

# NSS NEWS

APRIL 2018



Annual Cave Conservation Issue



# CALENDAR

Send items for the calendar to [davebunnell@comcast.net](mailto:davebunnell@comcast.net) at least 4 weeks before desired month of publication (e.g., by April 1 for the May issue).

## USA

**May 3-6, 2018**—67th Annual SERA Summer Cave Carnival, hosted by the Birmingham Grotto, at Maranatha Camp and Conference Center on Lake Guntersville in Scottsboro, AL. SERA is back in Jackson County where hundreds of everyone's favorite caves and pits will be just a short drive away. This is Birmingham Grotto's 60th Anniversary year also and we are looking forward to hosting an amazing 67th SERA with caving, swimming, music, fellowship and much more. [www.bhamgrotto.org/sera2018](http://www.bhamgrotto.org/sera2018)

**May 12-19, 2018**—National Cave Rescue Commission (NCRC) Cave Rescue Seminar. Camp Skyline, AL. Levels 1, 2, 3, TOFE, and SPAR-X (expanded small party assisted rescue). Each over 100 hours of classroom and hands-on training to make you safer cavers and more effective rescuers in both horizontal and vertical environments. Visit [NCRC.info](http://NCRC.info) for details.

**May 25-28, 2018**—Louisville Grotto will be hosting Speleofest 2018, Memorial Day Weekend, at The Lone Star Preserve, in Hart County Kentucky. Early arrival on Wednesday and Thursday available, and you can stay until Monday. Howdy Party on Friday night. Cave Central opens on Friday night with cave trip sign ups for the weekend. A Banquet on Saturday night with guest speaker and door prizes. Plenty of camping spots, port o potty's, and hot showers. Breakfast will be available on Saturday and Sunday mornings. Gear Vendors will be onsite. Vendors and Inquires, Contact David McClintock, Speleofest Chairman, @ 502-643-4590, or [dmcauto@hotmail.com](mailto:dmcauto@hotmail.com). Visit our website for more info and preregistration links. <http://louisville.caves.org/>

**June 8-10, 2018**—Greater Cincinnati Grotto is hosting Karst-O-Rama at the Great Saltpeter Cave Preserve, in Mt Vernon Ky. Cave trips on Friday, Saturday and Sunday. Cave vendors, children's activities, squeeze box climbing contest, and more. Howdy party on Friday night with a corn hole contest and a live band on Saturday night. Theme for the party is TBD. Be sure to dress up. Preregistration discount available. Visit us at <http://karstorama.com/kor16form.html> and like us on Facebook for updates! Any questions e-mail Don Brandner Karst-O-Rama Chair: [Sodastraw2002@yahoo.com](mailto:Sodastraw2002@yahoo.com)

**June 22-24, 2018**—Spring 2018 MAR, Bear Cave Natural Area, Hillside, PA. Within walking distance of several classic PA caves. For more information visit <https://www.eventbrite.com/e/loyalhanna-grotto-spring-mar-2018-tickets-41618632450>

**July 21-26, 2018**—The 18th Vulcanospeleology Symposium at the Winema Lodge in Tulelake, CA is a 6 day combination of seminar talks, active caving and specialty events highlighting volcanoes, caves, and environmental and historic aspects of its location in Lava Beds National Monument. There will be pre and post trips available including ice-caving, river rafting, 4-wheel drive trips, a trip to Crater Lake and more. Website and registration can be found at [www.18ivslavabeds.com](http://www.18ivslavabeds.com).

**July 28-August 4, 2018**—2018 NSS Convention in Helena, Montana. For more info visit <http://nss2018.caves.org/>

**August 17-19, 2018**—Indiana Cave Capers will return to beautiful, wooded, Camp Rivervale in Mitchell, Indiana, centrally located to lots of great caves. Friday night kicks off with a Howdy Party and music followed by great caving opportunities for the weekend. Saturday night features a

banquet, keynote speaker, door prizes, and fun! And of course our caving gear vendor Inner Mountain Outfitters will be there to supply all of your gear needs! The site also offers breakfast, cabins, and a swimming pool, see you there! For

more info contact Ron Adams, 317-490-7727 or [caveronrope@sbcglobal.net](mailto:caveronrope@sbcglobal.net).

**June-17-21, 2019**—2019 NSS Convention in Cookeville, Tennessee



Announcing a new world record for longest soda straw! In some places this might be a cave manager's nightmare to preserve such a fragile and easily damaged formation. Fortunately though, it was found deep in Wonder Cave in the remote Hidden Valley region of Gunung Mulu National Park in Malaysia. This is a section of Mulu that is protected from any visitors. A British expedition in 2017 discovered the straw in a new area christened the Liberation Passage. The length was determined by laser to be 9.13 m, just edging out the former record-longest straw found in Mexico (<https://caves.org/virtual/virtcave/largest.htm>) at 9.03 m. A second of equal length to that one was also found in Wonder Cave. This photo and length have been recently added to the Virtual Cave page which has served to compile record-holding formations and images of each. Photo by Jeff Wade. Caver models are Cat Hulse and Luke Cafferty.



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**Deadline:** Ads, articles, and announcements should be sent to the editor by the 1st of the month, 1 month before the month of issue (e.g., material for the March issue needs to be in by Feb. 1).

The NSS News (ISSN 0027-7010) is published monthly with the Members Manual and American Caving Accidents published as additional issues by the National Speleological Society, Inc, 6001 Pulaski Pike NW, Huntsville, AL 35810. Periodicals Postage Paid at Huntsville, AL and additional mailing offices. Tel: (256)852-1300, e-mail: [nss@caves.org](mailto:nss@caves.org), web: <http://caves.org/>

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# NSS NEWS

April 2018

Volume 76 Number 4

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edited by **Val Hildreth-Werker**,

NSS Conservation Chair

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## ABOUT THE COVER

*Front cover:*

Rare beaded helictites in Silent Splendor in Cave of the Winds, Colorado. Access to these delicate formations is strictly controlled by the cave’s owners. This image by Eric Raymond was shown in the 2017 NSS Photo Salon.

*Back cover:*

**Right:** Dave Joaquim maneuvers a repaired 45-pound stalactite into place in Carlsbad Caverns. Photo by Val Hildreth Werker. Story on page 4.

**Left:** Transporting the trash during the cleanup in Škocjan Cave. Photo Borut Lozei.

**Bottom:** Huge flowstones in the dark portion of Janelão Cave in Brazil. Photo by Luciana Alt and Vitor Moura.



# Speleo Legacies in Conservation

**Val Hildreth-Werker, NSS News Conservation Editor, [caves.org/conservation](http://caves.org/conservation)**

This NSS News features conservation work in four international cave parks that have earned the honor and responsibility of UNESCO World Heritage Site status. Project sites include Carlsbad Caverns National Park in New Mexico, Škocjan Rock Caves Park in Slovenia, the longest soda straw protected in Malaysia's Gunung Mulu National Park, and Brazil's new Peruaçu Caves National Park. The latter is currently on the Tentative List for World Heritage designation. An upcoming issue of the *NSS News* will share conservation efforts at the Puerto Princesa Underground River, Palawan, Philippines, and also a World Heritage Site. All five are fine examples of the significant public outreach gained by telling the wonderful stories of caves and karst through ongoing conservation projects.



**How to engineer this stalactite repair? The speleothem interior has big crystalline chunks that won't withstand drilling to install stainless steel all-thread pins. We decide to use only our archival museum-grade epoxy for this entire repair. ValHildrethWerkerPhoto**



**Corner walls with shims and sponges help us get tight repair joints. We stack and epoxy it upside down, allowing its own weight to assist curing. Photo by Wyatt Armstrong.**

## The Break

Recently an unfortunate *faux pas* in Carlsbad Cavern led to a significant stalactite repair project. During a GQStyle 2017 shoot featuring Brad Pitt, one of the photo assistants inadvertently bumped a long stalactite group near the 18-inch rock wall edging the visitor trail in King's Palace. Weighing at least 45 pounds, the broken stals created a significant headache, but fortunately, not a lasting injury for the crewmember. She and the photo team were genuinely contrite over the large stalactite pieces scattered about the cave floor. All relearned a valuable lesson that day—assign more spotters than you think you need, and make correcting each other an expected part of any gig in a cave.

## Stalactite Repair in a World Heritage Site

The Park called on us, Jim Werker and Val Hildreth-Werker, to repair and rehang the 4.5-foot length of grouped stalactites. NSS cavers Dave Joaquim and Wyatt Armstrong assisted. We rebuilt the formation piece-by-tedious-piece, supporting the stal against the corner walls and using its own weight to help keep alignment while our cave-safe epoxy cured. In speleothem repair, state-of-the-art-and-science mandates we use archival epoxies developed for laboratory and museum applications.\*

Using a ladder, bungee cords, shims, sponges, and boards, we engineered bungee tensions with cantilever techniques for supporting the speleothems while the epoxy



**Up on the ladder, Dave Joaquim positions the reassembled, 4.5-foot stalactite to its perfect "clickfit" while Jim Werker carefully secures the fulcrum and bungee tension below. ValHildrethWerkerPhoto**

cured. A week later we removed supports.

Though it can never be restored to its former condition, we successfully repaired the speleothem. To sum it up with his cowboy humor, Jim Werker says: This Brad break was the Pitts.

*Cave safely ... Cave softly!*

For more in-depth information on cave restoration, management, and speleothem repair, find a copy of our book, *Cave Conservation and Restoration* (Hildreth-Werker & Werker, 2006; available through the NSS Bookstore, caving vendors, and Amazon). You are welcome to contact us with questions, ideas, comments, or to offer conservation assistance: Val Hildreth-Werker & Jim C. Werker, NSS Conservation Division Chiefs [werks@cunacueva.com](mailto:werks@cunacueva.com)



**Bungees positioned at appropriate angles to create self-supporting tension. After a multi-day cure to assure strength of the archival epoxy, Dave Joaquim gingerly removes bungees. ValHildrethWerkerPhoto**



**Thanks to the diligence of National Park staff and our Speleothem Repair Team, the completed stalactites again hang in King's Palace.**



# Cave Conservation Course in Janelão Cave, Peruaçu Caves National Park – Brazil 2017

*text and photos by Luciana Alt and Vitor Moura*  
*Grupo Bambuí de Pesquisas Espeleológicas (Bambuí Speleological Research Group)*



Photo 1 – Janelão Cave, clear part

## Introduction

Gruta do Janelão, also known as Janelão Cave, is located in Peruaçu Caves National Park, in the northern area of the Brazilian state of Minas Gerais. Measuring 4,740 meters in length, Janelão's majestic main passage reaches more than 100 meters in height and is traversed by the Peruaçu River, creating one of the most spectacular karstic landscapes in the world.

This huge passageway of Janelão Cave has two characteristic sectors, known as the “clear part” and the “dark part” (Photos 1 & 2). In the “clear part”, the conduit is intercepted by large skylights, where the exuberant vegetation, the river, the natural light, and the enormous speleothems create scenarios of rare beauty that make Janelão Cave the main attraction of this National Park.



Photo 3 – Group working on impact mapping activity

In the “dark part”, the passage reaches its greatest heights and entrance zones are more distant from the only existing skylight, resulting in predominate penumbra zones and a few aphotic sectors. In the “dark part,” the Peruaçu River carved vast sedimentary deposits with terraces covered by fragile speleothems, microtravertines, dog teeth, and extensive pearl nests. Great breakdowns are present along the main cave passage, creating significant walking difficulty, especially in the “dark part.”

All the tourist caves in Peruaçu National Park have a Speleological Management Plan, published in 2005 (MMA & IBAMA, 2005). According to this Plan, guided tours are allowed along defined trails for about 1000 meters within the “clear part” of Janelão. Due to factors such as extremely fragile resources, visitor risk, and the need for mammal and other faunal protection, the Management Plan states that the 2000 meter-length of the “dark zone” is not appropriate for public use activities. This zone has never been completely closed to occasional and authorized visits from institutional teams, scientific researchers, and technical personnel doing inspection/documentation. The floor of this zone harbors numerous fragile features, and yet the trail has not been fully delineated—pathway marking has not been completed. Negative impacts are increasing and the need to better define, limit, and delineate the trail is urgent.

## Challenges

The floor of the dark part of Janelão shelters fragile resources, especially speleothems, fossils and sedimentary deposits. Due to high resource vulnerability and the lack of complete trail marking in some stretches, even with low visitation irreversible damage has occurred and can be intensified, as observed in technical visits we made during April 2013 and January 2017. A single out-of-place footprint can destroy a fragile fossil or chemical deposit. It would require about 2000 meters of trail delineation to reduce impacts on fragile, unique features and enhance the protection of Janelão.

In order to protect the cave's heritage and to contribute to the continuous technical training of the Park management team and the cave guides, we proposed a Cave Conservation Course that would deeply involve them in actions to protect and manage the caves.



Photo 2 – Janelão Cave, dark part

## Methodology

The Cave Conservation Course lasted four days, from August 1 to 4, 2017. The proposed program proved to be efficient, mixing daily theoretical and practical activities.

The course was attended by 19 students, with 15 freelance cave guides (three of whom are also employees of the Chico Mendes Biodiversity Institute (ICMBio—a Federal Institution responsible for Brazil's national protected areas), plus the Manager of Peruaçu Caves National Park, and three cavers.

The course was held on a voluntary basis by Bambuí Speleological Research Group, with speleologists Luciana Alt and Vitor Moura instructing. The Course was made possible through a National Speleological

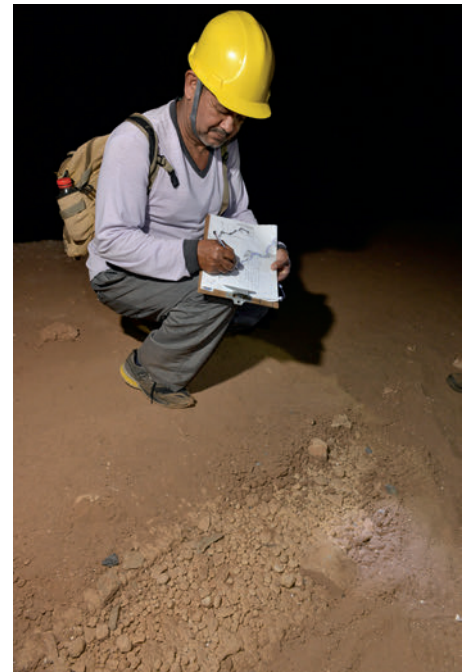


Photo 4 – Impact mapping activity—example of sediment introduction by trampling over a pearl nest





**Photo 5 – Set of stalactites that fell due to natural causes—impacted by trampling (brown spot on speleothem)**



**Photo 6 – Students working on speleothem restoration**



**Photo 7 –Success in speleothem cleanup**

Society Save-the-Caves Conservation Grant and the logistic support of the Peruaçu Caves National Park, ICMBio staff, and Grupo Bambuí de Pesquisas Espeleológicas. The NSS Conservation sponsorship enabled the purchase of materials necessary for restoration work and trail marking in the Janelão dark zone.

The main theoretical topics discussed during the Course were: (1) Peruaçu National Park heritage, (2) importance and fragility of cave and karst environments, (3) negative impacts on karst and caves, (5) actions to minimize impacts related to tourism in caves, (5) current best practices for cave conservation.

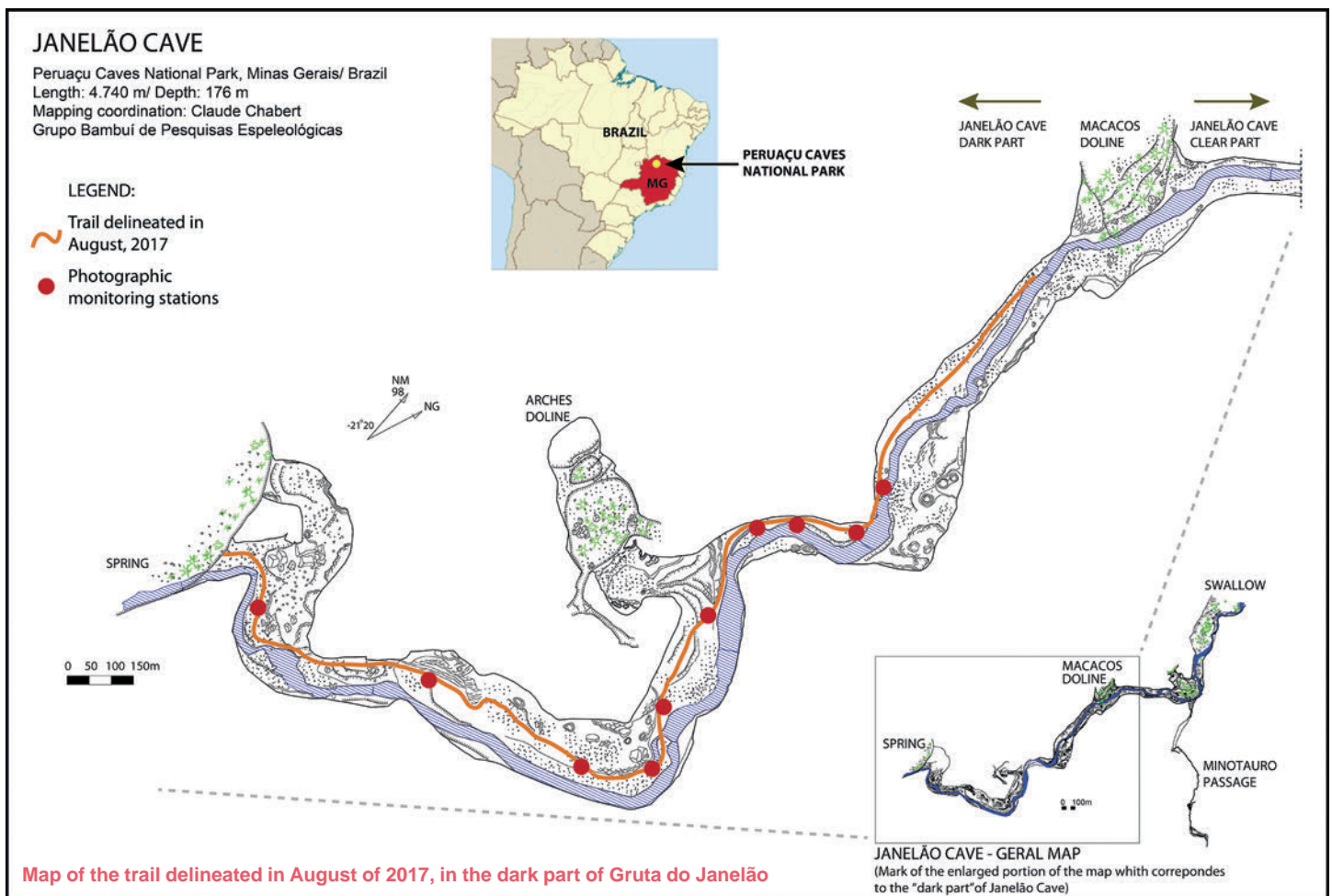
In the practical instruction, three main

activities were designed to sensitize the students to see and identify environmental problems, to take proper action in correcting the problems, and to avoid the emergence of new problems. To accomplish these objectives, students conducted in-cave conservation/management activities: (1) impact mapping in the dark part of Janelão, (2) speleothem cleaning and conservation, (3) assessing, defining, and delineating both sides of about 2000 meters of dark-zone trail inside Janelão Cave.

### Course Outcomes

Cave impact-mapping activities facilitate the identification and monitoring of environmental changes and encourage ongoing

management of the natural environment (Kuss et al., 1990; Ceballos-Lascuráin, 1996). During the course, we used impact-mapping projects to connect classroom theory with in-cave practice. Impact assessment and mapping enhances the students' spatial and environmental perception. In this activity, the students first learn to understand map symbols, legends, and cartographic representations; next, to orient themselves in the cave using only the map; and then to observe, locate, and describe resource impacts. The activity also stimulates subject matter for interpretation and production of various thematic maps that can become additional environmental interpretation tools for the cave guides (Ham, 1992). Impact







**Photo 8 – Trampling marks over speleothems**

mapping provides opportunity for students to contextualize cave resource impacts, strengthens team spirit, and serves as an introduction to the next Course activities (Photos 3&4).

After presenting theory on current best practice and examples of speleothem restoration, the instructors demonstrate techniques in speleothem conservation. We then assign student teams to in-cave sites for speleothem cleanup activities.

Speleothem restoration using the best current techniques in cave conservation (Hildreth-Werker, V. 2006) involves careful, meticulous minimum-impact techniques such as dry cleaning with brushes, wet cleaning accompanied by adequate water-absorbing sponges and barriers, and other non-invasive methods, together with photographic documentation before, during, and after the activity. Flowstone and speleothem restoration often yields spectacular results.

Cleaning and restoration returns the attractiveness to features that were degraded. In human terms, it increases the cave guides' sense of responsibility for the visitors' actions. Hands-on restoration activities increase awareness of causative actions that damage cave environments. Conservation activities inspire more responsible attitudes when entering caves. During the Course, cave guides gained firsthand experience in the difficulty of restoring a speleological feature to a healthier condition. This process takes time, much physical effort, and almost certainly does not revert 100% of the damage to its original state.

During the Course the restoration activities were simple, often merely mitigating



**Photo 11 – Example of stainless-steel stakes and polyester cord installed in the cave**



**Photo 9 – Students cleaning the speleothem in Photo 8**

damage caused by a single footprint in an inappropriate location. For the local team, the activity creates a pride, ownership, and stewarding relationship with the cave. Before the Course was completed, a group of cave guides looking at the impact on Janelão's "clear sector," together with the Park manager, decided that it would be beneficial to close a short arm of the trail until adequate infrastructure is established to avoid further impacts on speleothems. Examples like this indicate the efficiency of the Course (Photos 5 through 10).

The trail delineation was an urgent necessity for protecting fragile features and preventing further damage in Janelão's "dark sector." However, the trail marking does



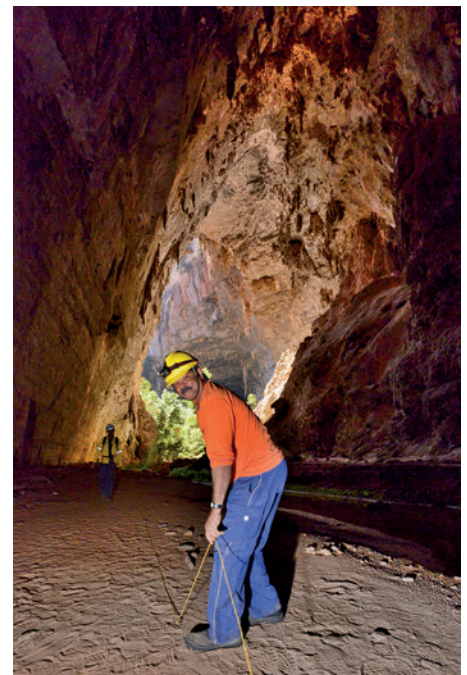
**Photo 12 to 15 – Examples of poly-cord trail installation processes in the dark part of Janelão Cave**



**Photo 10-the cleaned speleothem**

not mean the dark section is being opened to tourist visits. The marked trail merely facilitates greater control of impacts during authorized visits.

The goal was to immerse cave guides in the conservation and protection of the Park's resources. Two different techniques were used to define both sides of the trail. In wetland areas, we aligned rocks along the pathways. On terraces and breakdowns where flooding may occur in episodic events, we marked trails with 4-millimeter yellow polyester cord or rope. The poly lines were fixed with ANSI 304 stainless steel stakes or with local rocks (Photo 11). Rocks were mainly used in areas where stakes could cause irreversible impacts, such as perforation of stalagmite caps. Students also repaired or maintained small stretches in the dark zone where a few trails were first marked about 15 years ago. We made minor adjustments to protect specific features or to improve the existing route. Trail widths varied from 60 to 120 centimeters, depending on characteristics of the floor. Students also created areas for resting and taking photographs at



**Photo 13-poly-cord installation**





**Photo 14-poly-cord installation**

strategic points along the trail.

For the trail delineation, we used cave-safe materials chosen for this specific karst environment. The polyester cordage we selected has excellent resistance to abrasion, fatigue, traction, ultraviolet radiation, and low elongation/deformation (AFIPOL, 2017). The ANSI 304 stainless steel is confirmed to be a safe and inert material, suitable for use in caves, as highlighted by Werker (2006).

The poly-cord offers several benefits. Rope installation is fast. The cord has good visibility under adequate lighting, and low interference in photographs (compared to the commonly used demarcation flagging strips) (Photos 12 to 15). However, as in any cave environment, periodic monitoring is recommended to evaluate the trail conservation state and any possible interference of these materials with fauna. Other strategies should also be implemented, such as defining Limits of Acceptable Change and initiating Visitor Impact Management methodologies to monitor the new trails. (Stankey et al., 1985; Kuss et al., 1990).

For future monitoring of the impact-interventions executed during the Course, we established ten photomonitoring stations along the new trails in Janelão. We selected the most critical trail sections for photomonitoring: stretches close to fragile sites, stretches of greater geotechnical vulnerability, and stretches where the trail may induce erosive processes (Moura et al., 2013). Following best current practice, this monitoring process will potentially facilitate management decisions regarding trail operation and maintenance (Birkby et al., 2005; Lechner, 2005; Appalachian Mountain Club, 2008). During the Course, we performed



**Photo 15-poly-cord installation**

initial photographic registrations of these ten stations, accomplishing the first milestone of the monitoring process, with periodicity to be defined by ICMBio.

### Conclusion

The Course served to enhance the knowledge base of Janelão Cave Guides and the National Park Team. Through understanding more about the importance and fragility of cave systems, we all become better partners in protecting the Park's cave resources. We hope this shared perspective will be reflected in avoiding permanent and dispersed impacts in the fragile, unique karst environments of Peruaçu Caves National Park (Photo 16).

In material terms, the Course provided, in a short time-frame with few financial resources and vital team work, the development of a trail-delineating methodology applied in the dark zone of Janelão, with about 2 kilometers of extension. This simple and effective method of defining trails can now be easily maintained, adjusted, and applied in other caves by the local Park staff. In the Brazilian reality of limited financial and technical resources, activities like these are fundamental in strengthening the technical skills of local teams and helping them to improve their own management capabilities in protected areas.

Due to the Course success, the Park staff proposed the formalization of a partnership with the Bambuí Speleological Research Group to conduct new didactic courses and to reestablish the cave mapping project inside Peruaçu Caves National Park.

### Acknowledgments

The realization of this Course was only possible with the sponsorship of the National Speleological Society Conservation Grant (NSS/USA), and with the ICMBio partnership. We extend sincere gratitude to these institutions. We especially thank Rafael Pinto and the Peruaçu Caves National Park staff for organizational support and local logistics coordination. We certainly thank all the students for their commitment, dedication, and enthusiasm during the Course,



**Photo 16 – Example of the delineated yellow poly-cord trail in the dark part of Janelão Cave**

which made possible the delineation of the complete dark-zone trail in Janelão Cave. We are extremely grateful to Val Hildreth-Werker and Jim Werker for being an inspiration in cave conservation and restoration, for this paper revision and their valued contributions, for their inspiring discussion and suggestions during our technical visit to Janelão Cave in 2013 and for their great help in obtaining NSS sponsorship. We also acknowledge the International Seminar on Protected Areas Management Team (College of Forestry and Conservation, University of Montana) for technical support on the elaboration of this project action plan. We also thank Augusto Auler for logistical support on the international donation transfer from NSS to Bambuí Group of Speleological Research.

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## Cave Cleanups at Home and Abroad

**Danny Brass**

No matter what country a caver calls home, we share genuine concern for safeguarding the unique splendor and ecological integrity of underground environments. This is true no matter the size or grandeur of a system.

In an incredible display of caving solidarity, approximately 190 cavers from nine different countries gathered in Slovenia to participate in a cleanup of the Škocjan

Caves. While there is no denying that some of the individuals volunteering to help out probably jumped at the opportunity to visit this UNESCO World Heritage Site, others were undoubtedly motivated by more fundamental cave conservation concerns and reflect that pervasive characteristic of the caving community

Maintaining the health and integrity of underground ecosystems also helps to sustain

associated ecosystems. Moreover, spelean ecosystems play a vital role in our own health and welfare. Accumulation of cave pollutants denigrate underground aquifers, eventually coming back to haunt us in our own drinking water. Participation in regional cave cleanup and restoration activities is an excellent way to help preserve these special places, ensuring their existence for future generations of both cavers and cave-adapted species.

## Škocjan Caves Rock Cleanup Action

**Borut Peric**

On Saturday, 23 September 2017, the Škocjan Caves Park and Guardians of Universe environmental movement organised a collective international cleanup action bringing together numerous outdoor sportsmen and other nature lovers from nine countries. Volunteers from Slovenia worked side by side with guests from Serbia, Croatia, Czech Republic, Slovakia, Romania, Hungary, Italy, and Brazil. Some 190 individuals helped promote our common cause.

Mountaineers, skiers, rafters, canyoners, divers, Park employees, polar explorers, canoeists, kayakers, cavers, primary and secondary school students, and locals supported the action with their presence. The aim was to take out rubbish from the Škocjan Caves, predominantly plastic bottles that the river has been taking deep into the cave over several years and are now scattered over cave sediments before the sump.

The effort engaged numerous other locations in the park and its surroundings, with strong emphasis on the Reka surface flow. Apart from the Škocjan Caves itself, the volunteers worked in the Reka River gorge, along the Sušica stream (a Reka tributary before sinking under the Škocjan village), in Risnik collapse doline that lies directly above the underground Reka stream, in the Divača Cave, under Vremščica Hill, and along the Reka flow between the villages of Dolnja Bitnja and Buje.

A local branch of a national broadcasting company, TV Koper, covered the action extensively and prepared a long report about the project. Media outreach was one of the main goals of the action to encourage public awareness of pollution issues, especially water pollution problems. At the end, more than two hundred sacks of different types of rubbish were

brought to the Park's Visitor Center. After being sorted, the trash and recyclables were taken to suitable waste deposits.

The action, ending with an excellent dinner and pleasant music, was a great success. Many friendships were developed and everybody established that it is worth repeating in other locations. The intention was firmly declared and the guidelines for further activities were set.

The event was also an opportunity to present a recently published book, *Into the Unknown*, a volume of the Books with a Cause series. [Ed-see review in this issue's Reading section]. It presents 19th Century explorations in the Škocjan Caves and puts intrepid researchers of the time among the top greatest explorations in the history of mankind, alongside other Books with a Cause on expeditions to the North and South Poles, the Himalayas, and the Alps.





The canyoning team heading into the Mahorčič cave (BK)



Demanding cleaning in high waters in the Marinič cave (BK)



The first cleaning action at the end sump in the Martel chamber (BL)



Loading bags of trash at the end sump in the Martel chamber (BL)



About 50 sacs of trash waiting to be transported out of the cave (BL)



On the way to the Martel chamber to transport out the trash (EC)



In the Hanke channel (EC)



The international team reached the final part in the Martel chamber but due to high waters it is not safe to reach the end sump. However many sacs with trash were already prepared for transport (EC)



A part of the Hanke channel team (BK)  
Photos: BK = Bogdan Kladnik, BL = Borut Lozej, EC = Egri Csaba



# Camouflaging the Cables in Carlsbad Cavern

*Rod Horrocks, Lois Manno, and Ellen Trautner*

In 2015 Carlsbad Caverns National Park completed a project to install a new LED lighting system in Carlsbad Cavern. When I started at the park as the new Cave Specialist shortly after the transformers and cables were installed, the Superintendent said, “My first job is to camouflage the unsightly black cables that snake all over the cave floors.”

These cables are distracting because of their contrast with the light-colored cave surfaces. Distractions are further highlighted because of the artificial straight lines, which cause them to stand out more readily against the natural cave surfaces. Additional contrast was created by the smooth surface of the cables, so visually different from the uneven texture of the cave floors. Unfortunately, the cables were simply laid out on the cave floor by the electricians before I arrived at the park. There was no effort to hide them in shadows or route them in cracks or behind features. Initially, the park thought camouflage fabric could be laid on top of the cables, and they would disappear. However, as Penny Boston pointed out, that camo material would become a microbial breeding ground; so, that was not an option.

## Goals for Cable Camouflage

Goals outlined in our document, the Cable Camouflaging Plan, state that we want visitor’s eyes to be attracted to the lighted cave features and not be distracted by the infrastructure of cables and power supply units. However, if the visitors wonder where the light comes from, upon searching they should be able to find the fixtures in the ambient light; but those fixtures should be in the background and not readily noticeable. We want the camouflaging techniques to use local sediment, rock, or previously broken bits and avoid introducing foreign materials

to the cave ecosystem. The first thing we decided was that we would not repeat what was done in 1975 to hide the cables for the previous lighting system—covering cables with colored concrete was not an option this time. The concrete “camo” caused way too much impact on cave resources, and that was a total non-starter from our point of view. That meant that we had to come up with an entirely new technique. After many months of experimenting, we developed a handful of potential camouflaging techniques.

## Developing and Testing Techniques

We used an alcove off the Old Lunchroom to experiment and test the techniques. We chose that alcove because it was close to the elevator, and that section of the lighting system hadn’t suffered damage from lightning strikes, a problem we are dealing with in a couple other areas in the cave. We immediately realized that no one technique would work everywhere, and that every single cable run would require multiple camouflaging techniques.

Since it is going to be a monumental project to do the whole cave, I knew I needed to attract a volunteer to lead the two-year project. I found an energetic leader, Lois Manno, from the Sandia Grotto in Albuquerque. She put together an initial volunteer team, which consisted of Scott Christenson, Minori Yoshida, Todd Roberts, Evan Hubbard, Georganne Payne, and William Payne. They started work in the Grape Arbor area near the Lunchroom. Evan and Todd were tasked with taking “before” photos of each cable run before anyone did any camouflaging work. Each group then picked a cable run and began applying the different techniques we had showed them. Once an area was completed, the group would leapfrog forward to another cable and we would take an “after” photo of the newly camouflaged cable.

Once the cavers started applying the

techniques we had developed, they discovered new tricks that made the camouflaging even more effective. In the end, we ended up discarding three of the original techniques and refining a handful of others that became our core methods for the project.

## Slurry

One method, which we call the “slurry technique,” involves coating the cable with slurries made up of nearby cave sediment mixed with water to vary the consistencies. The silt is sourced from previously disturbed areas, as close to the cable as possible for color-matching. This slurry is then painted onto the cables with brushes, followed by dry sediment and gravel sprinkled onto the wet slurry. To create slurry that brushes on easily and consistently, we use a coarse sifter to remove larger chunks from the silt. We alternate from light to dark slurry depending on the color of the floor underneath the cable; color matching is critical to all the camouflage techniques. The resulting earth-colored cable blends very well into the background. We find this technique works best if the cable is at least 20 feet or so away from the tourist trail or if we are dealing with a single, thin “whip” cable leading to an individual light fixture.

## Mud

Also effective is mixing cave sediment with smaller amounts of water, creating a thick paste that can be “mudded” with a plastic spatula over cable bundles. This is particularly helpful when addressing the larger multi-cable bundles, which are not adequately disguised with the slurry technique. We use loose rocks and dry sediment with the mud for a more natural effect, and to help break up the cable’s horizontal profile.

## Trenching

Another technique is simply to bury the cables in shallow trenches and cover them



Brushing “slurry” mixture over a cable run. Photo by Evan Hubbard.



Figure 3: Covering a large cable run with mud paste and loose fill. Photo by Evan Hubbard.



with nearby sediment, small broken bits, or loose rocks. Trenching the cables below grade (in spots where the silt is deep enough to do so) is especially effective. In these areas, the cables literally become invisible. Unfortunately, this is only possible in a few areas. We do not attempt this in any area where *in situ* floor crusts might be disturbed. In some areas, new cable roughly follows the track of earlier lighting systems, and we can trench into already-disturbed silt.

### Rock and Sediment Blends

Another technique involves burying cables with breakdown, gravel, or broken bits. Unfortunately, in Carlsbad Cavern we have plenty of broken material from the days before the trails existed when people were allowed to wander anywhere. We discovered that, in order to avoid the “line of rocks” effect (which also looked artificial), we need to scatter rocks of varying sizes next to the cable and directly over it. We find that placing short lines of rocks outward from the cable in a perpendicular arrangement helps to draw the eye away from the cable run, further improving the blend. Sprinkling sediment over the rocks further helps them blend in. In most cases, we ended up layering several techniques together in order to gain a truly natural look.

The final method incorporates elevator shaft blasting material (broken rocks) from the Old Lunchroom area. We use blast rubble only on cable runs immediately adjacent to the lint curb (the 18-inch high rock walls that line the trails). The added rock blends with the existing wall and completely covers up the cables. We do not use blast rubble in areas away from the visitor trail because we don’t want to introduce “unnatural” rocks from other areas. Since the blast material is usually lighter than the surrounding cave surface, in some spots we paint the exposed faces of the blast rubble with slurry, to further break it up visually and help it blend in.

### Re-routing

In some areas, we re-route the cable slightly, to take advantage of low spots, shadows, and existing crevices. This is only possible where the cable runs have enough



Figure 4: Minori Yoshida pushing fill over a cable run. Photo by Todd Roberts.

slack to move cable without disturbing the light fixture. This substantially improves the final camouflaging results. In particularly problematic areas, we resort to slightly re-directing lights, or shifting the position of light fixtures to facilitate re-routing and to reduce illumination on the cables. In each situation that requires moving a light, we often improve the end result of the feature-based lighting—much to our satisfaction.

### More Satisfaction

Cavers quickly realize that they really enjoy the project; probably because of the immediate sense of satisfaction we receive after hiding a cable run. We aim to reduce the visibility of the cables by 80%, so we are very pleased when we essentially obtain a 100% visual elimination of the cables. Even people that know where the cables are have trouble finding them. Now that we have completed 1/3 of the Big Room, we are ready to push forward and complete the rest of the cave.



Figure 6: Before and after photos near the end of the Old Lunchroom near the Texas Pit and Billing Dove Tunnel. Photo by Todd Roberts.



## Montana’s Bigfork High School Cave Club Sets Up Resource Monitoring for Six Caves in Southeast Arizona

### Gabby Eaton, Big Fork HS Caver

Arizona Caves are completely different from Montana Caves. Caves in Montana are usually cold, wet, and muddy. There’s no wide variety of speleothems and we NEVER get to wear shorts. We soon discovered that Arizona caving is warm, dry, and insanely beautiful. But one thing that didn’t change from Montana to Arizona was the impact humans can leave on cave resources.

During the Spring of 2017, a group of five students from Bigfork, Montana—Kalvin Eaton, Johan Bencomo, Eli Passwater, Rhianyon Larson, and I—along with club sponsors, Hans Bodenhamer and Ellen Whittle, traveled to Southeastern Arizona in order to establish and repeat various types of monitoring in six caves in order to provide feedback and data concerning the human impact on non-renewable cave resources (stalactites, stalagmites, clay-covered floors, historic graffiti, and prehistoric rock art).

We teamed up with NSS members from Southern Arizona and spent March 28 through April 6 completing our

work. Over the course of the trip, we drove exactly 999 miles! When we arrived in Phoenix after a short flight, we all climbed into our rental van, the “Space Shuttle.” The space shuttle was pretty great minus the fact that our huge packs had to be shoved through the back into the tiny trunk.

We worked in two areas on this trip. First, we arrived in the Coronado National Forest where we established monitoring in three caves and, in two additional caves



BHS Cave Club group: Johan Bencomo, Eli Paswater, Ellen Whittle, Kalvin Eaton, and Rhianyon Larson.





**Decon in the car wash before we all got sprayed with water. Photo by Johan Bencomo.**

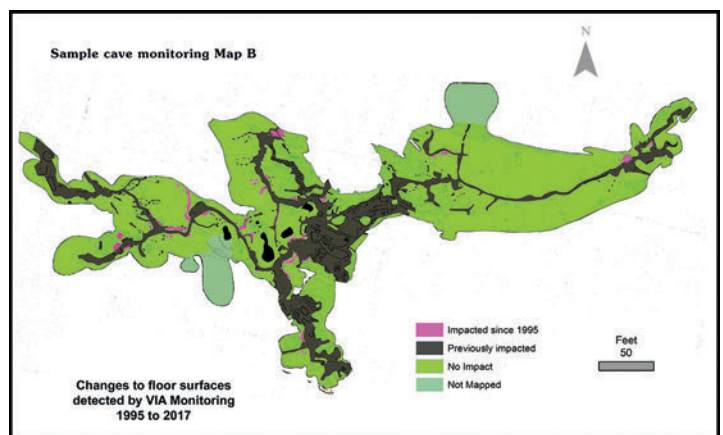
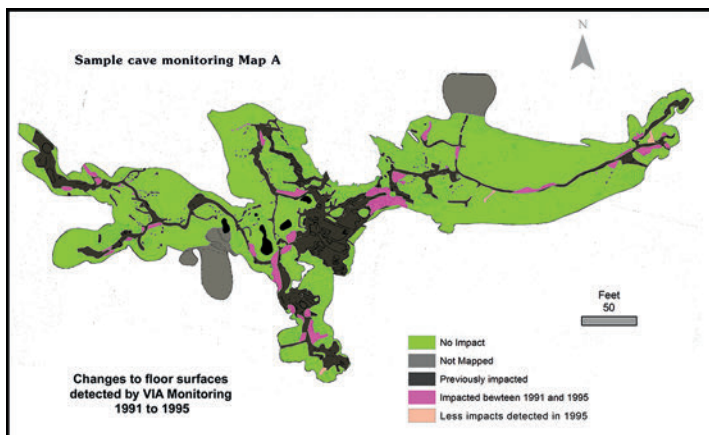
we performed repeated and augmented monitoring protocols that were originally established 30 years ago by our teacher/leader/cave-and-science instructor, Hans Bodenhamer. These caves are beautiful, but a couple had been heavily vandalized. Some of the cave trails had been established and marked with rock edges over 30 years ago. The trails proved to be very effective in preventing accidental destruction of fragile features. One cave in particular has some beautiful features that we Montanans had never seen the likes of before. We marveled at mud-cracked floors that looked like endless trays of brownies and white helictites that everyone thought looked like super curly hair. Most ceiling minerals in the especially decorated cave are still in pristine condition.

We spent five nights camping in the Huachuca Mountains until it was time to



**The Space Shuttle. Photo by Johan Bencomo.**

**Below: Changes to floor surfaces in one of the caves, 1991 to 1995 and 1995 to 2017**



**Flagged trail in one of the caves**

move to our next cave monitoring location. It was necessary to decontaminate our cave gear to prevent the spread of White Nose Syndrome. We were able to do this at a self-serve car wash. Everyone was fighting over who got to use the high-pressure hose and 409 spray. Needless to say, we received some very interesting looks from local residents in Sierra Vista.

After decon, we established monitoring in two areas of another cave. Near the entrance to the cave we found heavy vandalism that had occurred before a gate was installed. We had to crawl on top of thousands of very spiky quartz crystals. After a memorable crawl, we got to a place where we saw some pretty incredible formations. One area has a bunch of beautiful tree-like speleothems spread throughout.

Although our trip was done in partnership with the Forest Service, our biggest supporters were the NSS Conservation Save-the Caves Grant Program and the local NSS grottos, Southern Arizona Grotto,

Escabrosa Grotto, and Cochise County Cavers. Specifically, we would like to thank Dave Hamer, Tom Mooreland, Andy Mooreland (Escabrosa Grotto Conservation Chairman), Jessica Pruitt, Bob and Debbie Buecher, Belinda Norby (Southern Arizona Grotto President), and Peter London. These folks guided us in two caves, provided key loans, equipment we could not carry on the airplanes, and showed us where the best Mexican restaurants are! It was really cool to have them working with us in the caves.

For monitoring, we used the same methods that we use in Montana, including visitor impact mapping. A point or polygon is used to show where the damage is located on a map. We included a written description of the damage. This style of monitoring was only used in two caves where Mr. Bodenhamer established the method three decades ago.

Another method we used was photo monitoring. Students relocated photos taken from the monitoring established in 1989 and took a new photo from the same spot.



We also established new photos of features considered to be of high resource value, features likely to be damaged, and human impacts like graffiti, trampling, and broken speleothems. Throughout the whole trip, we took 550 cave monitoring photos, 52 of which were repeats from 1989 and 1991.

Students also established mineral monitoring. We rated floor and ceiling impacts based on whether the impacts were “none, light, heavy, or severe.”

Throughout our trip to Arizona, we learned a lot about the desert, visited some amazing caves, ate way too much Mexican food, and hopefully made a contribution to cave conservation. All of the data that we collected was input to GIS layers and we presented a recommendation plan along with a report.

We would like to thank everyone who made this trip possible and specifically the Charlotte Martin Foundation, the Angora Ridge Foundation, and the National Speleological Society Save-the-Caves Conservation Grant for financially supporting our work. Arizona and Montana caves might be different but the cavers there are just as awesome. Thank you!

If anyone is interested in a copy of our formal report (it is over 200 pages long with lots of maps, pictures, and our recommendations) contact our club sponsor Hans Bodenhamer: [hansb@bigfork.k12.mt.us](mailto:hansb@bigfork.k12.mt.us)



In the photo taken in 1989 there is a beautiful drapery called the Angel Wing In 2017 the drapery is missing (photo by Johan Bencomo).

## SRT Tower, Petri Dishes, and CaveSim Make Learning Conservation Fun

*Dave and Tracy Jackson*

You've probably heard about CaveSim for years now. What could possibly be different this year? Answer: Lots! If you want to feel like a kid again and join in some conservation fun without leaving your chair, read on.

CaveSim is just squeezey horizontal passages, right? Nope! Don't put down your vertical gear just yet. A new 12-foot Single Rope Techniques (SRT) A-frame now travels with the mobile cave, and at some of our programs kids use a Frog system or prusiks to ascend to the top. Teachers love the fact that students are learning about mechanical systems and friction (we use a rack to lower the students down) while the students have fun. Sure, it's only 12 feet tall, but when you're only 3 feet tall it's plenty high.

Of course, at some of our programs we have over 350 people explore CaveSim in a single day and they can't all get on rope, so we use the A-frame for demos. Both adults and kids also love using the 40-foot pit in the CaveSim system at CityROCK Climbing Gym in Colorado Springs—in the past year we've held over 33 days of SRT training in this big, permanent CaveSim system.

### Fun Leads to Love of Caves, Leads to Conservation

What does all this have to do with cave conservation? Well, to conserve caves you have to get people to care about them. And getting kids excited about cave exploration is a great way to get the next generation to carry on the cave conservation work happening today. All of our programs include a solid mix of fun, adventure, and conservation education.

If you're unfamiliar with CaveSim, here's a quick overview: a patented artificial cave system with computer scoring is at the heart of our programs. We bring the mobile version of our system around the country, and visitors are drawn in by the computer scoring (which grades them on their ability to cave softly). Then people get hooked by the physical exploration of crawling and climbing through 60 feet of cave passage. With CaveSim, we're reaching more people than ever. In the past year, we've done 48 days of programs (not counting our activities at the permanent CaveSim installation) across six states (AR, AZ, CO, GA, NM, and OK). 35 different organizations have hosted our programs, including 15 schools, four museums, five conferences, two caver events, and numerous free public events. The CaveSim system at CityROCK climbing gym is also



Awestruck while exploring CaveSim at PEEC Nature Center in Los Alamos. Photo by Thomas Graves.

open seven days a week. All this adds up to well over 10,000 people learning from us about cave conservation in the past year.

### It's Not Us, It's You

And who do we have to thank for all of this outreach? Well, mostly not ourselves. Fantastic partners and incredible volunteers and staff are the only way we can teach so many people to love and protect caves. We can't possibly recognize everyone who helps us, but we hope that a few quick stories will inspire you to become involved.

NSS member (and 3rd grade teacher) Deitra Biely saw CaveSim at the Missouri Convention and asked us to bring CaveSim from Colorado to Oklahoma for her school. Our first program in Grove, OK lasted two



Girls rock with vertical caving! Camryn and Mara prepare to descend the 40-foot pit at CityROCK. Photo by Dave Jackson.



days in 2016, and the district liked our program so much that Deitra had us come back for four days this past spring. In the spring of 2018, we will be doing six days of programming at three schools in Deitra's district. All of this was started by one simple email that Deitra sent us asking for our time. We have a great partnership in which we work together to develop content for grant proposals to the Grove Educational Foundation For Excellence (GEFFE). Deitra has even won outstanding educator awards for her awesome work. This past fall, Rachel McArthur saw CaveSim at the TAG Fall Cave-In and asked if we could bring CaveSim to her daughter's school. Together we made the program happen, and the kids loved it. If you're like Deitra or Rachel and you think it might be fun and beneficial to have CaveSim come to your schools or area, you should reach out to us with a simple email or phone call.

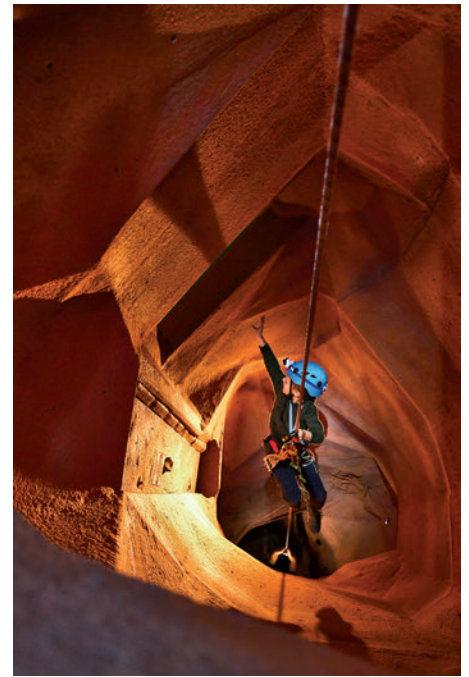
We also get incredible help from countless cavers who support our programs both financially and with their time. Jen Foote and Kevin Manley spent an entire day teaching kids SRT at an amazing USFS-sponsored event organized superbly by Johanna Kovarik. Kevin, who is more accustomed to subterranean darkness than unrelenting sun, sustained severe sunburn during the program, but still he persisted! Note to self: 30 SPF is NOT good enough for cavers. Not everyone who helps us sustains physical damage: Patricia Malone, Layla Borgens, Dan Sullivan, Dan O'Sullivan (no confusion there!), Todd Warren, Barb Smith, Jeff Goben, Floyd Fernandez and many others have spent countless hours with us over the past year. And then there are the people who support our programs from behind the scenes in various ways: Dick Blenz, Val Hildreth-Werker, Bill Stringfellow, Barb Bentzin, Bob Montgomery, Jeff Martin, Beth Cortright, Chuck Bitting, and others.

### But What Do We Do?

So what do all these people help us teach? Cave conservation and a whole lot more. Lots of non-cavers are afraid of bats, and our fun games and lessons quickly take kids and adults from being afraid to appreciating the value of bats. Karst topography models and hands-on labs teach our visitors about the importance of protecting groundwater. Exploring the mobile cave, riding in the Sked rescue stretcher, and using the squeezebox teach people to test their limits and to love exploration. We also believe in teaching people to love and understand science, so we've added a new biology lab to our programs that lets the kids get hands-on with Petri dishes and real biota (a big thanks to Ken Ingham for allowing us to use his photos to teach cave biology).

### Staying True To Our Roots

As some of you know, we invented CaveSim to solve a problem during cave search and rescue training. The system was originally designed to help rescuers (both cavers and non-cavers) develop better proprioception before doing mock rescues in real caves. Twelve hours from writing this, the Colorado Springs Fire Department will be using the CaveSim system at CityROCK for rescue training, including vertical rescue. Just like the kids we work with, the firefighters will be learning about the importance of protecting stalactites (and protecting themselves and their patients from unnecessary harm). We also stay true to our roots during our caving camps. During a recent camp trip to a real cave, our campers found some reparable cave vandalism and the kids took time out of their exploring to clean up the terrible mess. We've stumbled upon a system of education that turns 8-year-olds to octogenarians into active conservationists, and we hope you'll join us in this adventure. If you'd like to support our work in any way, or if you'd like us to bring CaveSim to you, reach out to us at [info@cavesim.com](mailto:info@cavesim.com).



Having fun with SRT in CaveSim at CityROCK Climbing Gym. Photo by Mark Reis, Colorado Springs Gazette.

## The Bat-Friendly Tequila Project

John Pint; uncredited photos by John

"If I were to make an Organization Chart of the Most Important Mammals in the World," naturalist Rodrigo Orozco once told me, "I would put bats at the very top of the chart. Every night nectar-eating bats do the same kind of pollination work that bees do by day. At the same time, fruit-eating bats spread seeds far and wide, creating biodiversity, while insect-eating bats prevent bugs from multiplying out of control. Believe it or not, I would rate the bat as the most important mammal in the world. Without it, the human race wouldn't stand a chance."

Unfortunately, bats are also among the most unloved and misunderstood creatures in the world. Such was the case decades ago in Mexico, when researchers discovered that bat populations in caves south of the U.S. border were dropping drastically, in many cases by as much as 90%. One of the causes was the widespread use of insecticides and another was "the war against bats" being waged by ranchers all over Mexico who would seal up or set fires inside caves trying to kill bats, all of whom they believed to be vampires: *Desmodus rotundus*, frequent carriers of rabies. Sadly, most of those bats were actually insect, nectar or fruit eaters, all of them vitally important to the environment.

I described this sad state of affairs in "Who Cares about Mexican Bats?" which the NSS News published in March of 1994. I commented that ranchers and *campesinos*

could easily learn to distinguish different kinds of bats by observing their guano and suggested that spots on radio stations broadcasting *ranchero* music could quickly educate them, but, alas, sponsors for such a project did not appear, although Carlsbad Caverns, which loses huge numbers of its bats to Mexico every year, made valiant attempts to help us. For more info on *Desmodus*, see "In the Lairs of the Vampire" by Dave Bunnell in the January 2011 News.

Onto the scene came National Autonomous University of Mexico biologist Rodrigo A. Medellín, who first worked to get the Lesser Long-Nosed Bat on the



Hologram sticker for identifying Bat-Friendly brands of tequila and mezcal





**Quiotes or agave stalks can now be seen in the fields around El Arenal, Jalisco. Photo by Tetsu Shady.**

Endangered Species list both in Mexico and the USA and then researched the 1500-kilometer “Nectar Corridor” the bats traditionally followed while traversing Mexico South to North. Medellín’s award-winning work in establishing some 30 “safe caves” resulted in such an increase in bat populations that, after twenty years, this “tequila bat,” as David Attenborough christened it, became the first mammal to be taken off Mexico’s Federal List of Endangered Species...and, thanks to a BBC documentary, Rodrigo Medellín became known all around the world as “The Bat Man of Mexico.”

I first heard the story of Medellín’s fight to save bats from Salvador “Chava” Rosales while sipping Siembra Valles Ancestral at the Cascahuín Distillery, one of Mexico’s oldest *tequilerías* and one of the few still producing Mexico’s favorite spirits “the good old way,” in the little town of El Arenal, Jalisco, 25 kilometers west of Guadalajara.

Rosales, Cascahuín’s Production Manager, then introduced me to TIP, the

Tequila Interchange Project: “This project originated with David Suro, owner of Philadelphia’s Tequilas Restaurant and Professor Rodrigo Medellín. It asks tequila and mezcal producers to let five percent of every hectare of their agaves flower, so bats can pollinate them, benefiting both bats and business. The way we reproduce agaves now—by replanting the little ‘clones’ that grow around the parent plant—has drastically reduced the genetic diversity of our plants. Medellín brought all this up to the Tequila Board many years ago and they considered him crazy.”

If left on its own, an agave produces an amazingly fast-growing *quiote* or stalk near the end of its life and all of its energy (meaning all of its sugar) is used to produce the stalk, the flowers and the seeds. “We tequila producers,” Rosales told me, “used to consider that *quiote* ‘El Chamuco’ (the Devil) because it meant we would lose all the sugar from that agave, and we would rush to cut it off. So this new approach takes some time to get used to. *De veras*, we had no idea at what time of the year the plant flowers. The first time we had to keep a lookout, and when the flowers appeared, we called Rodrigo Medellín: ‘Come quick!’ and he started measuring how much sugar was still in the plant and how much went into the flower, and what kind of insects were attracted. Then they stayed all night to catch the bats and see whether or not they were covered with pollen. And we saw that—even after 100 years of not drinking nectar from those flowers, the bats still remembered, and they pollinated them!”

“Now we are starting to look at our fields with new eyes. We always have spots where it’s not practical to plant agaves for one reason or another, like rocky patches or at the very edge of our property. Now we are thinking: ‘Wait a minute, let’s plant agaves there and leave them for the bats.’”

Rosales calls TIP a pilot program organized among three friends: the owners of Tequila Tapatío, Casa Siete Leguas, and



**A Lesser Long-Nosed Bat (yerbabuena) covered with pollen. These bats struggle to survive due to the widespread use of pesticides and efforts by country folk to exterminate them, confusing them with vampire bats. Photo by Marco Tschapka.**

Cascahuín. TIP has begun by releasing two bat-friendly tequilas in the USA: Siembra Valles Ancestral and Tequila Ocho, along with one mezcal: Don Mateo de la Sierra. “But many other distilleries are lining up to get on the bandwagon,” added Rosales.

Later I Skyped Rodrigo Medellín in his office at UNAM, Mexico’s national university, and asked him how the bat-friendly tequila project got started.

“It goes back 23 years,” said the professor, “to when I first tried to explain to the tequila industry that they owe their very significant profits to this little creature that flies at night and that by using nothing but clonal shoots to replant their fields, they were losing a big chunk of their genetic diversity.”

I told them I thought it was very paradoxical to think that they plant millions of agaves but don’t allow a single one to bloom. I said, “You only have tequila today because the bats have pollinated it for millions of years! It’s time for you to start investing: not only because you owe it to the bats, but because of your own self-interest.”

I told them that in 1994 for the first time and the Tequila Regulatory Council said, “Oh, what a nice project, thanks for coming to see us, but don’t call us, we’ll call you.”



**A Tequila Bat pollinates a Rough-leaved agave in a pine forest. Photo by Jesus Moreno**

**Salvador “Chava” Rosales of Cascahuín distillery still cooks agaves in an oven. He also uses an old-fashioned Filipino still to impart a smoky flavor to Siembra Valles Ancestral, which bears the Bat-Friendly seal.**







**Chava Rosales shows off Bat-Friendly Siembra Valles Ancestral.**

“Well, they never did. Then, ten years later, in 2004, I went back again, with a paper that a friend of mine had just published showing that over 160 million agaves were clones of just two individuals. So, basically, the genetic diversity was zero. Then I told them: you are playing with fire here. All it takes is one of your plants to be diseased and then all of your plants—because they are exact copies of each other—are going to be diseased. You cannot afford to run that risk. You have to start investing in feeding the bats a little, so they can continue exchanging genetic material from one plant to another.

“And they said, ‘Thank you very much. We will think seriously about this. We’ll let you know.’

“But they never did.”

“And then about five or six years later, the disease I had hypothesized actually showed up—I had nothing to do with that, honestly! And they said, ‘What? What was that story about the bats and the flowers and

genetics? What was that again?”

To the Bat Man’s delight, some members of the tequila industry began to listen to him and offered to invest heavily in his plan. “Now all I needed was a leg-in to the market,” Medellín told me.

That’s when he met restaurateur and tequila promoter David Suro, who told Medellín, “I’ve been looking for something like this all my life and I finally found you; so we need to work together.”

As a result, the Tequila Interchange Project launched 300,000 bottles of bat-friendly tequila in November of 2016, each of them displaying the little hologram issued by UNAM. “And,” adds Medellín, “we now have bars in San Antonio, New York, San Francisco, Washington D.C. and many other places, even Arkansas, whose menus list Bat-Friendly Tequilas and Mezcales. If you order from this page, one dollar from each drink is going to the project.”

Even if you live far from an Arkansas bar, you can help the Tequila Interchange Project. Rodrigo Medellín suggests you:

1. Read up on bats, pollen and bat-friendly tequila and mezcal.
2. Talk to your liquor-store owner and your bartender: tell them about this fantastic story.
3. Consider donating through the TIP website: [tequilainterchange.org](http://tequilainterchange.org).



**In a Skype interview for the NSS News, Mexican Bat Man Rodrigo Medellín shows a Bat-Friendly mezcal and tequila. “Tell your bartender about this fantastic story,” he says**



**Tequila Ocho with Bat-Friendly sticker**

“Everything donated,” says Rodrigo Medellín, “goes straight to the field.” Just click on the orange Donate button.

You will find the latest updates about TIP projects on their Facebook page “Tequila Interchange Project.” Parts of this article originally appeared in *The Guadalajara Reporter* and *Mexico News Daily*.



**Bats pollinating an agave which has been allowed to flower. Seeds from this plant have sprouted and are now growing at the National Autonomous University in Mexico City. Photo by David Suro.**



**Tequila bats visiting a hummingbird feeder in Guadalajara**



# The Southeastern Cave Conservancy: Protecting Environments Above and Below Since 1991

**Amber Lehmann, NSS 63379**

*Southeastern Cave Conservancy, [www.scci.org](http://www.scci.org)*

There are over 25,000 known caves in the southeastern United States. Caves and karst environments are home to over 1,000 cave-dwelling species, and 95 percent of them are listed as threatened or endangered. Caves house many historic and cultural resources from Civil War signatures to Native American cave writings. These special environments must be protected and remain as accessible as possible for recreational cavers and nature lovers alike.

Protection of these environments, balanced with recreational access, is exactly why the Southeastern Cave Conservancy, Inc. (SCCi) exists. SCCi's mission in conserving caves is to preserve areas of scenic beauty, provide recreational access and opportunities, protect cultural and biological resources, and support scientific research. SCCi envisions protecting the most significant and sensitive caves across the entire southeastern U.S. The Conservancy is successful through support of their grassroots network, partnerships with other organizations, and dedication from individuals interested in protecting caves and cave resources.

Thanks to two decades of abiding by the core mission, SCCi is the largest and most successful land conservancy solely devoted to acquiring and protecting caves. Although it has been operating for over 25 years, many new (and even seasoned) cavers may not be fully aware of SCCi's history, growth, and plans for the future.

## History

In the late 1980s, large sections of beautiful southeastern landscapes were being closed to recreational access and threatened by development. A small group of cavers started talking about how to protect a beautiful and pristine part of the landscape that many people hadn't thought much about: caves.

The Southeastern Cave Conservancy was the brainchild of Jeff and Alexis Harris, two long-time cave conservation activists from Georgia. In 1991, they called together a group of about 20 cavers to discuss the idea of starting a cave conservancy. Back then, the idea that cavers could come together to buy and manage large numbers of caves seemed reasonable, but they also knew that a conservancy would require huge sums of money and a vast amount of volunteer labor.

Everyone agreed to move forward with more planning meetings. The newly formed

Southeastern Cave Conservancy received official 501(c)3 status in November of 1991. The group believed the best way to protect caves was to purchase them. They thought they might be able to purchase a cave every once in a while as long as the property didn't cost too much.

The group has been much more successful than the founders could have imagined. 26 years later, SCCi owns over \$2 million in property, manages 31 preserves and over 170 caves through six southeastern states. How has SCCi done it?

The founders of SCCi benefited from the good advice and guidance of many people and organizations. SCCi's first acquisition was fortuitous when Chuck Henson donated Howards Waterfall Cave in Trenton, Georgia to the young conservancy. This donation set the stage for many other good projects in the years to come.

The purchase of Neversink many years later put SCCi on the map. People who were previously skeptical of a cave conservancy became enthusiastic about the group's mission and goals. People jumped on board to help the group pay off the \$50,000 mortgage. Over \$30,000 was raised before the closing. The remaining \$20,000 was financed by a loan from an anonymous supporter. The loan amount was raised and repaid in less than six months. In all, more than 400 people donated money to the project and became honorary owners of a "piece of the pit."

After such a success, the group moved on to other projects. Over the years, SCCi has raised money to purchase other famous southeastern caves such as Kennamer, Limrock Blowing, Valhalla, and Fern Cave's Surprise Pit. SCCi also ended up buying a large tract of land on Fox Mountain and some hugely popular caves. For some caves that weren't available for purchase, like Sinking Cove Cave, SCCi worked out long-term lease agreements so our members could visit the beautiful property and caves.

## Present

Within the past year alone, SCCi Preserves saw 9,715 permitted visitors. With the implementation of the Online Permit Systems (OPS), SCCi can now monitor and track preserve visitation. Extremely important for protecting the Preserves, SCCi can track permits and make necessary adjustments in visitation guidelines to prevent overuse of the cave resources. SCCi believes



Nathan Williams

**Julie Schenk Brown in Varnedoe Cave**

that people tend to appreciate the need to protect cave and karst environments when they get first-hand experience inside a cave.

Also in 2017, SCCi acquired the Elroy and Marilyn Daleo Cave Preserve in Kentucky. This preserve contains the Daleo Entrance to the Roppel Cave section of Mammoth Cave. SCCi is the only private conservancy to own an entrance to the Mammoth Cave system—the longest known cave system in the world.

## Future

To continue protecting these environments forever, SCCi has started to break new ground in operations, fundraising, and engaging members. It is challenging to maintain and protect these precious environments forever. After going through a multi-phase planning process, the member-elected Board of Directors adopted an ambitious 5-year plan to guide SCCi to the next level.

SCCi's future aspirations and goals are outlined below:

**Aspirations** are those things SCCi is striving to be or become. Aspirations include talents, skills, and capabilities that are needed to support current and future goals.

## Fundraising

- Generate revenues that provide for debt-free acquisitions
- Create revenue streams that support SCCi in perpetuity

## Acquisitions

- Maintain a targeted acquisitions list focused on caves and land that provide significant recreational, biological, and/or historical resources



## Membership

- Provide world-class member services
- Engage membership
- Double membership (50% of members are sustaining members)

## Stewardship

- Provide world-class stewardship
- Plan for forever stewardship

## Organizational Development/Operations

- Develop and implement effective management systems
- Develop capacity/expertise to achieve organizational outcomes
- Stay flexible

## Reputation

- Be THE storyteller for caves of the Southeast
- Be recognized on the national stage for cave conservation

### 5-Year Goals

- These 5-year goals are specific deliverable actions supported by the aspirations listed above.
- Achieve Land Trust Alliance Accreditation
- Recruit Volunteer Chief Scientist
- Establish Stewardship Endowment Fund of \$2.5 million
- Establish Strategic Acquisition Fund of \$1.0 million
- Buy Five Targeted Caves
- Increase Awareness Through Community and Media Events
- Build Education and Outreach Center

### Join the Action! Support SCCi

For more than 25 years, SCCi has provided opportunities for cave exploration, as well as hiking, photography, camping, and scientific study. SCCi owns some of the most beloved caves in the southeast to assure that future generations will be able to enjoy visiting some of the most beautiful places on and below the earth. SCCi also protect some of the most important bat habitats, caves with spectacular biodiversity, and important watersheds. To support SCCi, you can:

1. Join SCCi as a regular member for as little as \$25 a year! (Membership dues have allowed the SCCi to purchase or lease 31 preserves, over 140 caves, 1,465 acres in six southeastern states, and acquire over \$2 million in land assets. Please join us! [scci.org/join/](http://scci.org/join/)

2. Join the group of over 500 SCCi members with a sustaining membership. (SCCi Sustaining Members have helped meet the challenge of paying for acquisition, stewardship, preserve improvements, and administrative costs for over 2 decades). [scci.org/sustaining/](http://scci.org/sustaining/)

3. Donate to SCCi with a gift suited to your budget. [scci.org/donate](http://scci.org/donate)



Neversink at night by Reilly Blackwell, August 2017. A one-hour exposure captured the glow worms, and the light above is (believe it or not) lightning from two passing thunderstorms.



Kenamer Cave, AL

Nathan Williams



Bob Biddix



Ryan Mauer

Snail Shell entrance in flood, Tennessee  
Right: Byers Cave in Georgia



# Explore Our NSS Preserves

**Tom Griffin, NSS 24333, NSS Preserve Chairman and  
Curt Harler, NSS 22735, NSS EVP**

## Help Landowners Plan for Future Cave Stewardship

Landowners are increasingly concerned about liability. Sinkholes are filled in due to safety concerns. Untutored cave visitors adversely affect landowner relations. Landowners grow older and ponder the question, "What should I do with my cave after I move on in life?" To promote cave conservation and perpetual access, NSS members should contemplate, "What's going to happen to this cave when this landowner passes?" Cavers can partner with the NSS Landowner Relations Network Committee to approach landowners about perpetual access to their caves to ensure we all have caves to visit.

## Where to Cave?

As a grotto member, how many times has a new caver asked you, "Where can I go caving?" As you think back on your early days of locating caves, you think of how access has changed. You want to help this new member and teach them about responsible caving and encourage them to join the NSS. But, where can responsible cavers go?

## Do the Tour d'NSS!

In short, the Tour d'NSS is a visit to all of the NSS Preserves – or, as many as possible. The NSS currently owns or manages **16 Preserves**. As an NSS member, all of these caves are your Society's caves – your caves. Visit them! They are valuable resources to the NSS membership and the public. Although there are exceptions like bat closures (and Kingston Saltpeter is closed to sport caving), most welcome visitors year-round. You can find info on the status and location of NSS caves at <https://caves.org/preserves/>.

## Make the Rounds! NSS Members Can Enjoy NSS Nature Preserves

As an NSS member, all of these caves are your Society's caves – your caves. It is well worth the time and effort to visit all of the NSS Preserves. We hope to feature NSS Preserves in future issues of the NSS News, including photos. But to help you plan your Tour D'NSS, here's a checklist. How many have you hit so far?

- McFail's Cave Nature Preserve (NY)
- Shelta Cave Nature Preserve (AL)
- John Guilday Caves Nature Preserve (WV)
- Kingston Saltpeter Cave Nature Preserve (GA)
- James Gage Karst Preserve (NY)

- Warren Cave Nature Preserve (FL)
- Donald R. Russell Nature Preserve (OK)
- Schoharie Caverns Nature Preserve (NY)
- Mill Creek Sink Nature Preserve (FL) (aka Alachua Sinks)
- Tytoona Cave Nature Preserve (PA)
- Wells Cave Nature Preserve (KY)
- Great Expectations Cave Nature Preserve (WY)
- Richard Blenz Nature Preserve (IN)
- New River Cave Nature Preserve (VA)
- William J. Stephenson Nature Preserve (AL)
- Sims Sink Nature Preserve (FL)

## Buckner Cave Conservation — Richard Blenz Nature Preserve Anmar Mirza



Sam Frushour

Buckner entrance

The Richard Blenz Nature Preserve (RBNP) is an NSS-owned Preserve that was created when Richard "Dick" Blenz, long time NSS member, donated the property to the NSS. Richard bought the property in 1962, then moved to Bloomington and has lived on it ever since. Originally Richard had willed the property to the NSS but he decided to donate the property to the Society before his death.

Richard still lives on the property, and at a spry 93 years old, he gets around just fine. In 2005 the Richard Blenz Nature Conservancy, Inc. (RBNC) was incorporated by Richard Blenz, Patti Cummings, Sam Frushour, and Anmar Mirza to manage the property for Richard. The Preserve was created afterwards with the RBNC tasked with managing the property for the NSS. Anmar Mirza is both the property manager and the long-time president of the RBNC.

The Preserve contains 43 acres located west of Bloomington, Indiana and is located on the northern end of the Indiana cave country, which extends south to the Ohio River in the areas of Indiana not affected by Pleistocene glaciation. Most of the caves in Indiana are located in Mississippian Carbonates: limestones and dolomites that outcrop along the margin of the Illinois Basin of Indiana, Kentucky, and Illinois, and include Mammoth Cave. Rocks of this same age host caves across North America includ-

ing the Appalachians, Black Hills, Rocky Mountains, and Basin and Range. There are entrances to two significant cave systems on the Preserve, Buckner Cave and Queen Blair Cave, plus several other smaller caves and karst features. Buckner is a heavily trafficked and extensively vandalized cave.

## Buckner Cave 1770s to 1900

Buckner has a long history of visitation. The walk-in entrance is scenic and the first couple hundred feet of the cave is comprised of a large room terminating in breakdown with crawlways leading further in. Located at the head of a long valley holding two major springs associated with King Blair and Queen Blair caves, it is likely that Native Americans used Buckner as shelter, though we have no formal archaeological investigation. In the 1800s, the valley held at least two major settlements, with a gristmill at one spring and sawmill at the other. Only foundation stones for the mills remain as evidence of these settlements.

In the late 1700s a French explorer, LV Cushing, left the first graffiti in the cave, scratching his name and date on a rock about a thousand feet into the cave near the stream passage. A 1960s picture of the signature is unclear as to the exact date, but it looks like 1775 or 1795. There is also some evidence that explorers deep in the continental interior were not always clear on the year and may have used their date of birth instead. Either



Don Paquette

LV Cushing signature



explanation is plausible, as the LV Cushing for whom records were found would have been very young in the 1770s.

In the early mid-1800s the Blair family bought several thousand acres, including the valley that contains the entrance to Buckner. The valley came to be known as “Blair Hollow” or “Blair Valley.” In a room near where the LV Cushing signature was located, members of the Blair family also left their names and dates at various times in the 1840s, smoked in the ceiling with candles. In 1863 a “Cavenaugh” also left a signature there.

In the early 1900s, Geologist Clyde Malott first mapped the cave, using the local name of that time, “Blair Cave.” His map languished in the libraries at Indiana University for decades. In the 1950s members of the newly formed Indiana University Spelunking Club (IUSC), including Richard Powell who later authored “Caves of Indiana,” made an almost complete map of the cave. They named the area where the Blair and Cushing signatures are located the “Signature Room,” an unfortunate designation that seriously contributed to the mayhem that was to follow. Comparing their map with the Malott map, they rotated the two and noticed that it was the same cave. In the 2000s, the Indiana University Caving Club (renamed from the IUSC) did a modern-standards map of the cave, correcting several errors from the 1950s map and also renaming the “Signature Room” the “LV Cushing Room.”

Throughout the preceding paragraphs I have referred to these historical signatures as graffiti. In reality they are not graffiti, at least not according to modern connotations. According to the mores of the time, explorers of uncharted territories frequently left their mark to signify that an area had been explored, and landowners sometimes left their names. Though these practices

go against modern ethics of leaving natural areas as undisturbed as possible, I believe the historical facts of land ownership and initial exploration (of the time) demarcate a line between graffiti and historical record.

### Buckner Since 1962

In the 1960s, cavers started hanging out at the property after Richard bought it. Cavers from all over the Midwest, including cavers attending IU, would spend weekends exploring the cave and the surrounding area. Within a few miles there are dozens of caves and hundreds of karst features. One of those early cavers, Don Paquette who is still an active caver, took pictures in the cave before much of the vandalism and destruction followed over the next decades, including the LV Cushing signature picture mentioned above. By the 1970s, dozens of people were there every weekend, hanging out at the barn, dubbed the “Speleo Spot.” Richard and cavers had fixed up the barn with electricity and heat. It was a good incubator for experienced folks to mentor new cavers. Indeed, many big name and famous cavers got their start caving at Buckner.

Alas, this golden era of caving at Buckner was drawing to a close. In the mid 1970s, Doug Love published “The Spelunker’s Guide to the Garrison Chapel Valley” which had locations and cave maps. All of those locations were on private property and most of the landowners got really tired of people showing up at all hours and trashing their property. By the late 1970s the cavers in the area got disgusted with the huge influx of people and largely stopped coming, especially as new frontiers were opening up in other parts of the country. I first visited the property in 1983 as part of my 8th grade science teacher’s trip. By then the barn had been heavily vandalized and cavers were no longer hanging out there. Instead the era of the “spelunkers” had started.

Through the 1980s and 1990s and into the early 2000s a typical weekend might see a hundred or more visitors, coming at all hours, mostly to party away from the authorities. The cave constantly reeked of spray-paint and sewage. Local cavers would attempt to clean up the cave periodically—we’d bring out a dumpster load of garbage and within a week we couldn’t anything had been done. I was doing weekly trips in the cave, sometimes twice a week, and watched the destruction increase. I would try to educate where I could, but even when I found people vandalizing, Richard was reluctant to pursue prosecution because he feared retribution. On numerous occasions I was threatened by people I tried to stop from vandalizing, but luckily, as a very fast caver intimately familiar with the cave, I could easily get away from the folks trying to harm me. It amazed me—the effort people put forth to drag cases of beer thousands of feet into the cave (and of course they couldn’t be bothered to take out their trash).

The other consequence of all of the unprepared and frequently impaired people visiting the cave was the number of rescues. At least once a month we were called out because someone was overdue or injured. The majority of those people were impaired. We even joked that the cave was “self-rescuing” because lost or out-of-light people only had to wait a little while before another group would come along and set them on the right path. People would paint arrows in the cave which quickly became useless because there were arrows pointing both directions down every passage. We took bets on where we’d find people lost in the cave. Over that time period I participated in over a hundred rescues at Buckner Cave. Usually we’d get called Sunday evening or Monday morning when the last group in the cave was the one that got in trouble with no one left to come along and redirect them. Hundreds of people



Sam Frushour

Sandblasting in a canyon passage



Jesse Deli

Using the sandblaster to remove paint markings





Elliot Stahl

Layer upon layer of spray paint tags in the Signature Room



Dave Everton

The Signature Room after graffiti removal

per week were visiting the cave—Richard had been working two jobs through the 80s and 90s, so he was not home to manage the place.

### Richard Blenz Nature Conservancy—2005 Forward

When the RBNC took over management of the property for Richard, one of the first priorities was to curb unchecked access to the cave. A long time caver, Art Gaheimer, who intermittently lived in his truck on the property, mostly put a stop to the surface partying, and slowed the in-cave vandalism. We instituted an online access request policy, locked the gate at the end of the road, and braced ourselves. For several years the number of complaints from people who felt they had a right to be on the property was staggering. Art would turn away people who did not have permission. We did grant permission to anyone who requested and agreed to follow the rules for access to the property, and as I was doing a weekly trip through the cave on Mondays (my Monday night trip has been continuous as a regular thing since 1999), I was able to track new problems with visitors. Art disappeared after a year or so (Art was a free spirit and prone to wandering the country), but the worst of unauthorized access had mostly stopped.

Now that we were starting to get a handle on the problem, we felt we could make a concerted effort to clean up the cave. We would never be able to restore the destroyed formations, but we could work on removing garbage and graffiti. Ray Keeler lent us the sandblasting equipment they were using out in Arizona, and Dave Everton headed up the graffiti removal project. The Monday night crew had been using wire brushes and spending 15-20 minutes every trip to remove some graffiti, but with sandblasting equipment we were able to remove it much more quickly, and more importantly, it was the only way to remove spray-paint from the gypsum crust in parts of the cave. We did

not have enough air hose to get more than a couple of hundred feet past the T-room so the back part of the circle route was not yet de-graffitied.

The big priority was the infamous “Signature Room.” Right off the T-room, it was a natural place for people to go. A map copied from Doug Love’s book boldly labeled it “Signature Room.” The untutored interpreted that as ‘Sign Your Name!’ We renamed the room the “LV Cushing Room.” As cavers, we normally try to honor the original naming, but in this case, the interests of conservation took precedence. In this room there was an area Dave Everton dubbed “The Wall of Shame.” It contained so many layers of spray-paint that at one spot I measured a quarter-inch thickness down to the bare rock. The entire room was covered so densely with graffiti it was difficult to read most of it. The LV Cushing signature was long gone, and the Blair family signatures were getting covered over. So the sandblasters could reach the upper parts, I built scaffolding in the room, dragging in lumber through the crawlway over several Mondays. How graffiti got to some of those high places still amazes me.

After a couple of years, Dave was starting to burn out on managing the project, so Bill Baus took over. When Richard first bought the property he dug a shaft 40 feet into the Volcano Passage and contemplated building his house inside, but abandoned that idea. The shaft had long since collapsed, but Bill started auguring a hole from the top and he and I “removed” a few rocks from the bottom and inserted a PVC pipe, through which we ran hose for the sandblaster and power for lights. After a couple of years the pipe got crushed, but the power still worked, so Bill dismantled a small, cheap shop compressor, brought it into the cave and continued the work. About the time the Volcano Passage was done, the compressor died. To this day, Bill still leads groups in to wire brush graffiti. We estimate that less than half of the total graffiti in the cave has

been removed ... we ARE making progress!

During all of this time, we continuously removed garbage. By some estimates, over ten thousand pounds of rubbish has been removed from the cave! No major garbage is still visible, but it’s still easy to fill a cave pack with trash from cracks and crevices. The amount of broken glass is staggering.

### Education Over Prosecution

Though we have largely eliminated the vandalism, with a couple thousand visitors per year who have permission, and a few more who sneak in, we still have one-to-three incidents each year. When we manage to identify a culprit, we give them the opportunity to make amends or face prosecution. If they do not respond we place them on a “no access list.” We hold the trip leader responsible for the actions of people on the trip, and every person on the trip is also placed on “the list.” If they choose to make amends, then we supervise while they spend several hours cleaning the cave, including their own vandalism. If they do this and seem to be truly contrite then we consider the slate wiped clean. We’ve managed a few prosecutions from people who chose not to make amends, but it can be tricky to prosecute because it can be hard to prove who did it. Unless they are caught or admit to it, we can’t act.

We vastly prefer education over prosecution. First, people who make amends and are truly contrite often become staunch protectors of resources. We find that most people really don’t know that what they did was wrong. A small percentage do their vandalism maliciously and simply need to be punished and denied further access. Prosecution has not done much direct good—the miscreants just get fined and often have to do community service, but we still have to clean up after them. We work very hard to manage Buckner so that people, not just the few who are part of the caving community, but all people who will



responsibly enjoy the cave can have the best experience possible.

Managing and protecting a resource like Buckner takes ongoing effort. Not only does it require our presence on the property, it requires people who regularly go into the cave who can quickly find new issues and hopefully identify the culprits. It requires constant education of the ignorant and

exclusion of the malicious. I have no doubt that if the public were once again allowed unfettered and unsupervised access to the cave, it wouldn't take long for all our work to be undone. Though Buckner will never be pristine again, it's a much nicer place to visit than it was during the heyday of the vandals.



Jess Dell

## Virginia Region Sinkhole Cleanout Project – Awesome Collaboration

*Janet Tinkham*

Virginia Cave Week is sponsored by the Virginia Cave Board (VCB), and offers an opportunity to promote understanding of Virginia's caves and the surrounding limestone karst habitats.

Each year a different area of focus is chosen for Virginia Cave Week with educational materials and activities organized throughout the state. The theme for 2016 was "The HOLE Truth About Sinkholes!" The objective was to increase education and awareness of sinkholes and their management. Efforts began with a plan to identify potential sinkhole cleanout projects and collaborate with landowners to get the work done.

A 2016 project in Rockingham County, Virginia was referred to us. Huckleberry Hollow Farm is a 47-acre property purchased by the Wastie Family in 2014 with a sinkhole that the previous owners told them was used as a dump. The Wastie Family contacted the Virginia Department of Conservation and Recreation (DCR) Karst Program, eager to discuss logistics of how to proceed with cleaning it out.

### Assessment and Phase I

In April 2016, volunteers from the Virginia Region of the National Speleological Society (VAR) and the Cave Conservancy of the Virginias met with the Wastie Family for initial assessment of the sinkhole. Covering the sinkhole was a huge mound, appearing to be mostly wood, brush, and some concrete blocks. Not knowing how deep or what material was buried underneath the brush, we decided to begin Phase I with pulling off the upper layer of wood, cutting up and stacking what could be used by the owners in their wood stove, and burning the rest in an area 100 yards away from the sinkhole.

Volunteers began preliminary work organizing a system to transport debris to the burn pile and firewood stack. Curious cattle hung around amusing us and dropped fresh cow pies strategically in the work area.

April 23, 2016 was the first major workday with 28 additional volunteers arriving from the caving community. The weather cooperated for the most part, other than a

brief downpour when we all huddled under a canopy, telling jokes and amusing the reporter/photographer from the Daily News Record. We hoped the media coverage would encourage contact from other landowners with potential sinkhole projects

The crew pulled brush, wood, stumps, cinderblocks, planks, pallets, and wire from the sinkhole. We found parts of dismantled buildings, as well as a wheel frame from a Model A Ford and printing plates from a 1981 issue of the Daily News-Record. Phase I of the Sinkhole Cleanout Project resulted in a huge amount of removed material. Unfortunately, a mandatory burn ban prohibited brush burning, so the piles we created waited for Phase II.

### Phase II

After a busy summer at Huckleberry Hollow Farm that included the extremes of sinkhole flooding conditions to a more recent dry spell with looming burn ban restrictions, we continued with Phase II of the Sinkhole Cleanout Project in November.

Fifteen volunteers spent the day pulling massive amounts of barbwire and rocks from the sinkhole and burning the brush pile. As the sun began to set we realized that we accomplished all we could do at that time. When the project first began, the history and size of the sinkhole was not known. It became obvious during this work day that the sinkhole was deeper than realized and a backhoe would significantly expedite the process. The Cave Conservancy of the Virginias provided funding support.

During the week of Thanksgiving, the backhoe contractor worked on the sinkhole for a number of hours. We made progress, but unfortunately, digging deeper uncovered a lot of plastic and other materials. This news was disheartening—the sinkhole is an obvious drain during significant rain events and this material had potential to contaminate the groundwater.

Spring 2017 brought the return of the backhoe. Again, teams pulled buckets of debris out of the sinkhole which continued to get deeper and deeper. Subsequent work involved separating materials, hauling and

disposing of them properly, and securing fencing around the sinkhole to insure safety of farm animals.

Plastic was taken to the transfer station up the road since it was beyond being recycled. The wood was hauled down to the lower pasture and arranged in piles to be burned. Concrete will be hauled to the landfill at some point and they will waive fees and recycle it. Our best news was discovering that Rockingham Scrap Metal would deliver and pick up a metal bin at no charge. It was almost completely filled with old degraded fencing and miscellaneous metal stuff. The deal was that the first \$50 made in metal would go to the scrap metal company and anything over that would come back to Huckleberry Hollow Farm.

### Karst Groundwater Outreach

Tremendous progress was made to date with most trash removed from sinkhole and design discussion initiated for a fence to keep the farm animals from falling into the hole.

Why so much detail for something as "unglamorous" as a sinkhole cleanout project? To share information and build resources that will support these conservation projects. It's so important for the environment and protection of groundwater to increase education and awareness surrounding sinkholes and their management. Let's work together to identify potential sinkhole cleanout projects and build collaborations with landowners to get the work done.

A huge thank you goes to the amazing volunteers assisting with this Sinkhole Cleanout Project and to the landowners for being so conservation minded. In addition, we appreciate the collaboration/resources offered through the following organizations:

Virginia Region of the National Speleological Society <http://var.caves.org/>

Cave Conservancy of the Virginias <http://www.caveconservancyofvirginia.org/>

Huckleberry Hollow Farm <https://huckleberryyhollowfarm.com/>

Virginia Cave Board <http://www.dcr.virginia.gov/natural-heritage/cavehome>

Virginia Cave Week <http://vacave-week.com/>



# NSS Sims Sink Nature Preserve 2017 Conservation Activities

**Buford Pruitt, Jr.**

The Sims Sink Nature Preserve, located in Suwannee County, Florida, became an NSS Preserve in 2016. This property contains the underwater Sims Sink Cave, which is known to host five species of stygomorphic crustaceans including the Santa Fe Cave Crayfish, *Procamburus erythropros*. The latter is classified by the Florida Natural Areas Inventory as G1/S1, which means it is critically imperiled globally and in the State of Florida.

Since protection of this valuable biological resource is paramount, no recreational cave diving is allowed in its chambers. Visitation is currently limited to mapping surveys and research projects. Please contact me if you wish to collect data from within the preserve. An article in the April 2016 *NSS News* contains a brief cultural history of the resource. Photographs of the site and its management plan are on the NSS Website's preserve pages.

## Platform Removal

A small group of motivated NSS cavers met on site over the February 18-19 weekend in 2017 and accomplished several important goals. The most important mission of the weekend was to remove the rotten coal-tar creosoted wood platform that covered the throat of the sink. Jeopardizing cave biota as well as research scientists, the platform was completely removed by Tevis Kouts, Allen Mosler, Derek and son Billy Penkava, Matthew Bull, Breeanna Jacobson, and me.

The platform was covered by a layer of organic sandy sediments up to 18-inches thick that were held together by a web of tree roots. The sediment mat had to be removed before the platform could be taken up, and doing so was arduous. There was no convenient place to put the dirt or easy way to transport it from the sink, and workers had to toil atop the rickety platform while remaining constantly alert to its gaps and the potential for falling through its rotten boards. Fortunately, there were no mishaps and we were able to place most of the platform's sediments behind a dam that we constructed of logs from laurel oak thinnings. Tree roots will tie the log dam and sediments together and stabilize the spoil during the next year or two.

The sodden timbers of the platform were heavy enough to create a second ordeal. Although the 2x6- and 2x8-inch boards were only 8- to 10-foot long, they were heavy and required two people to haul them up and out of the sinkhole. One (untreated) cedar log used as a timber weighed 200+ pounds, so we elected to

leave it right there and use it as part of the landscaping. Fortunately, after drying out topside for a few weeks, the two-byes were much lighter when Tevis and I later loaded them onto a trailer. He then transported them to a county landfill.

## Gate Access

The platform's numerous holes also meant that a fair amount of sediment fell into the sink's waters as we shoveled it off. We consoled ourselves with the fact that all of the fallen sediments would have gone into the cave anyway if the platform had not been there in the first place. Sinkholes form and sinkholes fill up – it is a natural process – and the cave's inhabitants will use this environment as with any other in only a brief geological window of time. However, the spacious cave below can hold a lot more sediment, and planned additional stabilization measures should provide the little beasts with at least several more centuries of habitat.

Kouts put his experience with chain-link fencing to good use by relocating the double gate from the south side of the preserve to the west side, aided by Bull. It was previously not possible to drive into the preserve's fenced area because the gate was originally placed beside the steepest part of the sinkhole! With the gate moved, vehicular access is now available.

## Santa Fe Cave Crayfish

To test my theory that the large number of crayfish in the cave is a result of a now-dispersed bat colony, Matthew Bull collected a sediment sample from under an air-filled dome located beside the cave's entrance and I made a cursory investigation of the ceiling of that dome. However, the sediment sample was devoid of bat bones and guano and the dome's ceiling exhibited no obvious evidence of bat usage. It is possible that sedimentation over the last 80 years has buried any benthic evidence of bat inhabitation. If so, then samples from deeper layers that we collect in the future might provide positive evidence. More research on the ceiling is also warranted.

## More Conservation Action

Over the next several weekends, I thinned out some of the weedy and invasive laurel oaks (*Quercus hemisphaerica*) and black cherries (*Prunus serotina*) so that multiple vehicles can park inside the fencing. I also shoveled several dirt spoil piles into small depressions so that research vehicles can now drive to the edge of the sinkhole.

I then planted seedlings of several species of mature-forest hardwoods: Shumard oak (*Quercus shumardii*), pignut hickory (*Carya glabra*), and sourwood (*Oxydendrum arboreum*). I plan to install additional native species around the sinkhole over the coming years, including more of the above-mentioned tree species, other tree species, woody shrubs, and herbaceous plants.

Other conservation actions completed on the Sims Sink Nature Preserve in 2017 included:

- Matthew Bull worked on an in-cave survey to prepare a map of the cave, supported topside by his wife, Michelle. Bull also documented that two nearby solution pipes (karst windows) that descend to aquifer waters do not tie into Sims Sink Cave.
- Kelly Jessup removed old dive lines and replaced them with new lines that will allow multiple researchers to make repeatable census counts of cave crustaceans over time.
- Lisanne Aerts obtained underwater in-cave photographs that are now on the NSS Preserves Website.
- Kelly Jessup and Adam Hughes made a reconnaissance dive into the cave to evaluate potential water quality and crayfish census methods. Jessup used a Hydrolab sonde to collect physical water quality data on dissolved oxygen, temperature, oxidation-reduction potential, pH, and conductivity.
- Bill Streever made three visual counts of crayfish on June 30, 2017, revealing a mean count of 121 (S.D. ~15). Streever also noted that there was a reasonable distribution of sizes except for an absence in the <1.5cm size class, and that all were *Procamburus erythropros*. Streever's counts were significantly lower than Dick Franz's 1980s mark-recapture estimate (~500) and Streever's 1990s visual count (~200).



Tevis Kouts and the platform before removal



# Appalachian Cave Conservancy 2017 Conservation Activities

**Buford Pruitt, Jr.**

Members of the Appalachian Cave Conservancy (ACC), the second-oldest NSS Conservancy, conducted conservation work during 2017 in Perkins Cave and Daniel Boone Cave.

**Perkins Cave** in Washington County, Virginia, is on a farm owned by NSS members John and Mary Wilson. Four trips were made to the property in 2017, three of them being re-survey trips on March 17-18 and June 17. A total of 5,173 feet was measured by twelve cavers: Jason Lachniet, Amy Skowronski, Steve Ahn, Nick Socky, Carlin Kartchner, Elliot Edling, Janet Manning, Michael Johnson, Eric Cueva, Bill Grose, Caleb Taylor, and Zach Taylor.

On November 4, a trip to clean up the Perkins Cave field house was made by five

ACC/NSS members: Ellen Hofler, Janet Manning, Steve Bowers, Jason Lachniet, and me. Three trips to a county waste station were made to dispose of a variety of trash items, including paper and plastic, rotten furniture, and old tires collected during a previous cave entrance clean-up. We hope this work will make the field house more enticing for overnight stays associated with surveying and conservation activities.

**Daniel Boone Cave** in Scott County, Virginia, is owned by caver-friendly Milton Starnes. ACC Board member Bill James has been working with Starnes for many years, leading the installation of the cave's entrance gate, organizing cleanups, and helping the owner work with National Geographic to make a video of the cave. For several years,

university researchers have monitored the cave's water quality because of its unpolluted nature. This year, Starnes approached ACC members about doing a mop-up survey in the cave and setting up long-term arrangements for the cave's management and ownership. Both of these activities are expected to occur in the summer of 2018.

This year, the NSS Landowner Relations Network Committee awarded Starnes a Certificate of Appreciation thanking him for his very positive attitude toward ACC and its members.

Steve Bailey recently made in-cave photographs of Daniel Boone Cave to use on upcoming ACC conservation and fund-raising trifold brochures.

## Colorado Volcanic Cave Cleanup

**Donald G. Davis**

Bar-E Cave, in an isolated spruce-wooded mountain ridge on private property at 9,000 feet elevation in Routt County of northwestern Colorado, is a strange volcanic cave unknown to organized cavers until 2016, when a recon and then a survey trip were made. It is not a lava tube. A high-angle funnel-like pit in the flank of a brecciated basalt dike, requiring a 70-foot rappel to descend, opens into a large room nearly 100 feet long, shaped mainly by subsidence of breccia and stopping upward into Tertiary sandstone adjoining the dike. It is unlike any other known cave in Colorado, and was apparently created (probably several million years ago) by venting of volcanic gases and sinking of rubble after a brief explosive eruption. (See my interpretive report in *Rocky Mountain Caving*, March 2017, for a detailed account.)

Unfortunately, the cave, though fascinating, was not pristine. Former owners of the ranch had seen fit to back trucks up to the saddle above the pit, and dump tons of trash into the cave (starting perhaps as recently as ~1990). The largest items were three full-sized refrigerators, two of which had wedged in the narrowest part of the pit's throat and were overridden by smaller refuse, leaving an opening barely large enough for a rappelling caver to pass (and below the near-choke's overhang, cavers on rope had to carefully avoid a detached refrigerator door perched precariously on a 70° rock wall). When in the big room below, it was evident that the chamber had at some time flooded up to 15 feet deep, and thousands of lightweight items had floated and were redistributed around most

of the room. There were so many aluminum cans on one breakdown slab that I named it "Bauxite Beach." One of the refrigerators was rusting in two-foot-deep water in a residual pond at the low point of the room.

Some of the cavers decided to take on the daunting task of cleaning up the cave. Hosted by the landowner's neighbors Tim Julian and Dana Kerns, Mike and Donna Frazier assembled a team of 15<sup>1</sup>, and in September 2017 brought a truck with a heavy-duty winch to the saddle, as well as hauling rope to pass through a pulley rigged 15 feet up in a spruce overlooking the pit. The biggest and most challenging items were the refrigerators. Starting with the highest, these were each disentangled from snarls of discarded fence posts, wrapped in straps, and were slowly and carefully cable-winch up the steep slope a few inches at a time, with cavers on rope beside them to handle hang-ups. The appliances were brought back to the parking area without mishap.

Meanwhile, once the choke point had been opened large enough, other teams down in the cave filled many heavy-duty black plastic trash bags with smaller items, which were dragged up manually by surface workers using rope and pulley. The trash was loaded into a large flatbed trailer for disposal in the county dump. This went on until late in the afternoon, when a halt was called.

We made significant progress, but a large trash deposit remains in the cave, and it's likely that additional cleanup trips will be made in future summers (the area is snowed in during winter). The event was a sociable and fun trip, with everyone working well together, and gave more cavers who hadn't been there the previous year the opportunity to see and puzzle over one of Colorado's more bizarre, peculiar caves. (Even though small, with 66 feet of surveyed depth and 158 feet of length, Bar-E Cave is actually the state's longest and deepest recorded cave of volcanic origin.)



**Descending the 70-foot entrance drop**

Josh Berthiaume





Josh Berthiaume



Donna Frazier

Left and above: Donald Davis, Ken Headrick, Paul Mozal, and Matt Holcomb guide the ropes from above while Mike frazier prevents the refrigerator from snagging on obstacles coming out of the pit.



Donna Frazier



Donna Frazier

A good haul but much more trash remains to be extracted in the future.

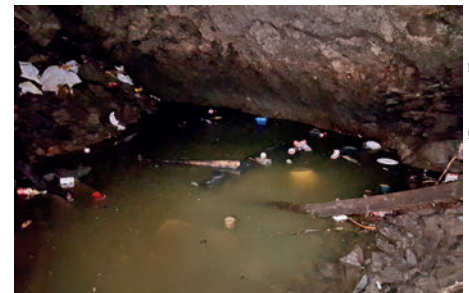


Donna Frazier



Josh Berthiaume

Donald Davis discovered that the light bulb from the 1990s-era fridge still worked (but not for long)!

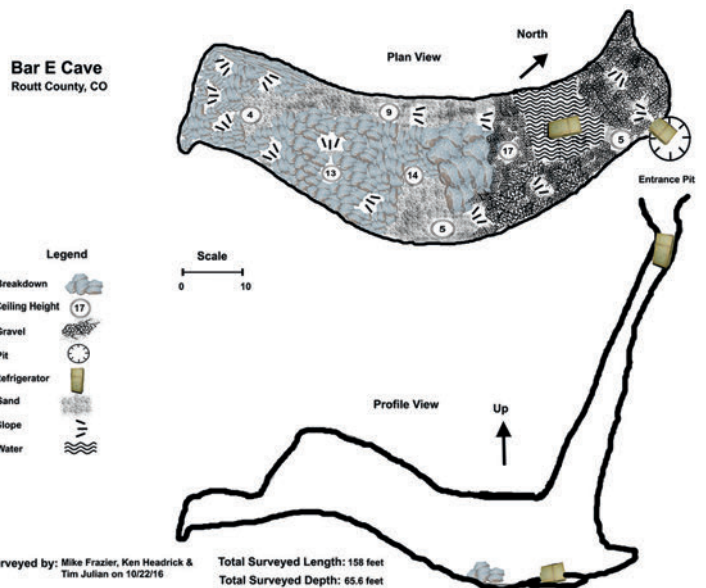


Donna Frazier

As Donald might say, this scene below the drop is "vile, foul, and disgusting." Much of this was removed.



Mike Frazier wrestles with an appliance





# Peppersauce Cave Conservation Project: Graffiti Removal and Restoration 2017-2018

Ray Keeler NSS 23245 rckeeler@cox.net

Peppersauce Cave is located in southern Arizona on Forest Service land. The cave has approximately 7300 feet of passage and is the most visited wild cave in Arizona, with an estimated 15,000 visitors per year. Because there is no regular on-site management of the cave and the cave has easy access, it is tagged heavily with spray painted graffiti.

Central Arizona Grotto (CAG) and the other Arizona grottos, cavers, and university students are engaged in removing all of the graffiti in the cave. Two large trips were completed in September and November 2017, with four more trips planned in 2018. During these two trips between 250 and 300 tags were removed, with some of the graffiti being quite large. Additionally the two panel kiosks outside the cave was restored and reflective "OUT" signs installed high on the ceilings and walls.

## Mobile Peppersauce Graffiti Blaster

For graffiti removal, a trailer-mounted compressor with 1200 feet of 3/4-inch high-pressure hose was parked on the forest service road. The hose extended 300 feet up the canyon to the entrance and through passages to work sites inside the cave.

For these trips the large hose goes to a regulator and the compressed air is split out into three 3/8-inch diameter hoses. These smaller pressure hoses allow sandblasting by several teams to remove graffiti tags in separate work areas. Blasting media is composed of small glass beads. Tarps are utilized to restrict media spread and to collect the spent media for removal from the cave. Personnel are rotated in with additional equipment in order to prevent interruption of the removal process.

Communication between the cave and the surface is completed through military field telephones. The surface-to-worksite telephone is critical for efficiency. For example it allows the in-cave teams to send requests for needs to the surface (send more blast media or notify them the lights are not working). The phone allows the surface to notify the work teams ("Relief cavers are coming in, do you need anything?" and "Group of tourists coming.")

Power for lighting the operation is provided via a generator on the surface with extension cords running through the cave to each work site (1900 feet of 12-gauge extension cords). Additional graffiti removal is accomplished using an acceptable biodegradable solvent with brushing. Tarps are used to reduce solvent from reaching the cave floor. Bristle brushes are used to remove the graffiti. Cave water is used to dilute the biodegradable solvent and towels are used to wipe away as much graffiti and solvent as possible from the rock.

Spray paint has evolved. Sandblasting and biodegradable solvent are both necessary to remove graffiti. There are some types that do not abrade away with sandblasting (acrylics and rubberized). There are others that do not come off with solvents.

Personal protective equipment (PPE) includes goggles, dust masks, face shields, gloves, latex gloves, helmets, and lights for those that do not have them. Other equipment includes tarps, towels, buckets, spray bottles, and tubs to carry equipment.

Untutored visitors enter Peppersauce every day. Many of the spray painted tags are arrows. People do not want to get lost. To reduce the need for these arrows, we are



Brian Mc Millan sandblasting in Third Room (B. Lusk)

placing "OUT →" reflective signs. Fourteen have been bolted high on the walls and ceilings using an extension ladder and placed out of reach wherever possible. The "OUT →" signs use white, highway grade reflective sign material (donated) with green reflective lettering.

The placement policy has been simple. Each sign has to be seen from the previous sign, placed out of reach the sign wherever possible and bolted substantially into the wall. People will bring in ladders and claw hammers to steal them. To put sign placement in more realistic terms, **the signs in the cave need to be seeable by someone who can see only with a cigarette lighter, and is drunk.**

## Tips and Lessons Learned

Some things that have been learned to help the project include:

- Safety is first. No sandblasting takes place without eye protection for everyone nearby. Period! When tourists



Sandblasting with protective gear and tarps (R. Keeler)



2nd Room. Exit crawl shown along with 30ish tags (R. Keeler)





Kiosk Restoration, Jeff Stevens (R. Keeler)

pass through, the sandblasting stops, which allows time for a conservation message.

- Retagging will happen, so we schedule for, and address it each trip. To make the second cleaning easier, we put a thin “venire” on areas that have had tags removed; cave water with a very little bit of mud to make water cloudy is painted onto the bare rock. This little bit is of great help farther along in the project.
- Surface signs around the cave parking area will be tagged. Tags come off with rubbing alcohol. Spray WD-40 on the

sign and wipe to a thin layer. The next tag will not stick to the sign and can be removed with rubbing alcohol.

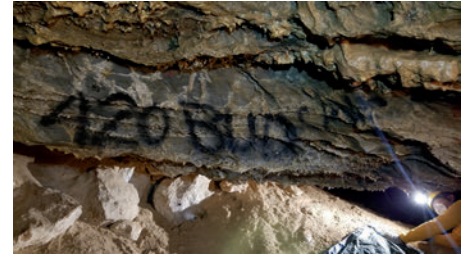
- Television media is being notified for the February trip. This will help get the word out to the local visitors.
- The spent blast media that is collected on the blue tarps is removed from the cave. Approximately 75% to 80% can be dried out, sifted to remove debris, and reused.
- Always look for more volunteers. In addition to cavers we are using Arizona State University Outdoor Club (AOC) students. They are young, very energetic and willing, but lack caving equipment.

At this point the project has generated over \$28,000 in volunteer value to Coronado National Forest.

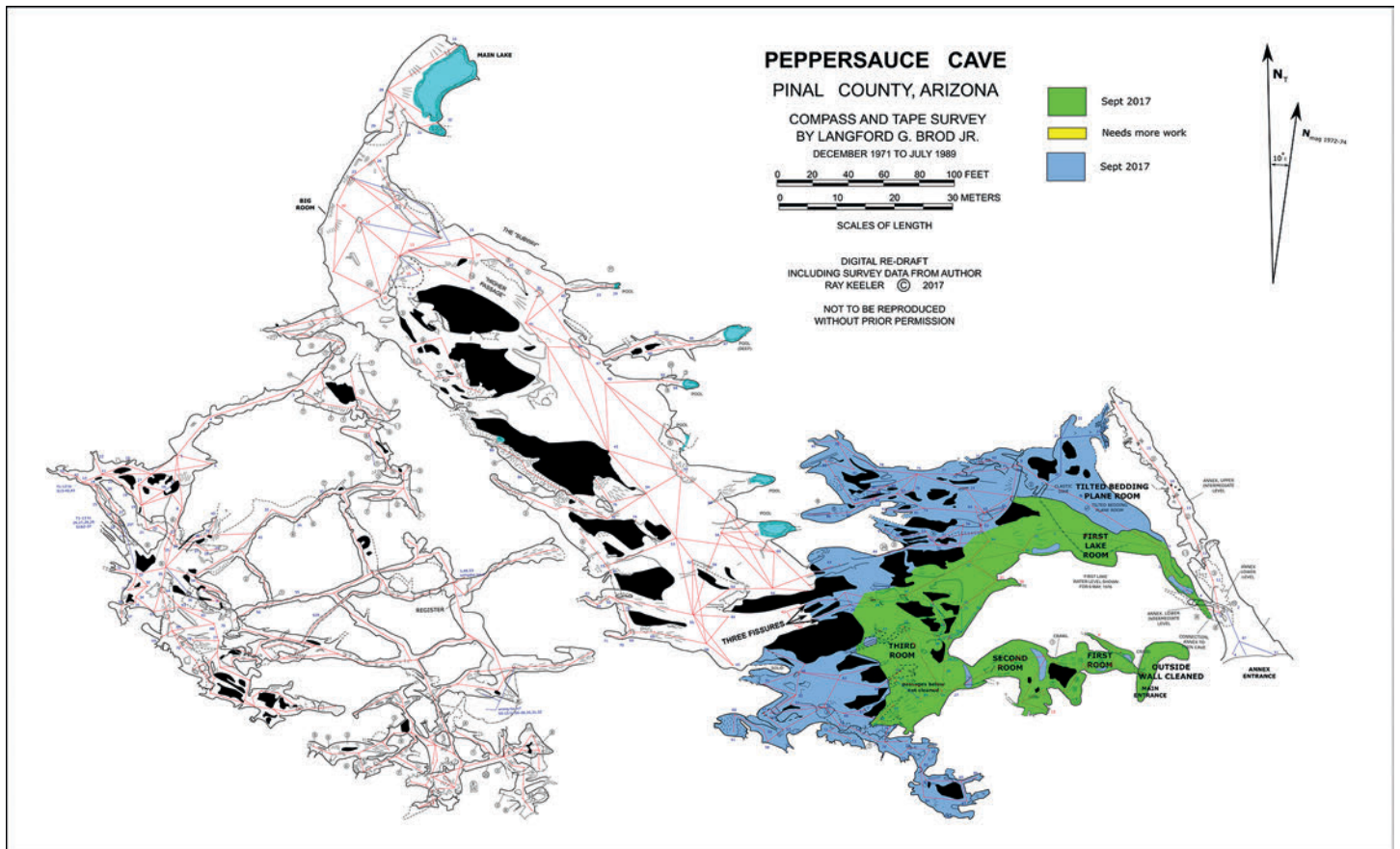
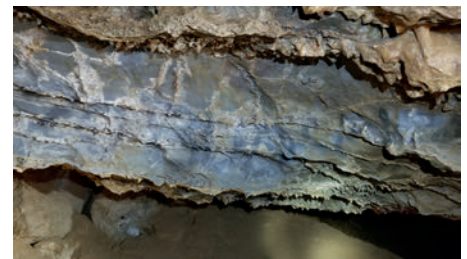
The upcoming graffiti removal weekends are set for February, April, June and (probably) August 2018 to hopefully complete the project. For more information please contact Ray Keeler at [rckeeler@cox.net](mailto:rckeeler@cox.net).



Cleaning graffiti in First Room. (B. Lusk)



Before and After (B. Lusk)



Peppersauce progress September through November 2017 shows graffiti removed during the first two trips. Between 250 and 300 tags were removed.



# Conserving Montana's Mystery Cave: Exemplary Partnership Between a High School Group, a Grotto, and a Federal Agency

*Hans Bodenhamer*

It is fortunate for Montana's bats and cavers that White Nose Syndrome has not yet reached Montana. It may yet make it here, but in anticipation of its potential arrival cavers, cave managers, and wildlife biologists are working together in strong partnership to help conserve bat populations, nonrenewable cave resources (such as speleothems), and provide for appropriate recreational use of caves. Developing the conservation and management of Mystery Cave in the Pryor Mountains of southwest Montana is one example of how cave conservation partnerships in Montana benefit bats, caves, and cavers.

## Conservation Monitoring Partnership

Mystery Cave is one of the most important bat hibernaculum in Montana. Over 500 bats depend on the seclusion and stable cave climate for hibernation. Mystery Cave is currently closed to most visitation due to concerns that White Nose Syndrome might spread to Montana. In early 2015 the Bigfork High School Cave Club and Northern Rocky Mountain Grotto proposed to establish monitoring for speleothems and other nonrenewable features. The cave is primarily managed for bats. Yet, the Cave Club, Grotto, and BLM decided the monitoring project would encourage a more holistic approach to the management of Mystery Cave and increase awareness of the spectrum of sensitive resources within the cave.

In addition to being an important bat roost, Mystery Cave is one of Montana's most beautiful caves. Sadly, some of its speleothems have been damaged and worn by visitors. Because the Cave Club and Grotto have been instrumental in helping cave managers and wildlife biologists develop statewide data on cave bat hibernacula, and all entities have worked in partner-

ship as members of the Montana Bat Working Group since 2011, the joint monitoring proposal from the High School Cave Club and the Grotto was quickly approved.

Monitoring work was conducted in September of 2015 when the hibernating bats were not present. All gear taken into the cave was decontaminated prior to entering the cave to insure the fungus that causes WNS was not inadvertently introduced to the cave. Based on photo and mineral monitoring, and a damage classification system developed by the BHS Cave Club, speleothems throughout Mystery Cave are on the average rated as "lightly" damaged. Most of the mineral deposits show no observable damage, and there are only a few areas where some deposits are rated as "heavily" and "severely" damaged.

## Restoration Management Partnership

In late 2015 the Cave Club and Grotto proposed a second project to the BLM to restore damaged flowstone, remove graffiti, install markers to close a few areas, and establish trails through others where speleothems are exceptionally fragile and beautiful. Mystery Cave sits at an altitude of nearly 8000 feet above sea level. Consequently, early snows in the fall of 2016 and lingering snows in the spring of 2017 prevented access to the cave and the project couldn't be undertaken until mid-summer of 2017.

On July 3 and 4, 2017, members of



the BHS Cave Club and Northern Rocky Mountain Grotto and staff of the Bureau of Land Management spent a combined 150 person-hours on conservation activities in Mystery Cave. Project participants divided into three teams. One team removed graffiti, another cleaned mud-tracked flowstone, and the third installed boundaries to mark closed areas and trails.

Almost all graffiti was removed using locally collected water, spray bottles, backpack sprayers, and stainless steel brushes. Only a few spray paint graffiti were not completely removed because the graffiti removal team ran out of water.

We cleaned flowstone in eight areas in the cave using locally collected water, nylon brushes, nylon sponges, bottle sprayers, and backpack sprayers. The cleaning was most effective on nonporous calcite flowstone, where cleaned flows were left sparkling with no remaining trace of damage. For porous moonmilk flowstone, the results were not as satisfying. After cleaning, the porous flows still remained slightly stained and showed



Closed area in Mystery Cave



Establishing mineral monitoring in Mystery Cave



Graffiti removal

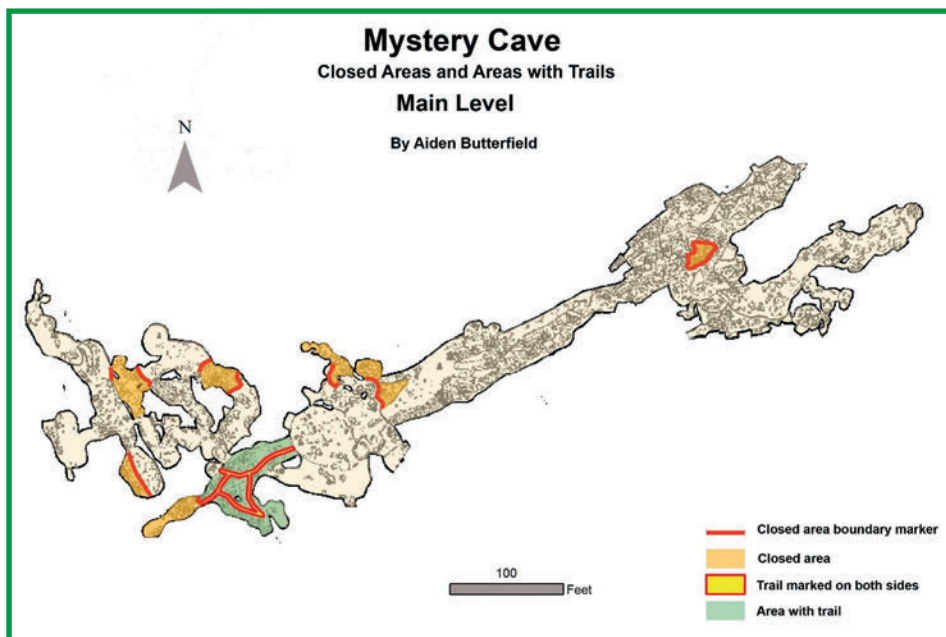
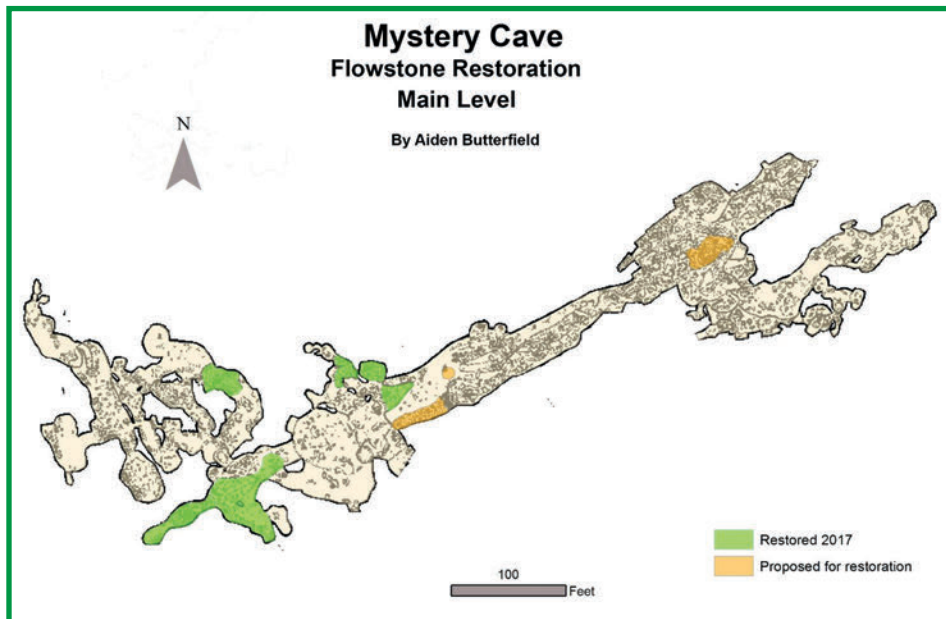
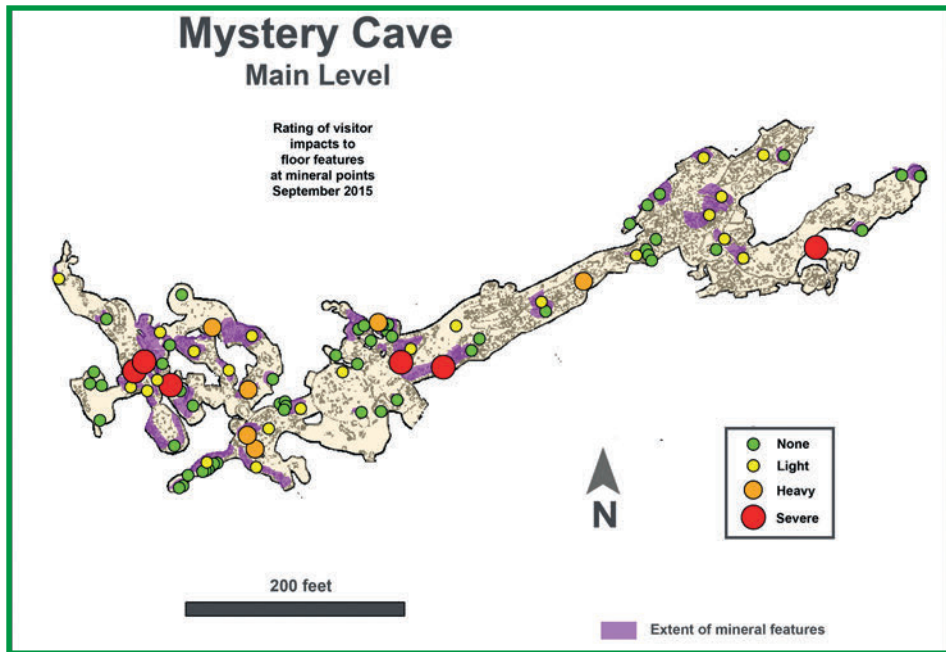


some faint trackways, although the overall appearance was greatly improved.

We selected seven areas in the cave for closure and one area for trail installation. For most of closed places it is possible to view speleothems within the area without entering it. The boundary of closed areas and both sides of trails were marked with 18-inch long garden stakes and nylon parachute cord. To install the garden stakes, we drilled small holes about 3 inches into flowstone or bedrock. We inserted the stakes into the holes and strung parachute cord between them, fastening to each with nylon cable ties. The garden stakes and parachute cord works well in Mystery Cave because they are sturdier and more aesthetic than the plastic surveyor's ribbon that is typically used. They also are biologically inert and can be easily removed if a problem develops.

### Future Management Plan

In the wake of the monitoring and conservation projects at Mystery Cave, the BLM is in the process of drafting a management plan for the cave. Because it is one of the most important bat hibernaculum in the state, management of the cave for bats will take priority. However, recreational visitation will probably be permitted at times of the year when bats are not hibernating in the cave roost. Permitted recreational use will likely be through guided tours conducted by approved grotto members, concessionaires, or others trained in appropriate caving conservation practices and etiquette. Data from future monitoring of cave resources and bat use and other will advise adjustments to the frequency of recreational use. Decontamination of caving gear to mitigate the spread of White Nose Syndrome will be a continuing requirement for all who enter the cave. Although Mystery Cave is not the first or last partnership project, the resource monitoring and conservation work completed by the Cave Club, Grotto, and BLM do provide good foundations for the management of Mystery Cave, and provides another example of the continuing benefits gained through working partnerships between Montana cavers and cave managing agencies.





# NSS Conservation Announcements

## Submit Abstracts for Conservation Tuesday at 2018 NSS Convention in Helena, Montana 28 July – Aug 4, 2018

Calling for presentations, PowerPoints, workshops, or panel discussions to fill our NSS Conservation Tuesday. Please send Val Hildreth-Werker a quick email now of your intent to present: [werks@cunacueva.com](mailto:werks@cunacueva.com)

We invite abstract submissions for any Cave or Karst Conservation talks addressing stewardship, cave management, or restoration. Send abstracts by May 1, 2018 to [werks@cunacueva.com](mailto:werks@cunacueva.com)

Limit abstracts to 250 words or less. Include title of your presentation and the authors' names, professional affiliations, mailing addresses, and e-mail addresses. For later publication in the *Journal of Cave and Karst Studies*, abstracts must draw a conclusion or explain the upshot of your study or project in a concluding sentence.

Equipment will be available for PowerPoint presentations. For online details about sessions and abstracts, visit the NSS Convention Website: [nss2018.caves.org/](http://nss2018.caves.org/)

## 2018 Cave Conservancy Roundtable at NSS Convention

The Twenty-first Annual Cave Conservancy Roundtable is scheduled at the 2018 NSS Convention on 3 August 2018, Friday starting at 1:00 PM. The theme is "Working to inspire future conservancy leaders to acquire the knowledge and skills needed to serve and to meet future challenges; to motivate cavers and environmentalists to participate in the conservancy's work; to build infrastructures of support in relevant communities." The Roundtable is usually on Friday, followed by the meeting of NSS Nature Preserves, with Tom Griffin presiding. Every caver who is a member of a cave conservancy is invited to participate in the Roundtable. All NSS members are invited to participate in the Nature Preserves meeting. Check NSS Convention Website updates for exact time and place: [nss2018.caves.org/](http://nss2018.caves.org/)

## Group and Grotto Cave/Karst Conservation Awards

Now accepting nominants for Grottos or Groups in recognition of conservation activities.

The NSS Conservation Division offers two annual awards recognizing conservation efforts of Groups and Grottos. Winners will be announced at Convention, receive a certificate, and have their names posted on a permanent plaque displayed at NSS Headquarters.

Candidates for the Group conservation award may be any of the following: an NSS Conservation Task Force, NSS commission, committee, subcommittee of a committee, division, conservancy, expedition, project, region, section, survey, taskforce, affinity group, institutional member, or a subunit of any of the above. An Internal Organization IO, Group, or Grotto to be nominated for these awards should be in good standing with the NSS. For more info, see the NSS Conservation Web pages <http://caves.org/conservation/conservationawards.shtml>

For consideration for either of the two 2018 awards, please send a letter of application or nomination summarizing your contributions to cave or karst conservation, along with supporting documentation and letters of support.

Please send nominations to the Conservation Committee Awards Chair, Kathy Lavoie by May 31, 2018. [lavoiekh@plattsburgh.edu](mailto:lavoiekh@plattsburgh.edu)

## Victor A. Schmidt Conservation Award

The annual Victor A. Schmidt Conservation Award recognizes one NSS member who, over time, has demonstrated outstanding dedication to the conservation of caves. Nominations for candidates are solicited by the NSS Awards Committee. The recipient will be approved by the Board of Governors upon recommendation of the Awards Committee.

The recipient must have been a member in good standing of the Society for at least two years immediately prior to his/her name being submitted as a candidate. The Awards Committee shall give preference to candidates who have not received the Outstanding Service Award or Honorary Membership.

To nominate a caver for a the Victor A. Schmidt Conservation Award, please send complete resume and nomination letters describing the caver's contributions to cave/karst conservation over many years. Send nominations by November 15 each year to: Bob Vandeventer [vandeventerbob@netzero.net](mailto:vandeventerbob@netzero.net)

## Conservation Task Forces: Making a Difference

NSS Conservation Task Forces (CTFs) make a difference in karst areas around the United States. Since passing of the Federal Cave Resources Protection Act of 1988, many CTFs are recognized by local federal agencies as primary representatives of the caving community on conservation issues in their areas. A CTF is a great way to gather like-minded people and make good things

happen in cave and karst conservation. Some CTFs have a specific project that may take a year or two to complete. Or it may be an ongoing project that continues and maintains conservation for many years. A CTF may tackle a significant cave vandalism problem, or it may work alongside landowners and civic leaders to clean up a groundwater pollution source. Any conservation or protection concern fits. Due to the ongoing efforts of CTFs, caves are mapped and inventoried; management plans are implemented; restoration and cleanups happen; and cave habitats are restored. NSS members of CTFs are helping to manage caves on behalf of public and private landowners. In some areas more caves are being restored than are being vandalized. Cave locations revealed on the Internet and through Social Media are disappearing because cavers are catching it and addressing it and getting it offline—Conservation is gaining!

**Join an existing CTF** <http://caves.org/committee/conservation/CTFS.shtml>

**Establish a New CTF** Create an NSS Conservation Task Force to focus on local, regional, national, or international cave and karst conservation issues. If your work would benefit from CTF designation, contact the NSS Conservation Division, Val Hildreth-Werker [werks@cunacueva.com](mailto:werks@cunacueva.com)

## Save-the-Caves Conservation Grant

The Conservation Committee is authorized to award up to \$5,000 annually from the Save-the-Caves Fund to make grants of up to \$1000 to Internal Organizations, Conservation Task Forces, Conservancies, or to individual NSS members for specific projects that involve cave or karst conservation, restoration, cleanup, or outreach.

The Conservation Committee is responsible for establishing the application, review, and award process. Recipients of these grants shall submit written reports to the Society as stipulated by the Chairman of the Conservation Committee. To be considered for a grant award, applications must include adequate description of one or more of the following:

- scientific investigation of cave or karst conservation problems;
- speleological research that will directly contribute to cave or karst conservation;
- remediation of ecological problems in cave, karst, or pseudokarst areas;
- hands-on, in-cave efforts to restore cave passages to a former ecological state;
- equipment and supplies for conservation or restoration projects that include



- hands-on participation from cavers;
- or public outreach to inform and raise awareness of cave and karst values.

Conservation Grants are awarded throughout the year, subject to availability of funds and number of applications received.

### Save-the-Caves Conservation Grant Application Process

Awards are based on the nature of the project and available funds. For relatively uncomplicated grants to NSS members and activities, send an e-mail application that includes the following points. Institutions and foundations should submit the more formal NSS grants application (insert link). Priority is sometimes given to conservation projects that provide quantitative research data.

Please specify in your application:

- who the applicant is (name, address, telephone number and other contact information)
  - who the official grant recipient is to be (name or organization, title, address, etc.)
  - what, specifically, the project and/or research will entail
  - what benefits are expected
  - when the work is to be done
  - dollar amount being requested from the NSS, including how that money will be used
  - a statement assuring the NSS that an article for publication, video, power-point, presentation, and/or other comparable account of the completed project or research will be provided in a form accessible to the membership to account for expenditure of NSS funds
- Please call or e-mail the Conservation Grants contact person if you need more information: Val Hildreth-Werker (575) 895-5050 [werks@cunacueva.com](mailto:werks@cunacueva.com)

### NSS Conservation Web Pages and Cave Conservation Facebook Group

All things caving encompass conservation.

The NSS Conservation Pages are online at [caves.org/conservation/](http://caves.org/conservation/)

We welcome input. Send to Val Hildreth-Werker [werks@cunacueva.com](mailto:werks@cunacueva.com)

Through the efforts of John Durall and John Wilson, we also have a Cave Conservation Facebook Group for cavers across the speleo spectrum! It's a broad, quick, all-in-one, easy spot on Facebook to serve the global caving and cave-interest communities! Join us, add members, repost, and share the site. <https://www.facebook.com/groups/257740784385806/>

Stewardship choices always kick in along the way. All of caving is about choices

and acts of conserving! So let's make this Facebook Open Group Space work for us all!

### Support Cave Conservation: Donate to Save-the-Caves Fund

The caves, cavers, and the NSS appreciate your financial support!

Our Saves-the-Caves Fund supports NSS Conservation Grants.

Contributions are tax deductible, of course!

Please specify Save the Caves — find fourth item in list after you click on blue link

- Donate through our online app <https://caves.org/nssapps/donate.shtml>
- Donate via a PDF that can be completed online and mailed or emailed in <https://caves.org/donate/Donate.pdf>
- Use the comment area provided in links above to include a note — a good place to list your gift as a special tribute to a friend or loved one with your Save-the-Caves Donation in Honor or in Memory of someone. Your gift could look like this:

**The National Spelological Society** has received a gift in memory of **C.K. Void** and in honor of our friend **Karsten Caver** With this gift, caves of our Earth will receive conservation, restoration, and protection.

#### Save The Caves!

Your name  
Your address

#### NSS Conservation Network

The **NSS Conservation Network** is an email resource expressly developed (at the request of Val and Jim) to quickly disseminate important and often 'short-fused' conservation-related updates to IOs and interested individuals. Send info bursts to [werks@cunacueva.com](mailto:werks@cunacueva.com) and [stevenlsmith@usa.net](mailto:stevenlsmith@usa.net)

Notices are sent out on an 'as needed' basis, with often with months between send-outs to IO Conservation Chairs (or overall Chair if the IO doesn't have a Conservation Chair), and to any individual caver who asks to be on the Conservation Network addressee list.

**NSS Internal Organizations!** Please keep me informed of new personnel or email addresses.

Send me a note if you want to keep a finger on the pulse of important conservation issues that affect us all.

**Steve Smith,**

Coordinator – NSS Conservation Network  
[stevenlsmith@usa.net](mailto:stevenlsmith@usa.net)

### NSS Conservation Memberships

Gift the caves *and* yourself ... or gift the caves *and* honor a friend or relative with an NSS Gift Membership! Any type of Membership can be gifted. Find all NSS Member categories at <http://caves.org/info/membertypes.shtml>

**Regular Gift Membership** – 18 years and over; full membership privileges, including an **electronic** subscription to the **NSSNews** for a total of \$35.00

**Conservation Regular** – combines a Regular NSS membership with **electronic NSSNews**, plus a donation to cave conservation, to total \$135.00

**Conservation Life** – goes to endowed funds for Life Membership in the NSS (\$900) plus a \$1,000 donation to cave conservation, totaling \$1900.00

### Send an Article for the Next Annual Conservation Issue of the NSS News!

Submit articles for our Annual Conservation Issue each year before New Year's Eve!

Please send a note anytime to [werks@cunacueva.com](mailto:werks@cunacueva.com) if you plan to submit.

This Annual Conservation Issue provides an overview of worldwide conservation research, projects, outreach, evolving current best practices, and networking efforts. Val Hildreth-Werker serves as Conservation Editor for the **NSS News**. Send submissions to Val at [werks@cunacueva.com](mailto:werks@cunacueva.com) by January 15, 2019 (Drop-dead-line!)

We include conservation pieces from one paragraph to several pages.

Please do not exceed 2500 words (or a 15,000 characters+spaces count).

Send only text in Word docs. Include captions and bylines, but no photos in Word doc.

DO NOT embed or place images into Word documents!! Send as separate files.

Send images as tiff or jpeg files to [werks@cunacueva.com](mailto:werks@cunacueva.com) AND [davebunnell@comcast.net](mailto:davebunnell@comcast.net)

Send maps and illustrations in PDF format.

Please follow the **NSSNews** Submission Guidelines and Style Sheet <http://caves.org/pub/nssnews/style.html>

### CALL FOR ISSUES for the 2018 Congress of Grottos of the NSS

The deadline for submitting issues for discussion and action at the Congress of Grottos (COG) during the NSS Convention in Helena, Montana is May 15th, 2018 to allow time for circulation to NSS Internal Organizations. See detailed writeup, October 2017 NSS News, page 24  
Send issues via email to: [cog@caves.org](mailto:cog@caves.org)



# Cultures of Caving: An Invitation to a Special Convention Session

**María Alejandra Pérez (maria.perez@mail.wvu.edu)**

**and John M. Wilson (jmwgeo@gmail.com)**

"We explore, we study, we protect." This is the NSS motto. But think about it, we have not always explored, studied, or protected in the same way. And, cavers in different places do these things differently. Finally, who is "we," anyway? Who does it include, how, and why? What could we do to broaden that "we" so as to ensure the future of caving and the long-term protection of cave and karst resources? These are some of the questions that keep us up at night.

As a couple of cavers fascinated by the cultural and historical qualities of caving, we have put together a special session titled "The Cultures of Caving: Broadening the Study of Humans and Caves." The session will take place on Monday afternoon, 30 July 2018, during the NSS Convention in Helena, Montana. This event is an invitation to think of caving from a cultural and historical perspective, and to examine what has changed and what has remained the same when it comes to humans exploring, studying, and conserving caves. The idea behind the session is to inform and build bridges between people interested in caves, their histories, their past cultural features, and the potential to develop for the future. Please contact either session co-chair if you have an idea for a presentation and you are wondering if it would be a good fit.

To give you a sense of themes, this is how our session is shaping up:

1. María Pérez will kick off the session with a brief introduction to the "Cultures of Caving" theme (refer to Chapter 26 of the 4<sup>th</sup> edition of *Caving Basics* for an in-depth report of what she has in mind).

2. John Wilson will share with us a summary of selected cave-related human science research.

3. María Pérez and John Wilson will report on their ongoing study of caver

villages, which this year will focus on the history of the Kirkwood Community of Austin, Texas. We are very excited to feature a panel of Kirkwood cavers that have agreed to participate and share their experiences. This panel is still in the process of coming together, to date we have two participants, Frank Binney and Bill Steele. Binney's presentation is titled *Kirkwood: Gateway to the Golden Age of Mexican Caving* while Steele will share with us how Kirkwood was a launching pad for both Montana wilderness caving and Huautla Expeditions. Be on the lookout for other interesting Kirkwood panelists who will broaden our perspective of what all went down in Austin, Texas during the 70s onwards.

4. María Pérez will then turn to her ongoing project on the history of collaboration between U.S. and Cuban cavers. This is a National Science Foundation project that has kept her busy during the last three years.

5. Dr. Wilmer Pérez will share with us stories and photographs highlighting his long experience as a caver in his native Venezuela. This presentation will commemorate the 50th anniversary of the Society of Venezuelan Speleology.

6. Will Urbanski and Kristine Ebrey will be sharing with us insights on the value and future of the Contemporary Cave Use Study, which is being revitalized with technology to advance caver organizations (see box below for more information on this remarkable project)

## Contemporary Cave Use Study: Revitalized by technology to bring cavers to the NSS community and advance the study of human use of caves

**Will Urbanski and Kristine Ebrey**

The new Internet caver log and the Contemporary Cave Use Study, being revitalized by technology, will bring cavers to the NSS community and advances the knowledge of the human use of caves. The Cave Management Division of the AVP department, the Information Technology Division of the OVP Department, and a Membership Committee in the President's Department have combined expertise and forces to develop a useful internet tool for cavers to use as a caving log.

In addition to making the traditional Contemporary Cave Use Study demographic questionnaire accessible on the internet, this application will be available as an electronic journal in which a person could keep his or her personal cave information privately or shared with selected people. Contact and demographic information will be available to the NSS membership committee and demographic researchers. Cavers will access this cave journal from the NSS website, and each person will have a separate username and password.

The new CCUS data entry page is intended to be adaptable to the specific needs of each caver. Cavers may add text and use the system to allow text descriptions of cave projects and links between project and grotto members. CCUS cave registers previously placed in caves near the entrances

are retired. Instead, signs, word of mouth, and social media will inform cavers of the opportunity to enter their caving information on their NSS caver page. Data entry will be available as close as one's cell phone, laptop, or desktop computer to record the trip details. Cavers may also add caves not already in the database.

In addition to being a service to cavers, the NSS should benefit from increased membership. If this project works as intended, we expect it will become one of the most effective means of recruiting additional NSS members. Soon this project will bring cavers into the NSS and advance caver science; all we need is a little help. The study has three parts with specialty areas in people science, software and technology, and membership promotion. We seek more cavers to help; please tell any of us by email if any of these things interest you. Our email addresses are below.

Project Chair (acting) - John M. Wilson, [jmwgeo@gmail.com](mailto:jmwgeo@gmail.com)

Technology and Software Development Section Chair - Will Urbanski, [wurbanski@caves.org](mailto:wurbanski@caves.org)

Caver Science Research Section Chair - to be appointed

Membership and Promotion Chair - Kristine Ebrey, [kebrey.director@caves.org](mailto:kebrey.director@caves.org)

2018-19

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[www.caveconservancyfoundation.org/](http://www.caveconservancyfoundation.org/)  
[www.caveconservancyofvirginias.org/](http://www.caveconservancyofvirginias.org/)

Telephone: 804-796-4893

**Cave Conservancy Foundation**



# PRESIDENT'S MESSAGE

Over the past few months, there have been several new initiatives by the NSS. I wanted to use this column to keep the membership up to date.

## Letter to the Secretaries

In February, Peter Youngbaer, Chair of the NSS Directorate; Dr. Merlin Tuttle, president of Merlin Tuttle's Bat Conservation; and I wrote a letter addressed to Mr. Ryan Zinke, Secretary of the Interior and Mr. Sonny Perdue, Secretary of Agriculture. The letter asked for their departments to reevaluate their policies regarding White Nose Syndrome (WNS) and closure of caves on Federal lands.

To paraphrase the letter, which is reprinted below and on the NSS Web page: "After ten years, it is time to acknowledge that WNS is going to run its course. Even if a cure were found, the practical field applications present insurmountable logistical challenges and expenses. Further, it is simply unlikely that humans are a significant vector of WNS transmission, the only proven method to date being physical bat to bat contact, as demonstrated and published by the National Wildlife Health Center Laboratory in Madison, Wisconsin.

"Blanket cave closures have proven ineffective and counterproductive." "We are requesting that the Department of Interior and the Department of Agriculture revisit their current cave closure and decontamination policies and lift the ban on entry of federally owned caves not important to bats."

We are awaiting a response for the respective departments.

## Speleo Arts Initiative.

As announced in last month's NSS News, we have implemented a Speleo Arts Initiative to highlight the many fine artists that we have in the Society. We are now working on getting our third print hung in the Roger J. Sperka Educational Hall. Ethan Reuter's picture of Incredible Pit in Ellison's Cave (GA) was the first to be hung. The second picture to be hung was by Ryan Maurer of the Friars Hole Entrance Series in West Virginia. Both artists were sponsored by Dave Hughes. The third picture being printed and soon to be hung is by Jacob Lieber titled "Very Hungry Caterpillar" sponsored by Tom Whitehurst. We have pledges for sponsorship of additional artists. The artwork will help to decorate the entrance foyer and hallway in the Headquarters and Conference Center and showcase the lure of caves and caving to our many visitors and members. We will consider sponsoring

art forms other than photographs on a case by case basis.

You can become a patron of the arts for a donation of \$150 or you can sponsor an individual artist for \$200. Please contact Bill Jackson at [fundraising@caves.org](mailto:fundraising@caves.org); Geary Schindel at [president@caves.org](mailto:president@caves.org), or call the NSS Office. Here is a chance for a grotto or individual to sponsor their favorite artist.

## Membership Committee Activities

We are now in the implementation phase of some of our many great recommendations to address our membership decline. The membership committee identified a number of areas to focus on, including retaining current members, regaining lost members, recruiting new members, highlighting benefits of being an NSS member, and grotto interactions. Currently, we are working on a survey to see what we're doing right, and what we could be doing better. We are reviewing our membership and dues structure, restructuring our web page membership section, increasing our outreach through monthly re-mailers and social media, etc. To review the full list of new membership committee initiatives, go to the NSS web page under NSS Business reports, and click on the President's report for the October 2017 board meeting. Special thanks to all that served on the membership committee including:

- Kristine Ebrey, Chair and BOG member
- Dawn Ryan, Membership Committee Chair\Co-Chair
- Phil Goldman, Windy City Grotto
- Hali Steinmann, Green River Grotto\ Sewanee Mt. Grotto
- Peter Youngbaer, Directorate Chair\ Vermont Cavers Assoc.
- Geary Schindel, NSS President\Bexar Grotto
- Sue Schindel, Bexar Grotto
- Sue Milburn, Sewanee Mt. Grotto\ Louisville Grotto
- Kyle Gochenour, Chattanooga Grotto
- Greg Brecht, Birmingham Grotto
- Kim Fedrick, Nashville Grotto
- Sarah Richards, Battlefield Area Troglodyte Society
- Tony Canike, NSS Social Media Chair\ Philadelphia Grotto
- Dave McRae, Birmingham Grotto
- Holly McClintock, Louisville Grotto
- Glenn Fell, Dogwood City Grotto
- Ian Chechet, Northern Rocky Mt. Grotto
- Christine Rose, G3Adventures
- David Luckins, Michigan Interlakes Grotto
- Tripp Lichtefeld, Chattanooga Grotto
- Marty Abercrombie, Chattanooga Grotto

**Geary Schindel, PG**  
NSS President

## WNS Letter sent to Secretaries of Interior and Agriculture

February 15, 2018  
Secretary of the Interior Ryan Zinke  
U.S. Department of the Interior  
1849 C Street, NW  
Washington, DC 20240  
Secretary of Agriculture Sonny Perdue  
U.S. Department of Agriculture  
1400 Independence Ave., SW  
Washington, DC 20250

Dear Secretary Zinke and Secretary Perdue,

Caves are a key American resource. Many are directly connected with groundwater resources that supply fresh water for human communities. They attract millions of tourist dollars and provide homes for insectivorous bats that save American farmers billions of dollars annually. Caves also contain whole ecosystems of microorganisms of potentially great biotechnological value.

The National Speleological Society (NSS) is by far the most knowledgeable and influential protector of these too often

forgotten, but critically important resources. Many of America's most valuable caves were originally discovered and reported by our members. In fact, America's largest remaining population of endangered gray bats, in Fern Cave, Alabama, was discovered by NSS members and was purchased by the U.S. Fish and Wildlife Service. Under a management agreement with the Wheeler Wildlife Refuge, it was effectively managed and protected by NSS members for more than 20 years, because the Fish and Wildlife Service lacked funds to do so. In fact, largely due to caver collaboration, today there are millions more of this species than when its extinction was predicted in the early 1970s.

When a fungus-caused disease was accidentally introduced into North America, it was NSS members who discovered it in 2007. NSS members helped fund experts to attend the first national meeting to manage the crisis. We also volunteered countless hours in support of research and survey work.



### WHAT OUR MEMBERS CAN DO

The NSS' letter to Secretaries Zinke and Perdue will have more impact if the Secretaries also hear from Senators and Representatives that they would like to see them address the WNS cave closure policies. If you, as NSS members, contact your Senators and Representatives and ask them to contact the Secretaries and support the NSS' letter, that will help greatly. Cabinet officials prioritize responses to those politicians currently in office, so your asking your congressional delegation to support the NSS' letter will make this effort stronger. Thank you.

How to contact your U.S. Senators: [https://www.senate.gov/general/contact\\_information/senators\\_cfm](https://www.senate.gov/general/contact_information/senators_cfm)

How to contact your U.S. Representatives: <https://www.house.gov/representatives>

Unfortunately, federal agencies have overreacted, often closing all caves to caver entry, even those not used by bats. They also canceled long-standing cooperative management agreements, resulting in great harm to key resources like Fern Cave, that were left unprotected and vandalized. At the same time, federal agencies have spent millions funding efforts to prevent WNS from spreading or to find a cure.

Despite these well intended efforts, WNS has rapidly spread from coast to coast. Bats can quickly move long distances, and available evidence indicates that bats, not humans, are accounting for its rapid movement. In fact, survey and research efforts in the bats' hibernation caves are causing far more harm than good. WNS kills bats by forcing them to wake up too often from hibernation, wasting limited fat reserves before spring. Yet winter surveys, and efforts to find a cure, are greatly increasing risk of bat mortality through additional arousals.

Today, members of the National Speleological Society are deeply concerned that agencies are wasting millions in taxpayer dollars on efforts that are in fact often putting bats at even greater risk. Continuation of current emphasis will needlessly create new endangered species at a time when funds are desperately needed to help depleted, but resistant remnant bats recover.

After ten years, it is time to acknowledge that WNS is going to run its course. Even if a cure were found, the practical field applications present insurmountable logistical challenges and expenses. Further, it is simply unlikely that humans are a significant vector of WNS transmission, the only proven method to date being physical bat to bat contact, as demonstrated and published by

the National Wildlife Health Center laboratory in Madison, Wisconsin.

In summary, blanket cave closures have proven ineffective and counterproductive. They have damaged long-standing collaboration with the NSS and threatened needless creation of additional endangered species, each of which could cost millions annually in endangered species enforcement and compliance. It is time to re-open America's caves. We are requesting that the Department of Interior and the Department of Agriculture revisit their current cave closure and decontamination policies and lift the ban on entry of federally owned caves not important to bats. Members of

the National Speleological Society deplore current actions, but stand ready, once again to become part of the solution.

Sincerely,

Geary M. Schindel, P.G.  
President, National Speleological Society  
[President@caves.org](mailto:President@caves.org)

Peter Youngbaer  
Chair of the Directorate,  
National Speleological Society

Dr. Merlin D. Tuttle  
Founder and Executive Director  
Merlin Tuttle's Bat Conservation

## Proposed I-66 Rears its Head Again in South-Central Kentucky Karst Land

**Leslie Barras**

*Karst Environmental Education and Protection (KEEP)*

Eleven years ago, "KICK-66," a public interest coalition that included our organization, Karst Environmental Education and Protection (KEEP), submitted extensive and critical comments on a Draft Environmental Impact Statement (DEIS) for the proposed I-66 highway segment from London to Somerset in Kentucky. This highly controversial new construction project would have bisected a 33-square-mile karst drainage basin that features the Sinking Valley cave system. A new bridge was proposed over the Rockcastle River, a scenic and wild river. Governmental agencies, such as the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and National Park Service, also seriously questioned the need for the project given its serious impacts to the environment and threatened and endangered species. The project then appeared abandoned, with a Final EIS never issued.

Bad projects never go away, however, they just go subterranean...for awhile. Thanks to alert reading by a caver, we recently found that the Kentucky Transportation Cabinet (KYTC) has listed a "KY 80 Upgrade" project from London to Somerset in the current state

highway plan. This proposal would use an existing alignment for KY 80 but upgrade the road and existing Rockcastle River bridge to interstate standards (in other words, it would be "I-66"). While that might sound like a better alternative, the upgrade would still pose serious impacts, associated with the six new interchanges that would be built along the 23-mile project and the requirement for expansive new frontage roads along each side of the upgraded highway.

KEEP's next step is to contact the Federal Highway Administration (FHWA) to discuss the fact that the DEIS is too stale to rely upon for decision making on this project and determine what course the FHWA and KYTC plans to take for public involvement in the "new" I-66 project.



**"Daniel Boone National Forest," on the Rockcastle River, near KY 80 is on the I-66 proposed alignment. Photos: above, Kevin McAdams; left, by Andrew Crenshaw.**



# UNDERGROUND UPDATE *Ian Reuter*

## **The Down & Dirty** **Vermont Cavers Association** **February 2018, Vol. 27, Number 1**

Over the last five years Vermont Cavers have made significant discoveries in their cave-sparse landscape. Considering that up until 2012 there were only six miles of documented cave passage in the entire state, the fact that cavers have added an additional two miles to that total in five short years is very impressive.

While studying the shifting water levels in **Morris Cave's** lake room, Jeff Munroe made some interesting finds. Surprisingly, the lake showed a wide degree of fluctuation throughout the year, at one point rising more than 60 feet below its minimum level. Even more shocking though, was Munroe's documentation of a four-hour period, during a raging thunderstorm, in which water levels rose over five feet per hour. The sheer volume of water that must have been coursing through the cave during this time sure makes it sound like Morris Cave is one to avoid when rain is in the forecast.

## **Cave Crawlers Gazette** **Central Arizona Grotto** **February 2018, Vol. 60, Number 2**

**Pond Cave** sounds like a real blast, as long as you enjoy crawling through 40 degree water interspersed with sections of four-foot deep, super-sticky mud. Despite these challenges, cavers have managed to finally break through into some drier, walking passage, and even a nice waterfall room. While getting to these outer reaches of the cave will remain unpleasant, the potential for cleaner passage beyond the nasty entrance sequence is sure to lure cavers back in the near future.

Tonto National Forest's **Redman Cave** was recently resurveyed for a total of 654 feet. Bad air was encountered by the survey team at the bottom of the cave's pit, making this an area to avoid for any future visitors.

## **The Carbide Dump** **Blue Ridge Grotto** **February 2018, Vol. 53, Number 2**

Discovered over 45 years ago, West Virginia's **Bash Cave** had been mostly forgotten until recently. Phil Murray, intrigued by a strong air current flowing through the short cave, began to dig within the cavern's tight confines a few years ago. A breakthrough into virgin passage was finally achieved last month, leading to 1000 feet of new survey, in addition to several more yet

unmapped passages. The proximity of two other nearby caves makes it likely Bash Cave will see some further significant extension.

## **Huntsville Grotto Newsletter** **Huntsville Grotto** **January 2017, Vol. 60, Number 1**

Resurvey in **Kenamer Cave** has continued through the winter months, with cavers recently passing by the cave's famed giant Moby Dick breakdown boulder.

## **Southwestern Cavers** **Southwestern Region of the NSS** **Jan-Feb 2018, Vol. 56, Number 1**

Last year's work in New Mexico's **Fort Stanton Cave** saw the cave pass the 36 mile mark, making it the 16<sup>th</sup> longest cave in the United States. With several week-long expeditions already planned out for this upcoming year, the cave is sure to keep on growing.

## **The Journal of Spelean History** **American Spelean History Association** **July-Dec 2017, Vol. 51, No. 2, Issue 152**

Marion O. Smith and Joe Douglas have done extensive research on the early history of Kentucky's **Diamond Crystal Cave** detailing everything from its initial exploration in 1859, to its frequent use by soldiers

from both sides of the Civil War. Very near to Bell's Tavern (now Park City) the cave seemed to rival **Mammoth Cave** in its early years. An 1860 firsthand account of the cave included with Smith and Douglas' work is a particularly interesting read. Filled with tales of "short 13 mile" and longer "18 mile" tourist routes, the article captures the often hyperbolic nature of the era's adventurous tales.

## **Sag Rag** **Shasta Area Grotto** **Nov-Dec 2017, Vol. 36, Number 6**

A ten-mile, round-trip hike to the remote **Paul Gibson Cave** makes visiting the cave a formidable challenge. Thus, the several survey trips local Shasta area cavers have made to the cave over the last few years are quite impressive. Inside the cave, cavers are making significant progress on their survey mission, mapping several extension passages that were missed by the original 1970s survey team. Their determination has seen them discover some fantastic new canyons and river passages, while extending the known cave just over 4,500 feet. With over twenty leads remaining, it's very likely the cave passes the mile mark in the next year.

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The Kentucky Speleological Survey passed a major milestone last month when it recorded the 5,000th known cave in Kentucky. Kentucky ranks fourth in the country in number of documented caves. The KSS "Race to 5,000" was started a year ago to encourage cavers to help bridge the existing knowledge gap by submitting new cave locations. Cave number 5,000 was discovered in Jackson County by KSS member Bruce Isaacs. (Feb. 5, <http://bit.ly/2FzZ1a>)

The survey on **Windy Mouth (WV)** continues: Nick Socky, Andrew Lycas, and Kelly McCarthy spent some time pushing some passage beyond the domes area in what Nick called "some of the most miserable laying in water belly crawling I have done in a while." With 25 stations and 370 feet of new map done, they called it a day. Nick notes that the passage still goes. (Feb. 4, <http://bit.ly/2CSmABW>) A week later, however, Nick and Tommy Polson were back at it, this time racking up 780 feet in the Downstream D survey. In the process they also documented what Nick referred to as a "creepy deer skeleton" along the C survey route. (Feb. 11, <http://bit.ly/2F2p9rj>)

There are hundreds of trash-filled sinkholes and pits. As of Feb. 8, however, there's at least two less. David and Mark Kutchenem, the Stream Team 888 and members of the Meramec Valley Grotto cleaned out a pair of unnamed pit caves in Missouri. David tells us that the first pit cave was 200 feet deep on five levels. Trash, tires and a microwave oven was taken out of that one. The other pit cave on the property was trashed out as well. More trash, a refrigerator, and tires were removed. Sadly, there's still more. At least one more trip is needed to remove the remaining trash in the second pit cave including a horizontal freezer. The Meramec Valley Grotto went down into the pit cave; Stream Team 888 were the haul guys pulling the trash up and out of the pit cave. I'll echo David's sentiments when he "you guys rock." Keep up the good work, folks! (Feb. 9, <http://bit.ly/2FJjlup>)

Most of us know that vampire bats (*Desmodus rotundus*) survive by drinking blood but until recently it wasn't really understood how they do so—blood is hardly a nutritional cornucopia. Rather, blood is high in proteins, but relatively low in carbohydrates and vitamins. Considering the typical vampire bat will daily consume up to half its body weight in blood, and considering the frequency of blood-borne pathogens,

it's a bit of a mystery how they not only survive but thrive on such a monotonous and nutritionally-questionable diet. Until recently, that is. Researchers found more than 280 varieties of bacteria in the bat's droppings that would sicken most other mammals. "The data suggests that there is a close evolutionary relationship between the gut microbiome and the genome of the vampire bat for adaptation to sanguivory (feeding exclusively on blood)," said study author, Dr Marie Zepeda Mendoza of the University of Copenhagen in Denmark. The key seems to lie in the fact that the vampire bat genome contains more "jumping genes", or DNA sequences that change position within the genome. (Feb. 19, <http://bbc.in/2FdFE2T>)

It has been said that there aren't any rescues for cave divers, only recoveries. In fact, until 2012 there had only been four successful cave diving rescues. Edd Sorenson recently recounted a fifth successful underwater cave rescue. In April of 2012 Edd was teaching a diving class at Merritt's Mill Pond in Marianna, FL. Merritt's Mill Pond is also the site of the **Twin Caves**. Twin Caves is a cave system that descends to 100 feet and runs about 3000 feet, with multiple side passages. A father, son, and daughter descended into the cave. Lack of proper cave diving technique quickly clouded the water, forcing another cave diving group to exit. In the process, the father and son pushed past them in a panic to get out. Somehow they'd gotten separated in the darkness and lost contact not only with each other but with their dive line. Edd returned to his dive shop for more air tanks and undertook what he presumed to be a recovery. Fortunately, Edd discovered the young girl fairly quickly; she'd managed to find an airbell and was treading water waiting for help. (Feb. 9, <http://bit.ly/2FKizmp>)

From Ray Knot, of SCCi: At approximately 7:30 pm (Central) on Saturday February 10<sup>th</sup>, Huntsville Cave Rescue Unit was dispatched to SCCi's **Tumbling Rock Cave Preserve (AL.)** A visitor hurt his knee on the Wildcat Rock Pile. At approximately 11:00 pm CST the visitor was carried out by the Huntsville Cave Rescue Unit. Special thanks to SCCi Board Members

Patty Springer and Steve Davis and SCCi Preserve Manager Nathan Williams for their onsite assistance. Incidents like this are a reminder that visiting wild caves comes with inherent dangers. (Feb. 11, <http://bit.ly/2FKrOmB>)

Clinton Elmore has been busy with 3D modeling lately. He recently modeled a bear carcass found in **Hunch Punch Plunge (TN)** using photogrammetry to stitch together 129 photos. Clinton used Agisoft Photoscan Standard Edition. No doubt the possibilities for 3D modeling open up a whole new aspect of cave mapping and even the ability to create virtual caves. (Feb. 17, <http://bit.ly/2F8nV9M>)

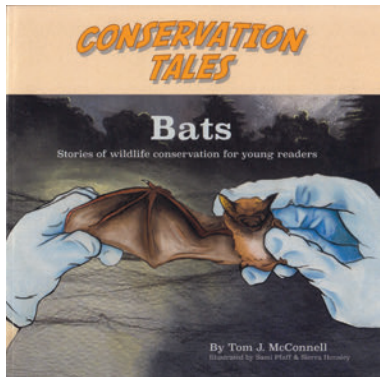
Karst protection staff Wil Orndorff and Tom Malabad continued to work collaboratively with VDGI's Rick Reynolds to perform the biannual hibernacula counts for caves focused on tricolored bats (*Perimyotis subflavus*.) From Jan 23, through Feb 1, nine more caves were surveyed. Six of these caves are long term monitoring sites. An additional three caves surveyed are on DCR property, including two on the Cedars Natural Area Preserve and one cave at Wilderness Road State Park. While counts at many reference sites are stable or slightly increased this year, *Pseudogymnascus destructans* (the fungus behind WNS) remains present in the environment and infected bats have been observed at several sites this year. (Feb. 14, <http://bit.ly/2FfPXDH>)

Want to see your grotto's exploits in the NSS News? Send me an e-mail at: **caverbill\_64616@aol.com** with your grotto's web site, trip reports, Facebook page, blog, or a link to sign up for your listserv and I'll do my best to get your newsworthy items in the NSS News!





# READING



## CONSERVATION TALES: BATS

(2017) by Tom J. McConnell. Airway Publishing. Muncie, Indiana. Paperback, 56 pages, 8½" x 8½" format, ISBN 9780986336942. Available for \$13.00.

In *Conservation Tales: Bats*, Tom McConnell tells the story of a group of youngsters who learn about bats during their time at summer camp. While sitting around the campfire one evening, several campers notice a number of bats flying overhead. Some of the girls are alarmed by the presence of these "creepy" animals flying around them; others are somewhat perplexed about what possible good bats can be. Their camp counselor seizes the moment as an excellent opportunity to educate the girls about various facets of ecology and teach them about the important roles played by bats in the ecosystem.

In order to help stimulate an interest in these animals, the camp counselor invites some of the local bat scientists to come and talk to the girls and other interested campers later in the week. When they arrive, the scientists show the campers some of the many tools that bat biologists use to study bats, including mist nets for capturing foraging bats, wing bands for identifying individual bats, tiny radio transmitters that can be affixed to a bat's back to help track its movements, and even sound detectors that can record the echolocation calls of bats. The scientists can use these recordings to identify the species of bats present in the area. The campers also learn about the various measurements that are taken of captive bats in order to help assess their age and health status. The scientists explain how this is particularly important in regard to the presence of white-nose syndrome, a fungal disease that affects several species of cave-hibernating bats.

Being able to observe and assist the biologists with their studies and learning how to record the scientific data goes a long way towards stimulating an interest in bats

among the young campers. In addition, they also learn about various conservation actions that can be adopted to help bats, notably the construction of bat houses, the preservation of tree snags, and the removal of invasive plant species. As they learn about the many interactions of bats and nature, they come to understand how invasive plants can have a negative impact on animals like bats.

*Conservation Tales: Bats* is a nice introduction to select aspects of bat ecology and the work of bat biologists. Color illustrations, which will appeal to young readers (grades 3 - 5), and full-color photographs (which vary in quality) complement the text.

*Bats* is the second title in the *Conservation Tales* series. The first was *The Cerulean Warbler*. Upcoming volumes will feature material on Bees, Salamanders, Manatees, Seahorses, and Sea Turtles. The series focuses on children who are interested in interacting with local scientists and learning more about endangered species present in their community.

In introducing children to some important ecological concepts, the books in this series will help young readers to appreciate the fragility of the natural world and the importance of responsible environmental stewardship. Learning about the work of biologists may help motivate young readers towards a greater interest in scientific pursuits. The text will afford children and teachers/parents various opportunities for interesting discussion.

Danny A. Brass



## INTO THE UNKNOWN: THE EXPLORATION OF ŠKOCJAN CAVES

(2017) by Borut Peric, Friedrich Müller, Borut Lozej, and Bogdan Kladnik. Škocjan Caves Park and Guardians Publications International, Ltd., Slovenia. Hardcover, 132 pages, 9½" x 8½" format, ISBN 978-961-94037-6-1. Available for \$39.90.

With almost four miles of mapped and surveyed passage and having an incredible volume, the Škocjan Caves is the most important karst feature in Slovenia and one of the most notable in the world. Carved by the Reka River, it contains a number of huge underground chambers, the largest of which is the Martel Chamber. With a volume of 2.2 million cubic meters, it is the largest known underground chamber in Europe and one of the largest anywhere in the world. The Škocjan Caves was declared a UNESCO World Heritage Site in 1986.

Serious exploration of the cave began in 1884, when cavers began the first systematic

# SPELEOFEST 2018

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underground expeditions at the cave. These early explorers faced daunting obstacles in their attempts to follow the tumultuous underground course of the Reka River.

Among the leaders of the late-nineteenth-century expeditions was Friedrich Müller, whose published reports are among the most eloquent accounts available of early exploration in the Škocjan cave system. The bulk of *Into the Unknown* consists of a translated version of Müller's 1891 article, *The Research Carried Out in 1890 in Škocjan Caves Between the 18th and 25th Underground Waterfalls*.

Müller highlights the numerous challenges in following the perilous course of the "wildly foaming Reka River" into the region of the Martel Chamber and Martel Lake (named after E. A. Martel, the famous French speleologist). The text provides an interesting, firsthand account of the many difficulties faced by early caving expeditions in this massive cave system.

In their efforts to truly appreciate the heroic feats of these early explorers, the authors of *Into the Unknown* attempted to recreate the epic underground journeys of Müller and his compatriots. Shedding their modern caving garb and equipment and replacing it with period clothing and caving gear, the band of explorers surge ahead into the stygian darkness of the Škocjan Caves.

A difficult and dangerous task using modern equipment and technique, the adventurers can only marvel at the Herculean efforts of Müller and associates. Frustrated by the many demanding obstacles in their path, their underground progress was eventually thwarted by the many difficulties of the task. They were forced to turn around, unable to follow in Müller's footsteps.

"Well, I think that we can stop here and admit something to ourselves," said Bogdan in his attempt to make a final conclusion. "These men were simply better than we are. I think we should stop right here and go out."

For a moment, we went silent and we all had to agree with him. Cave research with the aid of a boat and light emitted from torches and carbide lamps, as well as construction of trails in these dark and damp conditions deserve our respect. It's true that they had loads of time and were also paid for it, as they did it for a living, but they still deserve a huge bow from us.

The book is heavily illustrated with excellent photographs. These include full-color photo-essays of both the authors' efforts to recreate Müller's journey and those of modern-day exploration in the system, as well as historical photos and illustrations of the 19th-century expeditions. Collectively, they present an intriguing story of early exploration in the Škocjan cave system.

**Danny A. Brass**

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During a mapping trip to a deep pit in southwestern Missouri, a survey crew encountered a spotted salamander directly in the landing zone for the pit. While disturbance of any cave biota is discouraged—and should be avoided—the crew felt it was necessary to move the salamander to a safer location so that it would not be trampled. Katie Ingram took this photo of Ben Miller while relocating the salamander.



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APRIL 2018

## Cave conservation at three World Heritage sites

