it is assumed that no major barriers exist but some patches of habitat may not be available because the bighorns cannot find them.

A second problem found through the bighorn habitat GIS modeling was inadequate lambing area, due to a lack of available open water



13-year old Bighorn ram on Mt. Washington

sources. Better information will be obtained when inaccurate water and vegetation cover maps are corrected.

Based on the findings of the bighorn habitat GIS modeling, areas of forest cover were identified that: 1) connect habitat patches or surround large habitat patches; and, 2) meet all other model criteria for lambing habitat. These areas of forest cover can now be incorporated into various planning documents that could enhance bighorn habitat. For example, these areas would be incorporated into a fire management plan as priority areas for actions such as prescribed fire, prescribed natural fire or mechanical fuels reduction. Such actions would open up the forest canopy making it more suitable for use by bighorn sheep.

*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](http://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:  
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Great Basin National Park,  
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Or call us at: (775) 234-7331

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**Great Basin National Park**

