

# ***The Midden***

## **Great Basin National Park Resource Management Newsletter Spring/Summer 2001**



This newsletter is written to provide information about resource management activities to park employees, local communities, and interested visitors. Our goal is to produce a spring newsletter that sets forth our upcoming field season activities and a fall newsletter that will discuss what was accomplished during the previous field season.

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## **Spring Restoration**

**by Sarah Casper**

During the summer of 2001, Resource Management (RM) staff will restore eight of 19 developed springs located throughout Great Basin National Park.

These  $\frac{1}{4}$  to  $\frac{1}{2}$  acre developments are comprised of troughs, water boxes, piping, and barbed wire fencing that were once used to manage cattle grazing. Since cattle grazing ended in Great Basin National Park in 2000, these developments are no longer needed, and RM staff will be removing them to allow the springs to return to their natural condition. In addition, each spring is being evaluated for historical purposes, and designated historic objects will be left in place.

Spring restoration includes improvements which enable natural grasses and other foliage to grow. This vegetation creates suitable habitats for many species of birds, insects, and mammals. Birds utilize the dense foliage around the spring for



*Trough at Upper Kiou Spring*

cover, forage and nest sites. Springs provide an excellent habitat for insects, which in turn provide a plentiful food source for wildlife. Mammals depend upon the springs for both water and forage.

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## **Wildlife Projects**

**by Neal Darby**

The Resource Management (RM) Branch has initiated several small-scale projects to determine the status of sage grouse, Rocky Mountain bighorn sheep and elk. Some general information on the status (population levels, habitat conditions, etc.) of these animals is needed to help plan for potential grants and restoration projects.

### **Sage Grouse**

A petition will soon be filed by a private organization requesting that sage grouse be listed as threatened under the Endangered Species Act of 1973. This request covers the entire range of sage grouse, including most of Nevada. In an attempt to stay ahead of this petition and prevent the listing of sage grouse, we have initiated some projects to determine the status of sage grouse in and around Great Basin National Park (GRBA). RM staff assisted the Nevada Division of Wildlife (NDOW) in surveying historical sage grouse

lek (breeding ground) sites in Snake and Spring Valleys. The sites in Snake Valley had not been surveyed since 1992. During the 2001 surveys, no sage grouse were seen on historical leks in Snake Valley, while most historical lek sites in Spring Valley still attracted at least a few birds. This was by no means a complete scientific study, but it does indicate that Spring Valley and Snake Valley have experienced sage grouse population declines similar to those being noted throughout the west.

This summer, RM staff plan to conduct some Geographic Information Systems (GIS) modeling. This involves taking digital map layers, manipulating them and then combining them to create a single map detailing sage grouse habitat. From this, we will be able to determine what role GRBA can play in sage grouse management and identify areas where habitat restoration could have the most immediate benefit for sage grouse. We also plan to join with Governor Guinn's Nevada Sage Grouse Conservation Team to help plan and coordinate local projects to benefit sage grouse outside of GRBA and prevent their listing.

### **Rocky Mountain Bighorn Sheep**

A review of sighting records and results from RM crews conducting ground counts has indicated that fewer than 12 bighorn sheep subsist in GRBA. Presence of ear tags and the ability to count growth rings on their horns further indicate that most of the bighorns are over 12 years of age, meaning we will lose a significant portion of this small population in the next few years to natural causes. Furthermore, lamb production has been poor. Only one lamb was noted from last year. It is not known yet whether this lone lamb survived the winter.

This summer the RM staff will continue to obtain counts and learn the distribution of bighorns in GRBA. We are planning some helicopter surveys in late summer or early fall to increase the area searched. We will also conduct GIS modeling similar to that discussed in the sage grouse plan. Once more information is gathered on the status of bighorn sheep and their habitat, a restoration plan will be developed.

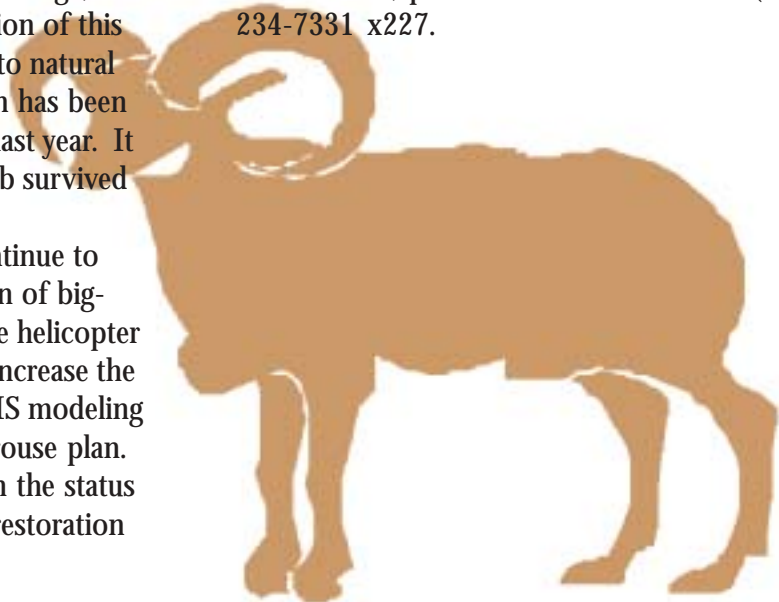
### **Elk**

Elk have been regularly sighted in GRBA since 1990. We recently compiled aerial sighting records obtained by NDOW, which conducts annual aerial surveys for deer but occasionally sight elk. We used this information to determine population trends that occurred between 1990 and 2000. Five animals were detected in 1990, and in 1999, 16 elk were spotted. These sightings do not reflect total numbers of elk, but provide the most consistent method of sightings available, allowing for their use in mathematical models to predict trends.

Plugging these numbers into a mathematical model called the Exponential Growth Model gave us an estimate that elk are exhibiting 10 percent annual growth in the south Snake Range. This means that the this elk population would be expected to double every seven years. Thus it is estimated that the elk population will reach 200, the number set forth in the White Pine County Elk Management Plan for the south Snake Range, in approximately 20 years, depending on the total numbers of elk out there.

The RM staff is putting together a study to determine the total numbers of elk on the south Snake Range and their distribution.

If you see any of these animals within the national park or have any information you would like to share, please contact RM staff at (775) 234-7331 x227.



# Bonneville Cutthroat Trout Reintroduction Project

by Fred Gender

The Bonneville cutthroat trout (BCT) reintroduction program is starting its third year. The goal of this project is to restore this native trout to its home waters within Great Basin National Park.

In past years, Strawberry Creek was determined to be suitable for reintroduction of Bonneville cutthroat trout. Nonnative fish stock were translocated to other fisheries, and remaining trout were extirpated using Rotenone, a chemical that affects gill-breathing organisms. The reintroduction of BCT in Strawberry Creek will begin when the macroinvertebrates (insects and other fish food) reach 75% of their pretreatment level. In 2001, organisms within Strawberry Creek will be sampled on a monthly basis in order to determine when conditions for reintroduction are reached.

Intensive survey work is being done on upper Lehman Creek, upper Snake Creek and south fork of Baker Creek to determine their suitability for future Bonneville cutthroat trout reintroduction. Stream characteristics being investigated are presence and quantity of amphibians, fish, mollusks and macroinvertebrates, as well as stream physical characteristics and water quality. No chemical renovation is planned for these streams in 2001.

The only streams in Great Basin National

Park currently known to contain native Bonneville cutthroat trout are Mill Creek and South Fork Big Wash. Mill Creek serves as a nursery for a genetically pure strain of BCT that is being translocated to other suitable fisheries. Last year 60 Bonneville cutthroat trout from Mill Creek were translocated to South Fork Big Wash, which for the past 40 years has been fishless. Early investigations have shown that the fish have taken hold in this section of the stream, and continued monitoring of this population is planned throughout 2001.

The "fish crew" for the 2001 field season brings to the project diverse experience in fisheries work. Neal Darby, biologist, has worked with bull trout, steelhead trout and sea-run cutthroat trout in the Pacific Northwest. The biological science technicians include Gretchen Schenk, Marilyn Keifenheim and Fred Gender. Gretchen has worked with cutthroat and lake trout in Yellowstone National Park. Marilyn has spent time working in the fisheries of the National Forests in Idaho, Wyoming and Michigan. Fred has spent his fisheries work on the limestone streams of Pennsylvania working with wild brook and brown trout. This team of dedicated professionals is working to keep the Bonneville cutthroat trout from becoming endangered if not extinct in Nevada. If you have any questions about the project, please feel free to approach any of our crew.



Cutthroat Trout



# Disturbed Lands Restoration

By Ben Roberts

Since 1999, Resource Management staff have actively reclaimed more than 40 acres of previously disturbed land within Great Basin National Park. This summer we plan to reclaim an additional 30 acres in two sites: the Bonita Mine and the Lexington Ponderosa Mine.

The Bonita Mine site covered approximately 50 acres of steep, mountainous terrain, and included 16 open adits, 43 wastepiles, five prospect pits, 23 trenches, over a mile of ditches, and over two miles of abandoned roads. In 2000, 12 of the 14 adits were closed, five trenches filled with their associated wastepiles, and four additional trenches were each half filled for safety considerations. Three short adits were collapsed and filled to eliminate human health and safety hazards arising from the accessibility and instability of the adit entrances.

Most of these features are hazardous to visitors and/or have a negative environmental impact upon park resources. Environmental problems include erosion, threatened water quality, impacts on fish and wildlife, proliferation of nonnative plants, impacts on the riparian zone, blocked hydrologic drainages, and lack of revegetation. While the Bonita Mine gives us information about historic mining activity in the park, its remains are a visual disruption to the natural beauty

of the park and also a danger to public safety and natural processes.

Based on bat surveys carried out in the summer of 1999 and the spring of 2000, two types of bat-compatible gates were installed in six adits that bats appeared to be using as roost sites. A traditional bat gate is shown below in a hard rock adit.

Non-traditional bat-compatible culverts were constructed in four adits to prevent tunnel collapse and to maintain airflow into tunnel systems for continued bat use while excluding human entry. Adits were first dug out to allow for the insertion of the pre-welded eight-foot culverts and were then sealed in place. Additional lengths of culvert were added to ensure that the openings wouldn't be covered after backfilling the area around the culvert. Small native rock walls were constructed at the culvert openings to prevent debris buildup at the entrance and to create a more natural look.

The Lexington-Ponderosa Mine site of 57 acres includes four inclined shafts, one adit, 64 trenches, 92 waste piles and 22 pits, and over two miles of abandoned roads. These disturbed sites impact water quality, reduce wildlife and fish habitats, contribute to alpine and riparian zone erosion, and supply sites for noxious weed proliferation. Resource Management staff, contractos and Baker ranchers have reclaimed and reseeded over 95 areas including all shafts and adits, and most pits, trenches, waste piles, and mining roads. All areas were brought to natural slope and reseeded. Remaining wastepiles and roads will be reclaimed this

summer, and trails will be constructed to provide access to the area.

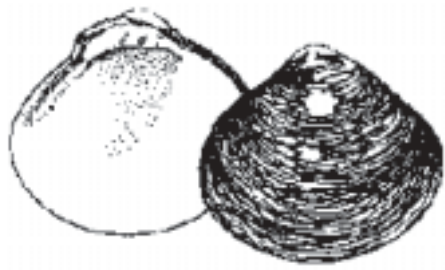
Many more areas of disturbed land remain in Great Basin National Park, including extensive mining areas, old gravel pits, overgrown logging roads, and incorrectly sited campgrounds. Resource Management staff will be restoring as many areas as possible over the next several years. We appreciate your support as we improve the safety, beauty and natural ecosystems of the park.



Before



After



## Great Basin's (Un)Charismatic Microfauna

By Neal Darby

Mollusks, which include snails and freshwater clams, are probably the least known of Great Basin wildlife. They are largely restricted to wet areas in and around streams, springs and seeps. Because of this restriction to wet areas and their lack of mobility, mollusks have become more isolated from each other than other wildlife. Thus, we see unique mollusk differentiation between wet areas. One such mollusk is the aquatic snail known as the Great Basin spring snail (*Pyrgulopsis* spp.). These spring snails are widely distributed throughout the Great Basin, but each spring contains an endemic

(native to a particular place) population that is slightly different from populations in any other spring. Unfortunately very little is known about their biology. There are other aquatic snails and freshwater clams which also exhibit endemism, but even less is known about their biology.

As part of an interagency conservation agreement and the Bonneville Cutthroat Trout Reintroduction Program, the Resource Management branch has been surveying streams, springs and seeps throughout the park for mollusks, in particular Great Basin spring snails. This simply involves picking through the vegetation, debris and soil looking for mollusks that may be no bigger than a pinhead. Those that are found are preserved in ethanol and sent to the U. S. Geological Survey Caribbean Science Center in Florida for identification. This center has a staff of mollusk experts, who will compile a list of the mollusks collected, compile information about their collection sites and then put together a field guide on the identification and distribution of mollusks in Great Basin National Park.

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## Fencing Removal Project

By Krupa Patel

The Resource Management division is initiating a fencing removal project in the park during 2001 and 2002. Over 18 miles of drift fence are found in the interior of the park, 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 Great Basin National Park in 2000.

As well as currently being unnecessary, the fences are also hazards to visitors and wildlife. Visitors who encounter the fences risk injury while crawling under or stepping over the barbed wire. Deer and antelope have also been found entangled in the fencing. Wildlife that cannot negotiate these fences may have their migration routes disturbed. From an aesthetic viewpoint, many people feel the fencing visually degrades the natural landscape.

During 2001, the Resource Management branch plans on removing roughly nine miles of the obsolete fencing in the park. Historic posts and braces will be allowed to remain to tell the story of grazing.



# Notes From The Underground

By Krupa Patel

The caves at Great Basin National Park are extraordinary creations. They have one of the highest densities of formations in the country. They contain rare shields and world-class anthodite (cluster of aragonite crystals) formations. Many invertebrates and other cave fauna that are found in the caves live in no other environment on earth. Because of the harsh



conditions in which these cave organisms have evolved, astrobiologists are studying these creatures to understand the potential life on planets like Mars. Geologists can get a glimpse into ancient climates and past sea-levels from the records preserved in stalagmites. From a research perspective, the caves are an incredible source of scientific information. From a recreational perspective, the caves are great fun. And from a management perspective, caves are unique and non-renewable resources that must be conserved.

Resource Management is responsible for trying to find a balance between all three differing perspectives. In order to find this balance we are creating a comprehensive Cave Management Plan for the caves in the park that is based on a firm understanding of the different aspects of the cave systems. Through understanding the scientific potential of the caves as well as the impact of humans on the cave system, we hope to find that balance between scientific conservation and human use.

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## Snakes!

By Bryan Hamilton

Snakes. Whether you love them or loathe them they inspire emotion in everyone. Nine to ten species of snakes live within Great Basin National Park and the surrounding area. Some of these species are very secretive and rare, and others are highly visible and often observed by park visitors and local residents. Resource Management staff are currently inventorying reptiles in Great Basin National Park to determine their abundance, distribution, and habitat preferences.

Of the local snake species, only rattlesnakes are dangerous to humans. Rattlesnakes can be distinguished from harmless snakes by their short, stocky bodies and stubby, rattle-tipped tail. Harmless snakes have a long, sharp tail. Below I will describe some of the most common snake species in the Snake Range and vicinity and give some observations on their natural history.

### Great Basin Gopher Snake (*Pituophis cantifer*)

Gopher Snakes are among the most abundant snakes in the area. Occasionally growing to lengths in excess of 72 inches, they average between 36 and 48 inches in length. Gopher snakes are habitat generalists, found in all habitats below 9,000 feet except very rocky areas. They feed on a wide variety of prey, including rodents, birds, eggs, lizards, and even the occasional rattlesnake. Female gopher snakes lay eggs in early summer in clutches of 12. Gopher snakes are most often seen on roads in early morning and late afternoon. Their defensive displays, exhalation of air in a loud HISS, coiling, and rapid vibration of their tail, have earned them the local name of “blowsnake”.





### **Desert Striped Whipsnake (*Masticophis taeniatus*)**

Whipsnakes are deceptively quick moving in short, sudden bursts of speed and are closely related to racers. Growing up to 72 inches in length,



whipsnakes frequent rocky shrub and woodland habitats up to 9,000 feet in elevation. Whipsnakes feed primarily on lizards, hunting by sight and smell. Whipsnake females lay eggs in the early summer in clutches of about 6.

### **Wandering Garter Snake (*Thamnophis elegans*)**

Wandering garter snakes are the only aquatic reptile in the area. This habitat preference is reflected in their local name of “water snake”. Garter snakes enter the water unhesitatingly, freely plunging into fast flowing streams with water temperatures often less than 50 degrees F. Garter snakes occur up to 10,000 feet in elevation and are never far from permanent water. They feed on earthworms, insects, and trout. Garter snakes are viviparous (give birth to live young), with 5-12 young produced in July or August.

### **Utah Mountain Kingsnake (*Lampropeltis pyromelana*)**

Mountain kingsnakes are strikingly beautiful animals in the area. Their brilliant red, white, and black bands are unmistakable. Mountain kingsnakes average about 24 inches in length and spend the majority of their time underground, often becoming surface active before and after summer thunderstorms. They prefer rugged, rocky mountain habitats near washes and riparian areas. Mountain kingsnakes feed primarily on lizards and small mammals which they kill by constriction. Female kingsnakes lay their eggs in clutches of 3-6 eggs.

### **Great Basin Rattlesnakes (*Crotalus viridis*)**

Great Basin rattlesnakes are the only rattlesnake species found in our area. Great Basin rattlers can be up to 48 inches in length, but are usually between 36 and 40 inches. Rattlesnakes frequent a variety of habitats with rocky areas: desert shrub, woodland, and forest. Great Basin rattlesnakes hibernate at communal hibernacula, leaving these areas during the summer to search for mates and hunt. Males can move up to five miles from the hibernaculum. Rattlesnakes return to the same hibernaculum each year. Rattlesnakes feed primarily on rodents, lizards, and birds. Rattlesnake venom is used primarily to secure prey but is also used defensively. **Rattlesnakes are venomous and should be treated with respect.** Female rattlesnakes give birth to 3-10 live babies in September and remain with their young for a week after their birth. The newborn rattlesnakes then follow their mother back to her hibernaculum. Please report any observations of large numbers of rattlesnakes in the spring or fall to Resource Management personnel.



Snakes are a fascinating part of our local environment. Snake Valley and the Snake Range is aptly named, since unlike many areas in the West, snakes are still abundant here. Snakes play an important role in ecosystems, serving as a food source for many animals and feeding on a significant amount of rodents. Rattlesnakes in particular feed on large numbers of deer mice. Enjoy your encounters with the local snake fauna and treat them with respect.

## Wild Cave Information for 2001

There are eight permitted and gated wild caves at Great Basin National Park. Permits will be approved for those who can demonstrate their experience with horizontal and vertical caving techniques, cave conservation ethics and Leave



*Entrance to Ice Cave*

No Trace principles, and experience with the proper equipment. Those who qualify and are interested can contact the Resource Management office at (775)234-7331 x228 for a Cave Permit application. *Permits must be applied for at least three weeks prior to the cave trip, either in writing or via email.* Visitors who are at the park and wish to speak with the Resource staff in person can stop by the Resource Management office which is located next to the Maintenance Yard off of the main park road. The Resource Management office is open Monday through Thursday from 7:00 a.m. to 5:30 p.m.

Many of the wild caves in the Park are important hibernacula and maternity roosts for various species of bats including four National Park Service (NPS) Sensitive species: long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), western small-footed myotis (*Myotis ciliolabrum*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Due to the disturbance caused by human use, the caves that are used by bat populations will be open only during the specific time periods listed below pursuant to Title 36, Code of Federal Regulations, Section 1.5 (a) (1):

<u>Cave</u>	<u>Open Dates</u>
Pictograph Model	September 10 to March 25 Winter (otherwise too much water)
Snake Creek	Temporarily closed
Little Muddy	October 1 to April 1
System's Key	May 15 to October 15
Ice	September 10 to October 15
Crevasse	September 10 to October 15
Wheeler's Deep	June 1 to April 1

For questions or further information about the wild cave permitting procedures, contact the Resource Management office.

The *Midden* is the resource management newsletter of Great Basin National Park. It will be published both on paper and on the Great Basin National Park website ([www.nps.gov/grba](http://www.nps.gov/grba)).

This newsletter is our first, and we would appreciate any comments or suggestions to improve future newsletters.

We also 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, (775) 234-7331 ext. 227 or 228



*Managing Editor:* Gretchen Schenk  
*Editor:* Kristina Heister  
*Illustrations:* Emily Page





