

## Ranger, What's that Person Doing?

### Documenting Treasures

Throughout this summer, if you see a ranger hiding in a dark corner of the cave system holding a strange electronic device, don't worry, she is making an inventory of cave features. Resource Management will be using a georeferenced map of the Timpanogos Cave System, to identify and map significant features throughout the caves such as cultural resources, rare or unusual formations, monitoring sites, infrastructure, accidents, and management activities. This project will help manage the cave system in all aspects of park management; Resource Management, Maintenance, Interpretation, and research.

We invite all divisions to become involved by informing resource management of any interesting finds. This way we can add your discovery into the digital archives to be preserved forever. Since GPS units do not function underground, these features must be manually entered into the software, so as much information as you can describe, photograph, or otherwise record, especially on the item's location will be immensely helpful not only to your friendly neighborhood resource staff, but also to the many future generations of staff to serve at this monument.



### Handrails

New Handrails are being installed in the cave to protect the cave and to provide a safer experience for visitors. All of the existing handrails will eventually be replaced with new stainless steel handrails. All new handrails will be attached to the existing trail. You may have noticed, over the winter, a new handrail in Chimes Chamber was added. The next handrail to be installed will be under Thirteen Stitch. You can view the complete handrail implementation plan at [www.nps.gov/tica/RMweb/](http://www.nps.gov/tica/RMweb/) under Project Management. All comments are welcome.

### Bat Friendly Gates

Hansen and Timpanogos Cave cave gates are now completed. The gates will enhance air flow in caves, improve security, and maximize the ease of bat passage, and eliminate the chances of bat predation.

This year, the Middle Cave gate will be replaced with a similar gate design. We are expecting to start the project the beginning of July, once safety issues and other considerations are finalized.



Gate Design

### Looking for Bugs

Since the cave is our primary resource, the Inventory & Monitory Program (I&M) thought that a cave invertebrate inventory was essential. Dr. Riley Nelson, from BYU's entomology department had additional funding remaining from last year's effort, so he is adding another sampling year to the study.

The invertebrates are being caught using 80 plastic cups hidden throughout the cave. These unbaited pitfall traps are filled with a mixture of water, salt, and dish soap. The dish soap breaks the water tension so that the insect can be trapped. The salt preserves the critter until identified. This sampling technique catches only the bugs that randomly roam through the traps.

Large numbers of invertebrates were not caught in any particular trap, but invertebrates were trapped throughout the cave system. A total of over 30 different species have been collected as part of our efforts and additional species are added with each successive visit.

### Cave Cleaning

Imagine what effects would occur if over 60,000 people would pass through your house each year. Soiled carpets, discolored walls, and accidental damages would be quite apparent. As a result of these effects, we have a GPRA goal stating that 3,000 ft<sup>2</sup> of cave surfaces will be restored each year.

This year's focus will be cleaning the entire cave trail surface. So expect to see Resource Management out slowly working along scrubbing and spraying to get the trail as clean as possible. In addition to the job, we will also be looking to improve traction throughout the cave's trail by adding cement ridges as seen in the end of the Timpanogos Tunnel. Volunteers are more than welcome to help with this project.

### Managing Vegetation

Invasive plants choke out native vegetation, and create a great threat to the park's ecosystem. In the past 3 years, the monument has begun to combat its invasive plants. At least 22 invasive plants have been identified within the monuments 250 acres. Our GPRA exotic plant goals are to control 5 acres of invasive plants and revegetate 1 acre each year. Our effort has reduced Toadflax and Spotted Knapweed by over 50%. This year, the park weeds are going to be pulled using the assistance from the Utah Conservation Corps over July 5 through July 9.

During the winter, Becky Peterson has been working on completing a draft Vegetation Management Plan. The plan outlines the long-term plan for controlling invasive plants, revegetation of disturbed areas, and Environmental Assessment (EA). The plan and EA should be ready for review by the end of the fiscal year.

# What Did I Miss This Winter?

## Going Online

This winter a new electronic resource was added to our information pool. On the park's website [[www.nps.gov/tica](http://www.nps.gov/tica)] you can now click on a new link entitled *Nature and Science*. At this site, you will find a wide range of information about the monument's animals, plants, birds, environmental issues, and natural features such as the cave, fossils, and monument geology.

Also be sure to check out the latest updates to the Resource Management website [[www.nps.gov/tica/RMweb](http://www.nps.gov/tica/RMweb)]. Here you can view a 3-D model of the cave, check out our projects in detail, and print off your own personal copies of all our publications.

## Water Rights

An agreement was signed between the National Park Service and Utah Division of Water Rights giving the park perennial rights to the water within the agreed acreage above the cave. This means no one will ever be allowed to divert or use the water from the cave's watershed other than the esthetic value within Timpanogos Cave System.



Everwood film crew setting up in the Swinging Bridge picnic area meadow.



Microbial growth that was found in the cave next to the Cascade of Energy stairs.

## Making History

Cami Pulham is working on several projects to preserve the park's history. Over the next 2 years, she will be cataloging all of the backlog museum items, a project that will add over 1200 items to our collection. The yearly museum GPRA goal is to catalog 100 items. The other large project is writing a comprehensive administrative history. This publication will cover the park's prehistory, its designation, and the history of the all of the divisions. The project is expected to be completed by the end of next summer.

## Hanging with the Stars

Another history making event was the filming of *Everwood*. Helen and Jennifer had their hearts stolen by the handsome cast of *Everwood*, a popular TV show that airs weekly on Channel 30. The Swinging Bridge Meadow was transformed into a plastic flower-covered picnic scene, and the visitor center was altered to look like a Colorado bus station. There is a copy of the episode available in the library if anyone is interested in seeing it.

## Testing the Water

The health of the cave ecology is largely dependent on the quality of the cave's water. The adjacent Forest Service land practices of grazing, ATV and off-road vehicle use, camping, and fire suppression and surrounding air quality can affect the cave's water quality. In 2003, contamination testing was conducted to establish baseline levels of water quality. Testing was performed at one location in each of the three caves. Contaminants tested for were total coliform, E.coli, Heavy Metals, gasoline, diesel, MTBE, Cyanide, purgables (VOCS), semi-volatiles, and pesticides. All the parameters measured were at or below detection levels. However, total coliform counts were found in Middle Cave Lake. The total coliform bacteria test is a primary indicator of "potability", suitability for consumption, of drinking water. More water testing will continue to define the extent and the source coliform counts.

## Microbial Communities

A study comparing microbial communities from "pristine" and "disturbed" areas from Timpanogos Cave is near completion. Last summer water and soil samples were taken from 10 locations throughout the Timpanogos Cave System. Each site is being analyzed by BYU PhD candidate, Megan Porter. In the lab, Megan and her students amplify, clone, and then use the 16s rDNA sequences as markers to identify what microbial groups are present. The samples are being accessed for the presence of 3 major microbial groups: bacteria, archea, and fungi. Preliminary results are showing that the samples from pristine and disturb areas are different. A number of clones from disturbed sites are similiar to sequences from contaminated mine and soil environments. As the analysis continues many new diverse species are being found.

Over the winter, a strange growth was found at the base of the Cascade of Energy stairs. It was sent off to Megan for description. The growth was found to be closely related to plague. After close examination, a tin wrapper and a waxed paper label "Hersey" as found.

## Presenting...

This year Resource Management is trying to enhance outreach capability. To do this, we have been increasing the quality and quantity of our publications and presentations. You have probably seen some of our new publications - this newsletter, Timpanogos Reflections, a wildflower guide, and new cave map and atlas. However, have you heard of our other outreach efforts?

Most all of our staff has been giving public presentations. Jon gave a presentation on *Portable Cave GIS* and *Restoring a Disturbed Cave* at the Cave Management Symposium in Gainesville, Florida. Jon and Brandon will also be giving presentations at the National Speleological Society (NSS) Convention in mid-July. Jon is presenting with Megan Porter the results of the microbial survey, and Brandon will be presenting cave photography techniques and cave mapping shortcuts. Mike Gosse and Jon gave a NPS philosophies presentation to former intern Anjana Kwanta's Resource Management class. Mike also gave a presentation on Federal Land Agency jobs to a class of diversity teens. Brandon, Becky, and Cami each have given unique presentations to scout groups. Jon and Brandon have been giving multiple cave conservation presentations at local Timpanogos Grotto meetings. And Jon has been giving multiple squad presentations on Resource Management projects.

Resource Management is also help helping other agencies with the management of cave related resources. We are assisting the Salt Lake BLM office with the gating and management of Crystal Cave. When the Environmental Assessment (EA) is complete we will be installing their gate. The Utah Division of Fish and Wildlife asked if we would assist in statewide bat surveys with our Anabat detector expertise. University of Utah's Museum is using our cave expertise in designing an exhibit on Utah Caves. The exhibit will educate people on correct caving techniques and ethics, as well as, special interests of Utah Caves. The exhibit should be opening in the spring of 2005.

We are also working with TICA volunteer, Chuck Acklin, to produce Safe Caving Program for Scouts. This program is combatting the Nutty Putty technique for scout caving - no helmets, no instruction, no training, and insufficient lights.

With all these presentations and community relations being implemented, Resource Management is truly building a better community awareness and outreach program.

## New Universal Cave Ticket

Don't run! No Correr! No courir pa! This winter we sweated, and squeezed, and yelled, and pushed; but we could not manage to fit a multi-linguaged translation of "Don't Run" as well as other safety rules on one small cave ticket. The simple solution, thanks to Camille Price, was to add universal symbols to the cave ticket. Now instead of yelling out "Don't Run" in multiple languages, simply hold up a cave ticket, point to the symbol of the rule that is being violated, and make an angry face.

## Timpanogos Reflections

The Timpanogos Reflections, the canyon's newspaper, has been printed. The newspaper is a great publication to inform our stakeholders about what there is to do and what is happening within the canyon. This publication is the result of many great individuals; however, huge credit goes to Mike Gosse, Norm Young, and Brandon Kowallis for getting the project to completion.

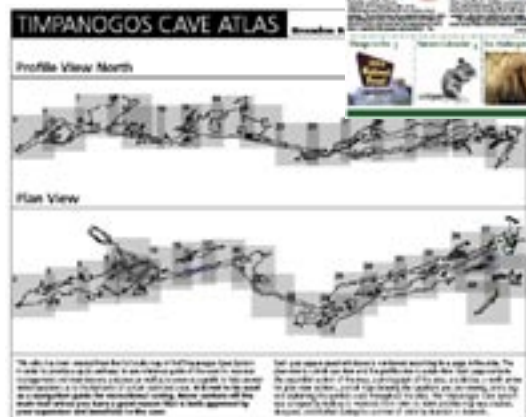
## New Wildflower Guide

A visitor once said, "What's that?" Well, with a new wonderful addition, Rangers will never have to stand there dumbfounded again when such a question arises...at least when it comes to TICA wildflowers. This winter Becky Peterson and Brandon Kowallis wrote and designed a wildflower guide to the Timpanogos Cave National Monument. A few copies of the guide are available for visitors and staff. If you study it's wisdom day and night you just might reach the coveted wildflower genius of Nancy or Arlo. If there is interest, this trail guide could be expanded to include mammals, birds, trees, etc.

## New Digital Projector

Have you ever spent hours or you life preparing programs that are going to wow visitors off their feet, educate the masses, and convert the entire world into Park loving activists, only to turn on the digital projector moments after your presentation has begun, look up on the screen, and panic as the blue flashing light taunts your feverish preparation.

Many changes have occured making PowerPoint presentations easier for everyone. No longer do you need to worry about how funky the Resource Management's PowerPoint is setup. Interpretation now has their own digital projector and laptop. With the PowerPoint setup in Lee's office there is a fine new set of visual instructions that will guide you through the process for your presentation.





## Meet the Staff

This year Resource Management has a staff of seven - its largest staff ever! We lost Jason Mateljek to Great Basin National Park and Lori Tierney to Sequoia National Forest. Our new employees are Bridgett Dart, Tim Barnhart, and Anita Pulham.

We attempt to have a team approach to all projects, however, each employee has their own speciality. Jon Jasper is the field lead for Resource Management. He organizes projects and serves as a technical consultant for resource issues. Cami Pulham's focus is on preserving the history of park. She is in charge of the park's museum, writing an administrative history, and cultural compliance. Becky Peterson is our vegetation management specialist. She spent a lot of time researching and writing a Vegetation Management Plan for the park. Her skills have greatly increased our success for combating the spread of invasive plants and revegetation efforts. Brandon Kowallis is our graphics design specialist. He has completed a new detailed map for the cave and several other wowing publications. Bridgett Dart is our fire coordinator. She organizes the fire cache and checks the park fire equipment for proper readiness. Tim Barnhart is Jason Mateljak's roommate from college. He will be trying to fill Jason's shoes on cave projects. He will be spending lots of time installing handrails and cleaning the cave. And of course, Anita Pulham is head of the volunteer cave monitoring program; she is the park's BATS coordinator!



New RM employee - Bridgett Dart



New RM employee - Tim Barnhart

## Call Waiting

New EnGenius Phones have installed. These cordless phones are attached into the Rockhouse phone line. They work well anywhere in direct sight in the Rockhouse's green roof - the Lunchbench, the Grotto, and various spot on the trail. Use them as needed, just remember that you are sharing the line with the entire Resource Management office. The park has three handsets - one for the cave, one for trail patrol, and one for Resource Management.

## Hazardous Trees/Defensible Space

Throughout this season, many trees are going to be removed to improve public safety, and for wildland fire defensible space. Trees are going to be trimmed or removed around VC, Housing areas, Rockhouse, and Maintenance to provide fire breaks. Additional dead trees will be removed from the Picnic Areas to minimize falling tree hazards. All of the trees to be removed are painted with a blue stripe. These trees will be visually checked for bird nests and then checked for bat roosts using our Anabat detector. We will try to save the trees that are proven to be providing wildlife habitat.

## Water to Flow Freely

Funding was received to restore the natural cave drainages. Places where the trail crosses the cave's drainages, leads to introduced debris from over 60,000 visitors per year, creating large deposits of mud. The mud creates an unnatural source of nutrients, and discolors and harms cave formations.

Remember that old stinky, square bucket to the side of the trail just below the Salt and Pepper shakers. This is a disturbed cave drainage. Look beyond this bucket, there is a large deposit of mud oozing into the Chimes Chamber.

The trail has recently been reconstructed, so water will not flow washing crud and ickyness into the cave. The new design pipes water underneath the trail. This modification was accomplished by chiseling the drainage route into the trail, placing a plastic pipe, and refinishing the trail's surface.



The finished drainage restoration at Salt and Pepper Shakers

## Formations & Climate

For his Masters Thesis, Jeremy Shakun is studying past climate conditions by isotope testing on cave formations. He is focusing on the climate during the time of Lake Bonneville. To perform his research, he collected several broken stalagmites. He will then cut and polish the formations, age date them, and then study the Oxygen isotopes for past climate information. Result of his research will be shared with park staff when completed.

## Volunteers Wanted

Resource Management has several volunteer opportunities. However with the large amount of projects to organize we ask that volunteers schedule times with us. Some of the project which folks can volunteer for are: cave cleaning, pulling invasive plants, revegetation, museum cataloging, cave research, and creating publications.