



The Midden

The Resource Management Newsletter of Great Basin National Park

Archeological Surveys Reveal New Finds

By JoAnn Blalack

The cultural resource program conducted an archeological survey in the Mill Creek watershed in 2004 as part of a two year archeological survey of backcountry areas in the park. Ten new archeological sites of both prehistoric and historic nature were documented, adding to the five known archeological sites within the project area.

The prehistoric sites found are typical seasonal sites located at lower elevations in the park and are comprised of lithic scatters. The historic sites contain information about mining activities and historic Native American activities. The mining sites consist of

test pits and a test adit, which is of interest since no records show any mining activities occurred in this area of the park. The second historic site type is that of historic Native American activities, encompassing pinyon pine nut gathering areas including wooden ladders used to harvest the pine nuts. These sites are associated with the Shoshone tribes that live in this region of the Great Basin.

With these finding in one of the park's smaller watersheds, we are looking forward to next year's field season when we begin to survey another one of the park's many watersheds.



Shoshone ladder used to pick pine nuts

Photo by J. Blalack, NPS

High Beetle Diversity in Sagebrush Habitat

By Tana Ellis

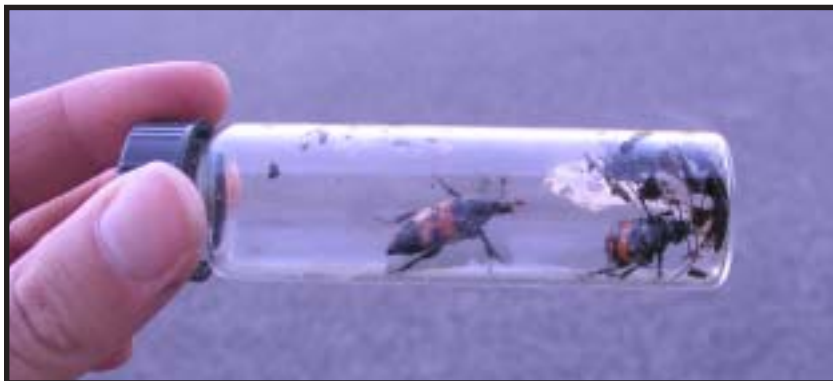
Of all creatures great and small, the tiny beetle is actually the greatest of all—in terms of diversity, that is. Of the approximately 1,000,000 known species of animals on the planet, insects represent 70 to 80 percent of all species, and of these, two-fifths (about

300,000) are beetles. This all adds up to mean that beetles dominate as the largest group of critters on Earth.

Beetles are essential components of most ecosystems for various reasons: many plants depend on beetles as pollinators; many mammals, birds, reptiles,

and amphibians benefit from a meal of beetles; as scavengers, beetles contribute to nutrient cycling; and as parasites and predators, beetles contribute to maintenance of community structure. Because of their great diversity, beetles are sensitive indicators of ecosystem change and can be used to study important questions concerning environmental quality and management. Ironically, beetles are a greatly understudied group.

The onset of a habitat restoration project this year at Great Basin National Park presents the opportunity not only to learn about beetles within specific habitats, but also to examine the effect of vegetative changes on beetle assemblages. As a result of past



Collected beetles

Photo by G. Baker, NPS

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Discovering Great Basin Birds

by Margaret Allan

More and more people are discovering how fascinating and interesting birdwatching can be, and an ideal place to watch birds is Great Basin National Park. Over 20 bird surveys were conducted this summer by park staff to learn more about birds associated with springs and to get baseline data before sage-steppe restoration.

Surveys were carried out during the peak breeding season of most Nevada landbirds, from May 20 through July 7 using protocols from the Great Basin Bird Observatory (www.gbbo.org). Fixed-radius point count surveys were used, meaning that only birds detected within a given distance from the observer were used for analysis. The data is just beginning to be analyzed, but preliminary findings are exciting. Almost 2,000 birds and more than 80 species were observed in the 22 surveys conducted throughout 11 areas of the park.

The 10 most common birds, in terms of number of individuals and places within the park where they were detected, are the Dark-eyed Junco, Mountain Chickadee, Ruby-crowned Kinglet, American Robin, Warbling Vireo, Violet-green Swallow, Hermit Thrush, Chipping Sparrow, Yellow-rumped Warbler, and Spotted Towhee.

A number of birds considered uncommon to the park area were also observed. They include the Blue-gray Gnatcatcher, American Crow, Canyon Wren, Black-throated Sparrow, Williamson's Sapsucker, Downy Woodpecker, Ash-throated Flycatcher, Gray Flycatcher, and Virginia's Warbler.

Of particular interest are the Black Rosy-Finch, Peregrine Falcon, Northern Goshawk, Willow Flycatcher and Lewis' Woodpecker sightings. Many visitors come to the Park specifically hoping to see Black Rosy-Finches, the highest breeding birds in North America, which nest on ridges, peaks and cliffs above 9,000 feet. The difficulty in accessing their breeding habitats makes studying them extremely complex. This season they were sighted on the Wheeler Peak Summit Trail, and previously have been sighted in the Park on Bald Mountain and above the glacier.



Lewis' Woodpecker

Peregrine Falcons are one of the world's fastest flyers, able to achieve dive speeds of almost 200 miles/hour. While they are no longer listed as endangered, they remain rare and the sighting atop Mt. Washington was an unexpected treat.

Two Northern Goshawks were observed as part of the surveys, including

a male seen calling from a nest. Northern Goshawks are important predators in mature forests. They have received considerable attention in recent years due to declines in their population and loss of critical habitat to commercial activities and encroachment of other habitat types.

Two Willow Flycatchers were observed in Pole Canyon. This species is listed by the state of California as endangered and its status and range within Nevada is poorly known. In at least some areas of its range, the Willow Flycatcher is thought to be in decline due to riparian habitat degradation and loss as well as Brown-headed Cowbird parasitism.

If you are worried that you would have to venture far to see uncommon birds, the observation of the Lewis' Woodpecker in the Park's housing area proves otherwise. The Lewis' Woodpecker is of high conservation importance because of its relatively small and patchy distribution, low overall density, possible declines in population, and poorly understood status.

It is hoped that after further analysis, the survey data will help to refine the existing list of common birds in the park and compare diversity and relative abundance of birds in unique habitats or areas experiencing different degrees of disturbance. This information will help alert resource managers to birds or habitats in need of management. But don't wait for the results of these projects to learn more about the park's birds. Wildlife viewing cards are available at the Visitor Center, and with over 45 year-round bird residents, there's no better time to grab those binoculars!

Trout Population on the Rise in the Park

By Eric L. Scott

Fish populations are thriving at Great Basin National Park. Throughout August and September the aquatics team performed population surveys in several of the creeks in the park.

The Bonneville cutthroat trout (BCT) populations residing in Strawberry and in South Fork Big Wash appear healthy and are growing rapidly. The BCT were first reintroduced into South Fork Big Wash in 2000. In 2002, a population survey found that there were 31 fish in the 100 meter long study area, including 18 young of the year (YOY) (Figure 1). In 2004, the survey was conducted again and found 65 fish in the same area with 55 YOY, an increase of overall fish numbers by 110% and of YOY by 206% (Figure 2). The high proportion of BCT YOY suggests that the populations are reproducing well and adapting to their new home. The Strawberry Creek survey showed an increase as well, with 18 fish caught in the 2003 survey and 28 in the 2004 survey, an increase of 56%.

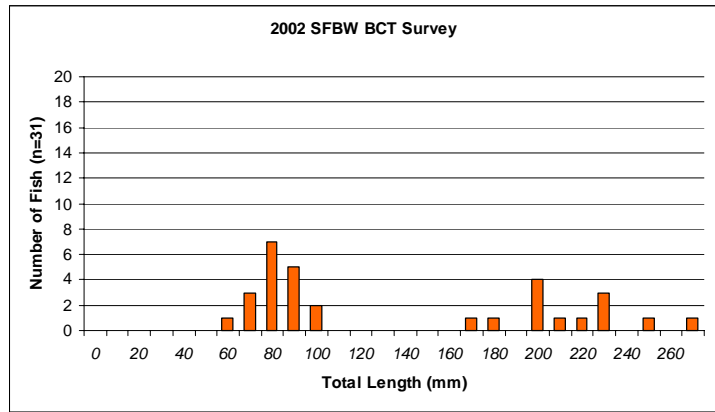


Figure 1. BCT found in South Fork Big Wash 100 meter survey area in 2002.

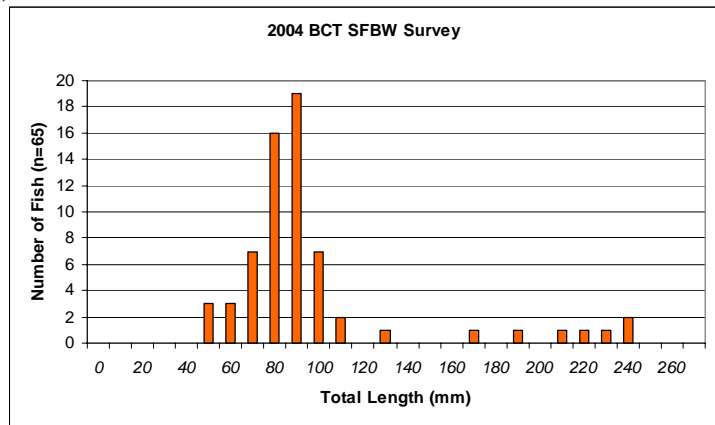


Figure 2. Just two years later, in 2004, the BCT in the same survey area had doubled in numbers.

Fish surveys were also conducted in 2004 on Lehman and Shingle Creeks. The Lehman Creek survey was conducted near Lower Lehman Campground and found 134 trout in the 100 meter study area, for a population estimate of 2157 fish per mile. Rainbow trout were most predominant, followed closely by brook trout and then brown trout. The biggest fish, a brown trout, was too heavy for our scale, weighing over 400 grams and measuring 340 mm (13.4 in) in length.

The 2004 survey on Shingle Creek found 70 rainbow trout in the 100 m study area, an increase from 28 found in 2001. It appears that this trout

population is healthy with good recruitment.

The fisheries program at Great Basin National Parks aims to restore Bonneville cutthroat trout and other native fish to selected streams and to monitor the non-native populations in other streams. Overall it appears that both the BCT and non-native populations are reproducing well and growing to large sizes. The park will continue to conduct fish surveys to monitor these populations.

Join us in Spring 2005 as we move Bonneville cutthroat trout into Upper Snake Creek from Hendry's Creek. Details on this Nevada Department of Wildlife and National Park Service cooperative effort will be forthcoming.

Beetle Diversity (Continued from page 1)

land management practices over the past century, such as grazing and alteration of natural fire regimes, pinyon pine (*Pinus monophylla*), Utah juniper (*Juniperus osteosperma*) and exotic cheatgrass (*Bromus tectorum*) have encroached upon much of the sagebrush-grassland community.

This restoration project aims to remove some of the existing stands of pinyon and juniper and thwart their further encroachment onto the historically and biologically important sagebrush-grassland habitat. As a result of this study, we can better understand the basic community structure and diversity of beetles within pinyon-juniper and sagebrush-grassland ecosystems, and further apply this knowledge to support resource management applications and decisions.

The first phase of the beetle project was completed this summer. Ground beetles were sampled from three locations: the pinyon-juniper “treatment” area; the pinyon-juniper “control” area; and the “comparison” area, which is a sagebrush-grassland area that may be comparable to the final goal of the restoration project. Pitfall traps were installed in each habitat and the captured beetles collected and



Photo by G. Baker, NPS

Tana Ellis displays recently pinned beetles

preserved.

Results show a significant difference between ground beetle communities within the pinyon-juniper and sagebrush-grassland habitats. Species composition within sagebrush-grassland was over twice as diverse as in the pinyon-juniper, with 26 of the 36 total collected species found in the sagebrush-grassland, and 17 of these found exclusively in this habitat. Ground beetle abundance varies significantly between habitat types as well, with 187 individuals collected in sagebrush-grassland, 71 in the treatment area, and 49 in the control area. This data reinforces the importance of the

restoration project, as a continued loss of sagebrush-grassland habitat may result in diversity declines of both native flora and fauna, and associated declines in functional resiliency of the sage-grassland ecosystem within the Park.

Because so little is understood about these six-legged resources both within Great Basin National Park and in the scientific community at large, this project can contribute much new knowledge. With the continuation of this study, we will have a better understanding to manage these lesser known resources unimpaired for future generations.

Have you seen a mountain lion?

The park is beginning a project to determine distribution and abundance of mountain lions and seasonal habitat use. The information will also be used in the upcoming bighorn sheep restoration project. Your help is needed! If you have seen a mountain lion, please contact resource management to report it. A wildlife observation report, available at the visitor center, can also be filled out

to assist with the project. Information needed includes: where you saw it; when (month and year); what it was doing; weather conditions; and how it reacted when it saw you.

The study will also be using remote cameras, snow-track surveys, and scat sampling to analyze how mountain lions and other carnivores are using the park.

Volunteers are welcome to help, look for information on page 8.



NPS Photo

Mountain lion approaching a remote camera in Decathlon Canyon

425+ Springs Found in Park

by Gretchen Baker

The aquatics crew has been searching high and low for springs throughout the entire park during the last two years. Each watershed was walked following streams and seeking hydrophilic (water loving) vegetation such as sedges, rose bushes, and willows. When a spring was found, the exact location was surveyed using global position system (GPS) units. Biotic surveys were then conducted looking for vegetation and animal sign including mollusks, amphibians, birds, tracks, and scat around the spring. Abiotic surveys incorporated water chemistry measurements and substrate descriptions.

Over 425 perennial springs and seeps were located throughout the park as part of this project. About 60% of these springs had a single springhead, while 40% were classified as spring complexes with multiple springheads. Baker Creek watershed contained the most springs, with 148, while eight of the park's 25 watersheds had no springs, largely due to underlying karst geology.

About 10% of the springs were at elevations greater than 10,000 ft, with 61% between 8,000 and 10,000 ft and the remainder below 8,000 ft. Corresponding to the elevation gradient, 76% of springs had aspen-mixed conifer habitat around them, while 11% had pinyon/juniper, 9% had sagebrush, and the remainder had a variety of vegetation types. Roughly 23% of the springs had encroachment nearby, largely due to white fir taking over aspen stands and pinyon/juniper moving into sagebrush.

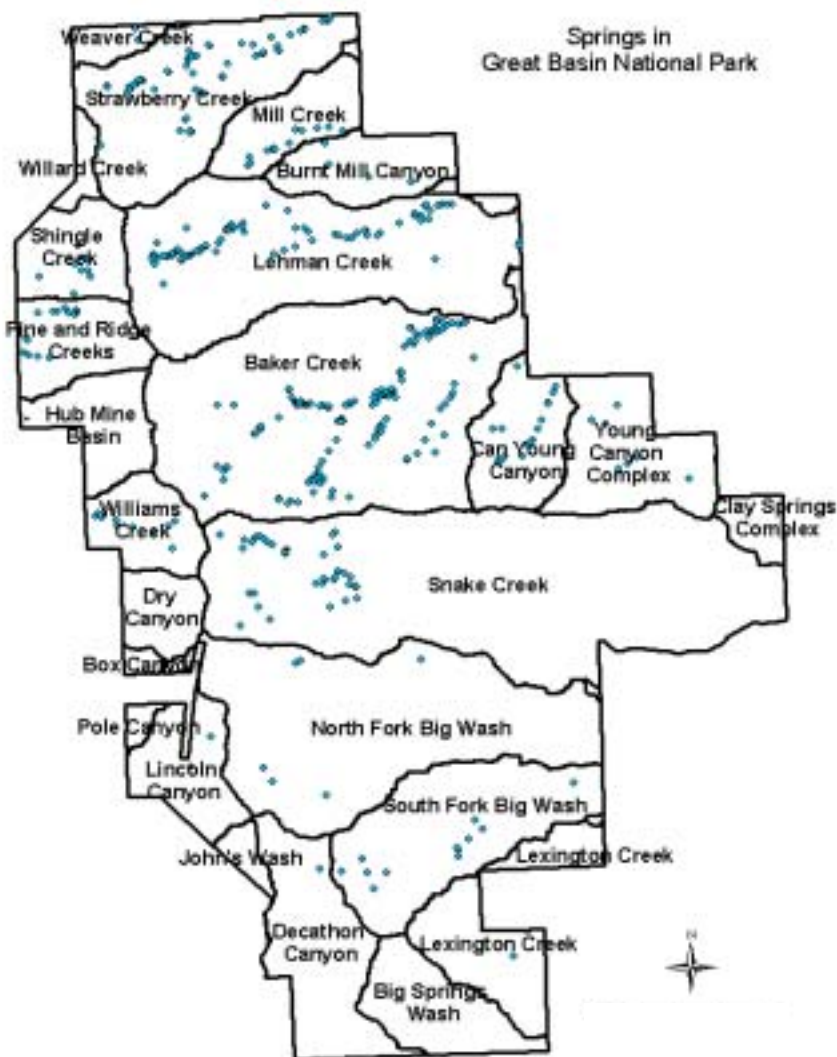
Nearly 17% of the springs had some disturbance near them, with roads and trails as the most common type of

disturbance. Seven percent of the springs had cultural features near them such as water troughs, fencing, or historic cabins. The mean water temperature of the springs was 7.3°C, with a maximum of 12.3°C, so it is now confirmed that Great Basin National Park has no hot springs.

Approximately 87% of the springs had visible animal sign near them, including 12% with mollusks. No amphibians were found near any of the springs, confirming previous survey results.

This project has greatly expanded the park's understanding of the location and baseline data on its water resources.

Future work will include selecting springs for long-term monitoring. The springs will be selected by analyzing which ones may be most susceptible to changes such as acidification, ground water withdrawals, and encroachment. In addition, springs that are heavily used by wildlife will also be monitored to gain a better understanding of how wildlife populations use the water sources in the park.



2004 Wildlife Projects

by Neal Darby

Elk

In 1999 park staff were participants on the White Pine Elk Management Technical Review Team that drafted a county Elk Management Plan. In 2000, park staff assisted with the release of elk north of the Park. Monitoring was assigned to agency personnel working close to release sites. The park has followed elk with radio telemetry equipment since 2002. Relative abundance figures from the past three years indicate an upward trend in the number of elk in and near the park, with 63 in 2002, 75 in 2003, and 85 in 2004. This represents a population increase averaging 16 percent per year. No vegetation degradation was seen as elk tended to be mobile, averaging movements of 2.5 miles between weekly locations.

Yellow-bellied marmots

With the loss of thousands of acres of marmot habitat from a century of fire suppression, marmots are a species of concern with downward trending populations and more and more limited distribution. Inventories have been initiated to find colonies and plan habitat restoration projects to arrest the downward trend and improve distribution. A 2004 survey found that the Baker Creek colonies had similar numbers of marmots as last year, with 11 individuals and three young of the year. Added emphasis was placed on educating and creating awareness of marmots to park staff, especially seasonal employees. This educational outreach resulted in the discovery of an undocumented colony within the park by seasonal Resource Management employees.

Beavers

Beavers naturally recolonized Great

Basin National Park in 2003 after being absent for 46 years. Eight dams were built during the summer of 2003 on the lower section of Strawberry Creek, approximately ¼ mile inside the eastern boundary. A lodge was found in the uppermost impoundment. Placement of remote cameras in fall 2003 and spring 2004 confirmed beaver presence and activity. Beaver ponds were monitored periodically through the summer of 2004 for continued activity. By September, it appeared the beavers were no longer active. An investigation is ongoing as to the reason for their disappearance including expanded surveys for potential dispersal to other drainages.



Mustang Spring trough before wildlife ramps

Photo by G. Baker, NPS

Wildlife Ramps

Mustang Spring, located in the southwest corner of the park, provides water for domestic sheep grazing in the Murphy Wash Allotment. Water is piped from the spring to troughs. Recent work in the area found that the troughs were not “wildlife friendly” and noted five bats and two rodents drowned in the troughs. Troughs contain no drainage plugs so they contain water even when the spring source is disconnected. Steep smooth metal sides prevent wildlife from climbing out. In the spring of 2004, wildlife ramps were installed to assist wildlife that may become caught in the troughs. Follow-up monitoring throughout the summer found no further wildlife drownings.

New Cultural Resources Database

by JoAnn Blalack

The cultural resource program is developing an archeological database at the park based on a template by the Western Archeological and Conservation Center (WACC) in Tucson, Arizona. All archeological information is put into an Integrated Cultural Resources Database that allows the cultural resource manager of a park or monument to have easy access to all information pertaining to a particular site or area within the park or monument. At Great Basin National Park this database will help the cultural resource manager in assisting other departments in the park such as the natural resource and maintenance departments on projects that may have an impact on archeological sites. The database allows for updates to old site records and to input new site records. It also shows where past archeological surveys have been completed.

Furthermore, the database allows other park employees, such as park interpreters, access to non-sensitive site information so that they can better inform the public about the types of archeological sites within the park. We are very excited about this system and hope to have it up and running by the end of 2004.

The Midden is now being distributed in full color PDF format by email. If you would like to be added to the distribution list, please email Gretchen_Baker@nps.gov.

German National Parks--A Comparison

by Nadja Schaefer

I am a student at the German University of Ulm studying ecology, and I volunteered at Great Basin National Park from mid-August to mid-October. I worked with Resource Management to find springs, conduct fish population surveys, and help with elk telemetry and data entry.

Great Basin National Park and the surrounding area are very impressive to me. The apparent endless vastness and the seclusion have been a new experience I am glad I didn't miss.

Compared to Nevada, Germany has approximately 80 times greater population, with more than 80,000,000 inhabitants in an area comparable to the space of Nevada. Between 1970 and 2004, 15 national parks were established in Germany with a total area of 913,431 hectares (2.3 million acres). Approximately 80% of this protected area is covered with mud flats or water.

Generally, national parks try to protect the diversity of plant and animal species and their habitat. However, in contrast to American national parks, most German national parks are called "Ziel-National Parks." In these parks, humans have been present for thousands of years, thus the natural areas are not undisturbed. There are almost no areas that are not affected by human beings. So, in German national parks, traditional and economic lifestyles persist within the park, as well as tourism. Depending on the surrounding area of the Park, there are different emphases on what each Park is protecting. Many people use the national parks as health resorts or recreation areas.

The National Park Berchtesgaden, the only alpine national park in Germany, is located in the Alps near the Austrian border and contains the second highest peak in Germany, the "Watzmann" at an elevation of 2,712



Berchtesgaden with the second highest peak in Germany, the "Watzmann," in the background.

Photo by Andreas Thoma

meters (8,900 ft). It has many beautiful lakes and amazing scenery while incorporating human settlements. This park protects different species of animals like marmots, golden eagles, chamois (mountain antelope), and salamanders as well as different species of plants like gentian, edelweiss and Alpine rose.

More information about the 15 national parks in Germany is available at www.germany-tourism.de/e/national-parks.html.

Cave Program

by Matt Reece

The cave crew had a busy summer, spending the majority of time in the alpine areas of the park. Thirteen caves were mapped in the final year of a three-year project to locate, inventory, and map the wild caves of the park. In addition to the known caves, four new caves were discovered, bringing the total number of caves in the park to forty-five.

Alpine caving presents challenges not often encountered in the park's lower elevation caves. The high elevation caves are cold and very technical. The majority of the caves mapped required technical rope skills, and rigging styles developed in Europe for deep alpine cave systems. Specialized clothing and rugged nylon coveralls



Jason Mateljck enters one of the icy alpine caves

Photo by B. Roberts, NPS

are also necessary, as the temperature in the alpine caves is less than 40 degrees Fahrenheit. Included in the mapping were Long Cold Cave, the deepest cave in Nevada at 435 feet, and High Pit, the highest elevation cave in Nevada at 11,267 feet.

Also this year we received news of some cave biology results. Dr. Douglas Zeppelini, a Brazilian biologist doing species identifications for biota collected in 2003 as part of the project, sent exciting information. Two species of *Collembola* collected from Snake Creek and Model caves are new to science. We're hoping to be able to collect a few more of these critters so Dr. Zeppelini can do a full species description.



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U.S. Department of the Interior

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EXPERIENCE YOUR AMERICA

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

A spring/summer and fall/winter issue are sent out 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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Cindy Nielsen

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Upcoming Events:

Nov 17-18: Leonid Meteor Shower One of the best meteor showers of the year, with most activity predicted from 3 A.M. to 6 A.M. on Nov 18. More info at <http://en.wikipedia.org/wiki/Leonids>



Nov 25: Thanksgiving Bird Count Count birds outside your window for one hour on Thanksgiving Day. Started in 1966, extra counts needed in the West. Data form at <http://www.utahbirds.org/cbc/ThanksgBCForm.htm>

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

Spring 2005: Help reintroduce Bonneville cutthroat trout into Upper Snake Creek Contact Gretchen Baker at 234-7331 x267 if you would like to volunteer. Date dependent on weather conditions.

Summer 2005: New Great Basin Visitor Center Opens! Information will be posted at the park website as details become available.

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.