

# THE CAVE CONSERVATIONIST

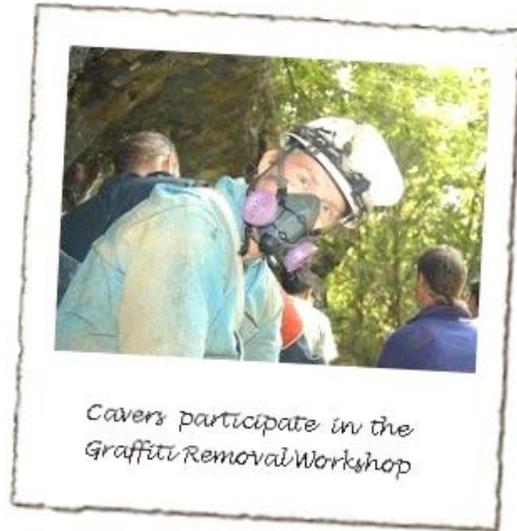
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***The Cave Conservation and Management Section of the NSS***

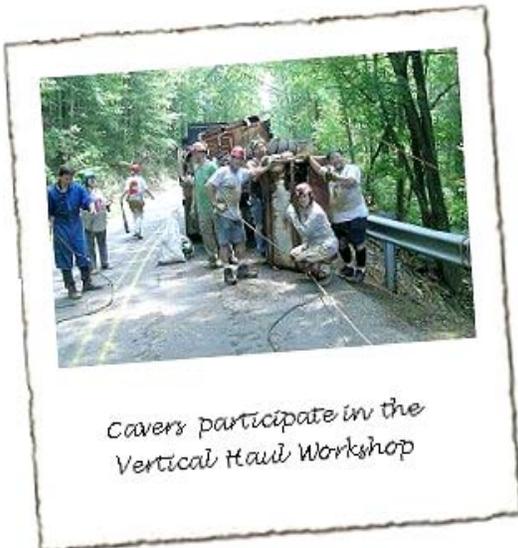


*Cavers participate in the Speleothem Repair Workshop*



*Cavers participate in the Graffiti Removal Workshop*

## CONSERVATION IN ACTION 2005 NSS CONVENTION



*Cavers participate in the Vertical Haul Workshop*



*Cavers Recycle!  
19 (55 gallon) Bags of Plastic  
14 (55 gallon) Bags of Aluminum*



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Section of the  
National  
Speleological Society**

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## NSS Convention 2005 - Conservation in the South

Without a doubt there were an assortment of Conservation sessions, meetings, recycling activities, and conservation activities happening at this year's annual NSS Convention.

The Cave Restoration Forum had a vast amount of information available for cavers who wanted to learn more about cave restoration activities. Aaron Stockton presented the "High Guads Restoration Project", Jon Jasper and Kyle Voyles presented "Graffiti Removal Project in Bloomington Cave, Utah", while Dale L. Pate gave a presentation on "Saving the Rookery in Carlsbad Cavern" and Maureen Handler offered her presentation on "Graffiti Removal".

The Cave Conservation and Management Session offered cavers a wide variety of cave and karst conservation and management speakers. Presentations included "The Caves of Sinking Valley" by Larry Simpson, "Finding the Lost River of Onondaga Cave" by Ben Miller and Bob Lerch, "Studying Cave Visitation Trends at Timpanogos Cave National Monument and Nutty Putty Cave" by Jon Jasper, "Karst Education: Working with Developers to Protect Natural Resources" by Kriste Lindberg, "Considerations for Cave Rescue Planning: A Case Study of the 2004 Rescue Preplan for Lechuguilla" by John Panches, Anmar Mirza, Stan Allison and Tom Bemis, "Cave and Karst Resources of the Virginia Department of Conservation and Recreation Natural Area Preserve System" by Joey Fagan, Larry Smith, Mike Leahy and Wil Orndorff, "Tourism, Drought and Climate Change at Kartchner Caverns State Park" by Richard S. Toomey III and Ginger Nolan, "Protecting Underground Cultural Resources: Cagle Saltpeter Cave, Tennessee" by Joseph C. Douglas and Kristen Bobo, "The Evolution of the BeCKIS Project for Cave Inventory and Conservation in Bermuda" by Bernard W. Szukalski, "Hualalai Ranch - A Cave to be Conserved for All and All Time" by John Rosenfeld and John M. Wilson, and the Hot Topic Panel discussion ending the sessions "Location! Location! Location! Cave Conservation and the Implications of Global Positioning Technology", moderated by Bern Szukalski. This turned out to be quite a lively discussion among those attending!

The Southeastern Regional Associations' Karst Task Force (SKTF) hosted three workshops during Convention week. On Monday, The Graffiti Removal Workshop was held at Hughes Cave. Before the clean up began Brian and Lynn Roebuck demonstrated techniques used to identify historic and prehistoric wall markings before a cave clean up project is planned. The workshop led by SKTF Project Leader Maureen Handler at the entrance of the cave, demonstrated safety considerations and the

process of chemical removal of graffiti. Myrna Attaway inside the cave demonstrated brush techniques to remove graffiti. Eric Crisp demonstrated sand blasting techniques to remove graffiti at the third station. Some hands on experience was enjoyed by those in attendance.

On Wednesday, The Speleothem Repair Workshop began in a classroom setting with NSS Conservation Division Co-Chairs, Jim Werker and Val Hildreth-Werker giving an informative slide presentation on *Speleothem Restoration / How To Repair Speleothems*. The process of speleothem repair was observed to be a blend of engineering science and art. After the presentation SKTF Project Leaders Brian and Lynn Roebuck led participants to Crossings Cave for a tour of early speleothem repair attempts conducted by Huntsville Grotto members John French and Paul Meyer, who spent years working on repairs in this cave. The group was surprised to be joined by Huntsville Grotto member Don Hediger and a Birmingham News reporter complete with a photographer. The reporter was writing an article on the 2005 NSS Convention and was interested in seeing the repair work that John French and Paul Meyer had accomplished. The entire group enjoyed observing the repaired speleothem areas, historically significant signatures, prehistoric significant markings, and of course the cave trip itself.

On the last day of Convention, the Friday Vertical Hauling Workshop was held on private land at a heavily littered steep-walled ravine. This hands-on workshop led by SKTF Project Leader Peter Michaud required a highline setup to aid in the lifting and subsequent removal of trash and appliances from the ravine. Peter and others did a great job with the advance planning in finding this worthy location and conducting the workshop. Safety of the participants was first and foremost. Local landowner relations also received a boost as a result of this effort!

Throughout the entire convention, Sewanee Mountain Grottos' Glenn and Martha Mills headed up recycling efforts by placing convenient recycling bins all over the Convention use areas. As Convention drew to a close cavers helped to recycle 19 fifty-five gallon bags of plastic and 14 fifty-five gallon bags of aluminum.

The 2005 NSS Convention was alive with cave conservation activities, learning experiences, and demonstrations of real and useful techniques. Perhaps this convention will be the catalyst for even greater conservation efforts in the future.

## Guidelines for Trash and Rubble Cleanup Projects

George Veni

Excerpt from: Veni G. 2005. Guidelines for Trash and Rubble Cleanup Projects. In: Hildreth-Werker V, Werker JC, editors. *Cave Conservation and Restoration*. Huntsville (AL): National Speleological Society. p 365-367. In Press.

Sometimes caves and sinkholes become trash dumps. Other chapters discuss detailed aspects of removing artificial fill (Horrocks, page 369) and cleaning out sinkholes (Fagan and Orndorff, page 383). While much of the restoration and rubble removal at these sites is intuitive and obvious, below are some guidelines to minimize surprises and ensure the work goes smoothly.

### Trash Pits and Sinkholes

Trash is sometimes dumped in sinkholes or cave entrances. Working inside the cave may not be necessary, so access and removal is relatively simple. Following are some important items to consider for restoration work that involves trash removal.

- **Gloves and shots.** Everyone should wear thick leather gloves and be current on their tetanus shots. While many underplay the threat of tetanus, by the time the symptoms appear it can be fatal. Check with your doctor for other immunizations you should consider.
- **Recycling.** Decide in advance if it is feasible to recycle the glass, aluminum, and other materials removed from the cave or sinkhole. If so, prepare areas and containers for sorting and temporary storage, and be sure to line up a recycling facility that will accept the materials. If possible, sort the recyclables as they are dug out of the pile—otherwise assign enough people to sort them at the top.
- **Disposal.** Arrange in advance how you will dispose of the materials. You may need to take them to a public landfill and pay a small fee. Contact the landfill first. Some only accept certain types of trash and have vehicle or load requirements. See if a public agency can be involved to waive the fee and perhaps provide a dump truck. If the trash volume is small, it could be divided between the cavers and set out with their weekly trash pickup.
- **Interview the owner.** Find out what the owner knows about the age, content, and extent of the trash. It will prove important in planning the restoration project and for the considerations listed below.
- **How old is it?** In many states, human-produced materials more than 50 years old are considered archaeological or historical artifacts (cultural artifacts). Their handling and disposal may be

regulated. Contact your state historical office for advice if you suspect a dump could hold historical material. If possible, find an archaeologist to monitor the excavation for rare or unusual items worthy of preservation that most people wouldn't recognize. (Douglas, 50-year rule, page 343.)

- **Is it toxic?** Use common sense. Avoid physical contact with potential hazardous materials and fumes. If you're not sure, leave it alone, even if you must cancel the restoration project, and call a county or state inspector to assess and remove it. For recent dumps where containers of hazardous materials are more likely to be intact, use additional leak-proof containers for transport. Hazardous materials should not be disposed of with the nonhazardous trash—make disposal arrangements with the appropriate facilities. With most old trash dumps, bottles and cans have long ago leaked their chemicals into the groundwater. However, toxic substances in car batteries and other hazardous materials may still present hazards.

### Removing Large Volumes of Materials

Regardless of whether it is trash or rubble, included here are some guidelines for removing large volumes of materials.

- **Limit the number of diggers.** Cavers love to dig, but this craving must be curbed. In projects where a lot of material needs to be removed, especially if the project is conducted in a cave or down a deep sinkhole or pit, many cavers will be needed to haul away the material produced by only a few diggers.
- **Buckets.** For most projects, hauling debris in 5-gallon (20-liter) plastic buckets is the easiest method for transporting materials. The size of the bucket limits weight to a reasonable amount. Buckets are sturdy, hold large and small items, do not leak, and are convenient to stack, load, and transport. At least 30 buckets are needed for small projects and over 100 may be needed for large projects because, at any one time, many of the buckets are in transit in or out of the cave or are waiting to be filled. Of course, plans should be made in advance for removing large or awkward items that will not fit in buckets.

(See **Guidelines**, Page 5)

## Guidelines

(Starts on Page 4)

- **Partly fill the buckets.** Depending on the weight of items loaded, it may be important to fill buckets only half-way. Full buckets are often too heavy for most cavers to carry. The half-way fill also works if the material is likely to spill out, or if the weight or contents are more likely to break the buckets.
- **Don't repack buckets.** Once a bucket is filled, do not empty or repack it until it is ready to be dumped. Repacking results in extra effort, less efficient use of people, spillage throughout the cave, and more cleanup. Wheelbarrows have been used in some projects, but they can create messes in the cave. Also, time is lost loading and unloading wheelbarrows, and they are likely to damage the cave if the passages are narrow.
- **Pass, do not carry buckets.** Carrying buckets is tiring, inefficient, and creates a lot of potential for injury to cavers and caves. The most efficient way of moving buckets over irregular terrain, like stairways in a show cave or uneven ground in a sinkhole, is to pass them, in assembly-line fashion. Place cavers about 2 to 3 paces apart. This requires a few more people, but is easier on the people and the cave, results in faster removal of the buckets, and produces far less confusion than cavers running all over the place.
- **Dollies.** Upright or truck dollies should be used in flat-floored passages. Half-filled buckets can be stacked 3 or 4 high and wheeled quickly out of the cave or to an area where people will pass them onward. If passages are narrow, a prearranged location should be established for the dollies to pass each other.
- **Dump trucks.** All removed material should be dumped into a truck and carried off for proper disposal at a landfill. If only rubble and dirt are removed, a flat-bed trailer may suffice to carry the trail rubble to a field where it can be deposited and blended with the landscape.
- **Heavy equipment.** Some excavations may be beyond what can be feasibly accomplished by human hands and buckets. Some types of work will require heavy equipment such as backhoes, skid loaders ("bobcats"), and excavators. People with specific skills and training in heavy equipment should operate it. For safety reasons—unless required for other specialized tasks—no one else should be allowed in the excavation area. Slopes (and sometimes even level surfaces) in and near sinkholes may be unstable under the weight of heavy equipment. Extreme caution is necessary. The equipment should not be fueled in the sinkhole unless there is no alternative—always take precautions to prevent spills of fuel, oil, or hydraulic fluid. To prevent damage to the natural sinkhole walls and floor, equipment operators must be careful not to dig too deeply in any single movement. Some fill can be left and later removed more carefully by hand.

## The 2005 NSS Grotto and Group Conservation Awards



The Cave Conservation and Management Section presents the Grotto and Group Conservation Award annually to an NSS Grotto and an NSS Group that makes significant contributions towards cave conservation and management. The award consists of a certificate, \$100 check, and the group's name on the Group Conservation Award plaque in the NSS office.

This year The Cave Conservation and Management Section are pleased to announce that the 2005 Grotto Conservation Award was presented to Timpanogos Grotto and the 2005 Group Conservation Award was presented to Mammoth Cave Restoration Camp!

## Identification of Historic and Prehistoric Resources on Cave Walls in the Southeast United States

Brian Roebuck and Lynn Roebuck

Recent work in historic and archaeological cave research has led cavers in the southeastern United States to become increasingly familiar with these delicate significant resources in numerous caves located in this geographic area.

Many saltpetre caves of the area offer glimpses into the past with saltpetre works, casts, vats, tally marks, torch smoke marks, names of the miners, and other interesting and historic remnants of a once thriving industry. Unfortunately cavers in the region have also witnessed the loss of many significant historical artifacts as well as the degradation and damage of signatures and other written symbols of the era. Other historical resources in southeastern caves may include signatures of early explorers, dance cave signatures and dates, remnants of moonshine operation, food storage and preservation areas and equipment, names of locals and cave owners, signatures of genealogical significance and a host of other resources interesting and valuable to historians, archaeologists and cavers alike.

The prehistory of southeastern caves is also beginning to become a more heavily researched resource especially in the last few decades as dozens of ancient cave art sites have been discovered in the region. Research is being conducted by many universities throughout the southeast on the use of caves for exploration, habitation, ceremonies, mortuaries, artistry, mining and the list goes on. Much has been learned in this increasingly endangered area of study as pressure from outside sources make it imperative to gather as much information as possible before it is lost. It is truly a race by under-staffed and under-funded experts to try to locate, survey, document and protect the remaining ancient and sacred cultural resources before they are harmed, stolen by the greedy or destroyed by the ignorant.

Identifying these resources is an ongoing learning process that takes cavers many years to become qualified to accomplish. Good observation skills, keen interest, and the availability of experts willing to teach the methods are key factors in becoming proficient at identifying such resources.

While this article is not intended to make the reader an expert at identifying such resources it will serve as a basic guide on what to observe, where to find more information, and who to contact to make a positive identification if you happen to locate any significant resources in a cave in the southeast region of the United States.

Historic resources are very diverse and subject to the interpretations of historians familiar with the region, cave location, and local history of the area. Historians are aware of the major saltpetre operations through records kept by military contracts with saltpetre mining companies. Many minor "mom and pop" operations also existed during the 1812 war period through the Civil War era and at various times for local use as well. Often the caver only finds mounds of cave dirt 3 or more feet high in a rectangular shape about 8 feet long and 4 feet wide. This represents a cast of the petre dirt left from mining operations. In rare cases the wood planks forming the vat are partially or even completely intact around the petre dirt.

Often one finds tally marks along the cave passages marked in black charcoal from sharpened torch fragments or etched into the walls. Similar methods were used by literate miners to write their names, dates, and other information with the elaborate penmanship of the era that must be studied carefully by modern cavers to be able to be read.

Military units of both sides of the Civil War also visited caves and left markings, names, dates, unit information, and other historical references. Pencils, paints, etchings, candle smoke, torch smoke, charcoal, and mud writings were all used by people of this era to make their marks on the cave walls and ceilings. Carbide was not in widespread use until about 1900 or later however and should not be considered a nineteenth century medium for writing in caves.

Later many caves were used for dance halls, taverns, and moonshine still sites in the southeast. Often one can find evidence of such activity in the form of names and dates, flat areas suitable for dancing, rock piles for the fire and support of moonshine making equipment, and even a tavern or two. It is not uncommon to find layers of cave writings on top of older writings and even prehistoric art. Modern graffiti quite often is found atop all of this. Apparently an area of the cave that was good for prehistoric peoples to draw on is also still a great place for more modern renderings as well.

As you can imagine, it is important to know what to look for and how to find it so as to be able to identify what resources may be contained within the cave. As a responsible caver it is critical that all significant cave resources be located, identified and documented prior to initiating any cave clean up projects or cave restoration projects.

## Speleothem Repair Planning and Documentation

Jim C. Werker and Val Hildreth-Werker

Excerpt from: Werker JC, Hildreth-Werker V. 2005. Speleothem Repair Planning and Documentation. In: Hildreth-Werker V, Werker JC, editors. *Cave Conservation and Restoration*. Huntsville (AL): National Speleological Society, p 441-444. In Press.

More people are visiting caves. Increased visitation often results in more broken speleothems. Whether damaged through acts of ignorant vandalism, blatant carelessness, or inadvertent clumsiness, some busted formations can be repaired. As with any cave restoration project, before making decisions carefully consider the potential environmental impact of repair materials, equipment requirements, and safety measures.

The first objective in speleothem repair is to avoid creating new problems—first, do no harm. Before starting a repair project, go into the cave, look at the site, evaluate the potential problems, and get permission from the landowner, manager, or agency. Talk over the repair tasks and logistics, consult with others, bounce ideas around, and make certain the broken pieces fit tightly together—then figure out what to do. Is it best to repair it or leave it alone? In some cases, doing nothing at all may be the best answer. Evaluate the potential repair from all angles and become aware of materials that are safest for long-term use in caves. [Editor's note: Recommended cave-safe products and specific techniques are described in the book.]

### Explore These Questions

Before getting to the nitty-gritty of the actual repair techniques, there are a few important questions and decisions to address.

- Is it natural breakage? Most speleologists agree that speleothem pieces should be left alone if the break was caused by naturally occurring environmental changes. Repair the break if the damage was caused by human interference.
  - Do the pieces actually fit each other? Most speleothem repair experts agree that *orphan* speleothem pieces should not be glued together to create a new formation out of unmatching broken pieces. Likewise, it usually is considered unethical to add speleothems where none were naturally placed by time and deposition.
  - What about fabricating missing chunks? It is often reasonable to restore an incomplete formation by filling in gaps with a mixture of epoxy and rock dust. However, it is usually considered inappropriate to fabricate or recreate totally missing speleothems.
  - What if calcite deposition prevents tight alignment? If abundant new calcite has deposited on top of an old break, it may be inefficient or detrimental to attempt repair. However, this manual offers several pinning and fabrication techniques that have worked in reconstructing speleothem joints disfigured by light calcite deposits.
  - Will the repaired speleothem be safe from future damage? Should it be repaired anyway, regardless of security factors or potential for additional vandalism?
  - What is the probability that more damage will be caused during the repair? Is a repair attempt worth the potential harm?
  - What are the safety considerations? Are scaffolding and fixtures needed to raise the formation into place? Should cavers or broken pieces be tied off for safety due to the location of the repair? Caution should prevail when repairing heavy speleothems. Evaluate location and weight before rehung heavy stalactites. Consider liability issues before attempting repairs.
  - Will critters be affected by fumes from the adhesives or residue from the glues? Bats? Invertebrates? Other cave dwellers?
  - Include planning for the logistics of cleanup after the project is complete. Remove all indications of the repair crew's presence.
  - Evaluate the potential residual effects of any proposed repair. Because all materials will eventually break down and the byproducts may be harmful, minimize the use of human-introduced materials as much as possible.
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# Grotto Conservation Spotlight

## Clean Up Inside Rocky River Cave ▶

6-17-05 Spencer Mountain Grotto members Paul Moser, Marion O. Smith, Anne Elmore Daniel Titus, and UCG Member Kristen Bobo



## ◀ Clean Up at Camps Gulf Cave & Area

7-16-05 Spencer Mountain Grotto members Brian Roebuck, Rosemarie Macdonell, Sharon Jones, Paul Moser, Ashley Moser and Lynn Roebuck (taking photo)



### Cave Conservation and Management Section of the National Speleological Society Membership Form



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## 2005 National Cave And Karst Management Symposium

The 2005 National Cave and Karst Management Symposium to be held Oct. 31 to November 4 in Albany, New York, marks 30 years since the first Symposium was held in Albuquerque, New Mexico. Hosted by The Northeastern Cave Conservancy, Inc., the Symposium will showcase both the accomplishments of decades of cooperative cave and karst management research, and the path towards the future. For more information or to register visit <http://www.nckms.org/2005>

## The Cave Conservationist

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## Membership in the Conservation and Management Section

The NSS Conservation and Management Section is open to all members of the National Speleological Society as well as those interested in the conservation, management and protection of caves. Members receive the newsletter *The Cave Conservationist* and are entitled to vote at the annual meeting. Annual membership dues: \$5.00/ year to receive *The Cave Conservationist* electronically and \$10.00/year to receive *The Cave Conservationist* by regular mail. A membership application can be found on our website. The Section presents two annual awards to a NSS Grotto and a NSS Group that have made significant contributions towards conservation or management of cave or karst resources. For more information concerning The NSS Cave Conservation and Management Section please visit our website. <http://www.caves.org/section/ccms>

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