



**NSS NEWS** APRIL 2019



# CALENDAR

## USA

**April 15, 2019**—2019 NSS Convention Session and Chair Leaders: All Abstracts Are Due To John Hoffelt, Program Editor. All abstracts need to go through the sessions/chair leader and forwarded to John at [mossyguy@comcast.net](mailto:mossyguy@comcast.net).

**May 11-18, 2019**—National Cave Rescue Commission (NCRC) **Cave Rescue Operations and Management Seminar** at Camp Rivervale in Mitchell, Indiana. Extensive classroom instruction and fieldwork in all phases of cave rescue including underground environment, vertical rescue, hauling systems, extrication techniques, medical management, communication systems and much more! For more information, please go to: [www.ncrc.info](http://www.ncrc.info).

**May 24-27, 2019**—The Louisville Grotto is hosting their 49th **Speleofest** caving event at the Lone Star Preserve, Bonnierville, Kentucky; always on Memorial Day Weekend, always a great time. Close proximity to lots of caves, kayaking, Mammoth Cave National Park, and other local attractions for surface dwellers. There will be lots of caving, gear, vendors, banquet, bonfire, and fun for the kids. Follow us on Facebook for updates <https://www.facebook.com/Speleofest> <http://speleofest.com/>

**June 17-21, 2019**—2019 NSS Convention in Cookeville, Tennessee. <http://nss2019.subworks.com/>

**July 18-21, 2019**—**Karst-O-Rama**, at Great Saltpetre Cave Preserve, Mt. Vernon, Kentucky. Hosted by the Greater Cincinnati Grotto. Cave trips on Friday, Saturday, and Sunday. There will be cave vendors, children's activities, cave box for the flexible, climbing contest, and more. Howdy party on Friday night and a live band on Saturday night. Theme for the party is still TBD. Pre-registration discount will be available, once the website is updated. Please check back here for details to come. In the meantime, questions can be emailed to the Karst-O-Rama committee, at [kor@karstorama.com](mailto:kor@karstorama.com)

**August 2-4, 2019**—The 66th annual **Indiana Cave Capers** will be held at the Crawford County Fairgrounds in Marengo, IN. Friday night is the Camp Party with music and Shallow Grotto fellowship. Led cave trips by volunteers, food, Saturday night banquet with keynote speaker photographer-explorer Chris Bell, and cave vendor Inner Mountain Outfitters will all make this an event to not miss! See you there! For info: [cigcaves.com](http://cigcaves.com) or Ron Adams 317-490-7727

**August 21-25, 2019**—Registration is now open for this year's 5-Day **SPAR class** in Redmond OR. This is a small party assisted rescue class and teaches essential small party rescue skills. Register early as these classes fill up quickly. <https://ncrc.regfox.com/2019-ncrc-spar-redmond-oregon>

**August 30 – September 2 2019**—**CaveFest**. Sewanee Mountain Grotto is hosting their annual auction and party in the heart of TAG over Labor Day weekend. Auction, led cave trips, bat flight float trips, music, dancing, homebrew (available ALL weekend with the purchase of a \$10 mug) and a potluck dinner. Please bring a side dish for the potluck if you wish to participate. SMG will provide the meat. Caver's Paradise Campground amenities include: Bath house with hot showers, volleyball court, dish washing station, RV hook

ups, hot tub and a sauna.. And not to mention thousands of caves within an hour drive or less. Please refer to the Caver's Paradise website for directions. There is no registration fee but the campground does charge a \$10.00 for the entire weekend and RV hookups are available for an additional \$25.00. All of the proceeds from our event go back into the caving community! To follow or join the event on facebook, go to: <https://www.facebook.com/groups/SMGCaveFest/>  
**October 7 - 11, 2019** —National Cave and Karst Management Symposium, Bristol, VA. Those

with an interest in cave and karst management and conservation should consider coming to Bristol for the 2019 National Cave and Karst Management Symposium. The Symposium is the week before the TAG Fall Cave-in, so this presents an opportunity to combine two great events into one trip. The Wednesday field trip will feature Natural Tunnel State Park (VA), Cumberland Gap National Historic Park's Gap Cave, and the Gray Fossil Site Museum. Pre-conference field trips will be held October 5 - 7. For information, see [www.sinkingcreekpottery.com](http://www.sinkingcreekpottery.com). Abstract deadline is June 3, 2019



December 28-31, 2019

## LEAVE NO TRACE SYMPOSIUM

HOSTED BY NSS HQ



### SUPPORT

Events such as this require support and participation of related organizations and the community. Pledge your support with The TVA Audubon Society, the Birmingham Audubon Society, Finch Conservation, One Rope 1, CrossTek Construction, and B&W Signmasters. Multiple tiers of sponsorship available.



### TEACH

You are invited to participate in the symposium. The sessions can be secured by reserving a 1-hour segment. Specific presentation needs and attendance expectations will be coordinated in September.

Join us at NSS HQ in Huntsville, Alabama! The event will bring together like-minded groups and individuals to share their missions, ideas, merchandise, opportunities, and vision for the future of Leave No Trace. Each day will be 8:00 am to 5:00 pm and filled with presentations from local universities, academia professors, environmental organizations, adventure groups and related companies. We hope you join us in celebrating the Leave No Trace Lifestyle!

Contact Event Chair, Fenn Spencer  
[NSSLeaveNoTrace2019@caves.org](mailto:NSSLeaveNoTrace2019@caves.org)

## ABOUT THE COVER

Front cover:

*Crystals in France*, by Georg Taffet, won a Merit Award in the 2018 Photo Salon.

Back cover:

Three Honorable Mention award photos from the 2018 Photo Salon that highlight the delicate nature of caves: left and bottom, Bob Biddix, aragonite upper right, Adam Haydock

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).



**POSTMASTERS OR MEMBERS:**  
Send address changes to the National Speleological Society Office, contact information below.

**National Speleological Society Office**

6001 Pulaski Pike NW, Huntsville, AL 35810

Tel: (256) 852-1300

e-mail: [nss@caves.org](mailto:nss@caves.org); Web site: <http://caves.org>

Please contact the office for address changes or back issues.

**NSS EXECUTIVE COMMITTEE**

**President**

Geary Schindel

Bexar Grotto

San Antonio, TX

[president@caves.org](mailto:president@caves.org)

(210).326.1576 cell

**Operations VP**

Mark Skove  
Smoky Mountain Grotto  
Clinton, TN  
(865) 640-2323  
[ovp@caves.org](mailto:ovp@caves.org)

**Administrative VP**

Katherine L. Crispin, Ph.D.  
TRA Grotto, GAG, BATS  
State College, Pennsylvania  
(610) 504-0339 cell  
[avp@caves.org](mailto:avp@caves.org)

**Executive VP**

Scott Engel  
Smoky Mountain Grotto  
Knoxville, TN  
(225) 281-3914  
[evp@caves.org](mailto:evp@caves.org)

**Secretary/Treasurer**

Gaylene Speacet  
Colorado Grotto  
Aurora, Colorado  
(303) 880 3168  
[s-t@caves.org](mailto:s-t@caves.org)

**NSS NEWS EDITOR**

Dave Bunnell, Ph.D.  
Box 879  
Angels Camp, CA 95222  
[nssnews@caves.org](mailto:nssnews@caves.org)

Please include "NSS News" in your subject line when e-mailing material to help me sort it from the spam. Thanks!  
Questions about submitting features and photos? Please see the style and submission guidelines on the NSS web site:  
<https://caves.org/pub/nssnews/style.shtml>

**ADVERTISING**

Complete advertising information, including rate cards, mechanical specs and deadlines is available online at  
<https://caves.org/pub/nssnews/ads.shtml>  
New advertisers should contact Matt Bowers, NSS Director of Business Development at 209-529-9000 or [matt.bowers@caves.org](mailto:matt.bowers@caves.org).  
Payments for ads should be sent to the NSS office. New advertisers are expected to pay for ads prior to publication.

**DEPARTMENT EDITORS**

**ASSISTANT COPY EDITOR**

Gary Gibula  
[garygibula@aol.com](mailto:garygibula@aol.com)

**UNDERGROUND ONLINE**

Bill Grose  
[caverbill\\_64616@aol.com](mailto:caverbill_64616@aol.com)

**CONSERVATION**

Jim & Val Hildreth-Werker  
PO Box 207  
Hillsboro, NM 88042-0207  
(575) 895-5050  
[werks@cunacueva.com](mailto:werks@cunacueva.com)

**NEWSLETTER REVIEW**

Ian Reuter  
5560 Sierra Court  
Rapid City, SD 57702  
[ianreuter@aol.com](mailto:ianreuter@aol.com)

**SPELEAN SPOTLIGHT**

Michael Ray Taylor  
[taylor@hsu.edu](mailto:taylor@hsu.edu)

**CAVE CHRONICLES**

Philip Rykwaldner  
[philip@cavenow.com](mailto:philip@cavenow.com)

**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/>

Regular membership with electronic copy of NSS News in the NSS is \$40 per year. Members may elect to receive paper copy of NSS NEWS for \$10 per year. Please visit [members.caves.org](http://members.caves.org) for descriptions of other membership categories. Non member Subscriptions to the NSS News are \$36 per year. Individual copies are \$3.00 each or 5 or more copies for \$1.00 each. Contact the Huntsville office for membership applications, subscriptions, orders, or for replacement of issues missing or damaged in the mail. Moving? Address changes can be made from your profile in the Account + Settings tab- Profile tab, for assistance call the office.

Copyright ©2019 by the National Speleological Society



# NSS NEWS

April 2019

Volume 77 Number 4

## Annual Conservation Issue

Features Editor for this issue: Val Hildreth-Werker

Global Trajectory for Cave and Karst Conservation..... 3  
**Val Hildreth-Werker**

International Union of Speleology Call to Action: International Year of Caves and Karst ..... 3  
**Dr. George Veni**

Caribbean Cave Recovery in Aftermath of 2017 Storms ..... 7  
**Angel D Vega**

New Mexico Adds "Caving" to Recreational Use Statute ..... 9  
**Steve Peerman**

Bill Austin: One Father of Cave Conservation..... 10  
**Tom Brucker**

A Perfect Collision of Forces: Charles B. Henson Cave Preserve .. 11  
**Amber Lehmann**

Conservation Education: Don't Go It Alone ..... 13  
**Dave Jackson**

Cave Conservancy of Hawaii Creates Fred Stone Memorial Endowment Fund..... 14  
**CCH members**

Clarksville Cave Preserve Addition ..... 15  
**Thom Engel**

Lincoln Caverns: Committed to Conservation Outreach ..... 16  
**Abbe Hamilton**

Crystal Onyx Cave Reopens in Cave City, Kentucky..... 17  
**Scott & Sara Sendtko**

Colorado Cavers Assist in Battle Against Quarry Expansion Project ..... 18  
**Richard Rhinehart**

Mammoth Cave Restoration Reaches 30-year Milestone ..... 21  
**Gary Gibula**

Inventorying Broken Speleothems to Quantify Visitor Impacts .. 22  
**Aria Mildice**

Stalactajack/Speleclamp..... 24  
**Janice Tucker**

High Guads Restoration Project Update ..... 25  
**Jennifer Foote**

Excavating the Richard Blenz House..... 26  
**Sam Frushour**

## DEPARTMENTS

Classified Ads ..... 20  
Society News ..... 27  
President's Message ..... 29

News and Notes..... 29  
Underground Online..... 30  
Salon Gallery..... 31

# Global Trajectory for Cave and Karst Conservation

**Val Hildreth-Werker NSS 28963CL (CO,CM,FE)**

NSS News Conservation Editor

**All Things Caving Encompass Conservation!** In the US, that's where we've been headed for long time, and it's taken us decades to get here. Quite a journey it is, and pieces of the odyssey in cave resource protection are brilliantly recorded in this Annual Conservation Issue of the NSSNews.

This issue is full of great stories! Read about the steps to conservation success—giant jumps and short scoots. All work together in advancing the cave and karst conservation movement.

The 2019 Conservation Issue highlights how individual cavers with vision can make far-reaching impacts. The articles honor a string of dedicated individuals whose wonderful stories are becoming cave conservation legacies. The first steps of Kentucky cave protection were promoted by the intense resolve of an early NSS caver. Cave outreach grows exponentially, rolling across

the country on the wheels of educational cave lab activities. A land scam eventually leads to a new Nature Preserve, thanks to the wisdom and legacy of a Georgia caver.

Touching on a plethora of conservation topics, these pages tell stories of growing seeds of cave conservation into extensive land-monuments of protected karstscape. Privately owned show caves are becoming impressive conservation and education outreach centers. Innovative techniques and promising developments in cave restoration and repair are building new stories. Plus, a couple of important announcements offer long-reaching potential benefits for caves, cavers, and bats.

The world of conservation is at a critical point of rapid change. The global conservation quest is on the verge of major leaps in international action for cave awareness with an exciting announcement from the International Union of Speleology President,

George Veni. See International Year of Caves and Karst, next page.

Caving communities have come a long way in advancing conservation standards during the last twenty years. It's all happening because cavers around the world are embracing cave and karst conservation strategies and turning outreach into action that tells the story and makes a difference.

It's all about the wonderful stories of caves and karst. Make your own wonderful story, and tell it! That's what makes the world of conservation grow 'round!

**Cave safe ... Cave soft ... Cave clean!**

**Val & Jim**

*Val Hildreth-Werker & Jim C. Werker  
NSS Conservation Division Chiefs  
[werks@cunacueva.com](mailto:werks@cunacueva.com)*

## International Union of Speleology Call to Action: International Year of Caves and Karst

**Dr. George Veni**

*UIS President*

### Please Read This Summary!

The International Year of Caves and Karst (IYCK) will be the most important event in the history of speleology. Through public and governmental outreach programs around the world, the degree of appreciation for the tremendous value of caves and karst to all of humanity and our environment and economies will be elevated greatly. The years following the IYCK will undoubtedly see increased funding for research, more effective regulations and better awareness to protect caves and karst, and more opportunities to explore new caves and karst areas.

The International Union of Speleology and the NSS are committed to the IYCK, along with organizations in over 30 countries. But success really comes down to the involvement of you, the individual members, who make it all happen. Please read this article. Learn what is going on and think about what you can do to help. There are things large and small that everyone can do, and they all matter. Join us in this call to action for the caves we love.

*This report is part of an annual series from the International Union of Speleology (UIS) to the newsletters of its member countries. The purpose of these reports is to reach all cavers in the member countries with important news from the Union. For more information about the UIS, visit [www.uis-speleo.org](http://www.uis-speleo.org), which includes the UIS Bulletin with much more news and details. This report focuses on what could be the most important speleological event ever!*

#### What is an International Year?

International Years are typically organized under the auspices of the United Nations (UN) or the United Nations Education, Science, and Cultural Organization

(UNESCO). Their primary purpose is to educate the public and celebrate important aspects of life, such as Indigenous Languages (2019) and Planet Earth (2008).

As the name implies, International Years are a series of events that are held around the world by international teams that include partners from non-governmental organizations, government agencies, businesses, and interested individuals. There is always at least one major event, plus many other activities that are held throughout the year in multiple countries.

One other typical thing about International Years occurs when the year is over. There is a great increase in appreciation for the year's topic. This often appears as increases in funding, better regulations,

protection of peoples and important areas, and new business opportunities, depending on the topic of the year.

#### Why an International Year of Caves and Karst?

On 16 June 2015, Dr. Kyung Sik Woo, then President of the International Union of Speleology (UIS), made a declaration proposing 2021 as the International Year of Caves and Karst (IYCK) to be recognized by the UN and UNESCO. This declaration was supported strongly by a vote of UIS member countries.

The UIS, its member countries, organizational partners, and individual cave explorers, scientists, managers, and educators have done tremendous work over many decades





George Verri

Plitvice Lakes National Park, Croatia, is one of 93 World Heritage Sites that UIS has identified as based entirely or in part on caves and karst. UIS has also identified 64 similarly-established UNESCO Global Geoparks.



George Verri

UIS Past President Dr. Kyung Sik Woo in Yongcheon Cave, part of Jeju Volcanic Island World Heritage Site, Republic of Korea. This cave has extensive displays of calcite speleothems, which are rarely found in lava tubes.

to improve the world’s understanding and appreciation of caves and karst. However, despite all of our combined accomplishments, caves continue to be destroyed. Trash is still dumped underground. Karst aquifers are polluted. Many rare cave ecosystems are now endangered. Precious archaeological and paleontological materials in caves are still commonly lost and looted. And sadly, many government officials, educators, and even scientists and environmental managers do not understand caves and karst enough to prevent these tragedies, or even recognize that they are tragedies.

An IYCK is the next step to raise the level of understanding and respect for caves and karst as globally important physical, ecological, and cultural systems. A successful IYCK will lead to new caves opened for exploration, and more funds and other support for that exploration, as well as for research, management, and protection, at levels we’ve never seen before.

### What is the Current Status?

Since Dr. Woo’s declaration, the UIS has gathered the support of most of its member countries, as well as the support of four countries, nine international organizations and 21 national organizations in 13 countries. I thank them for their joining this vital effort.

While it is clear we have broad support for the IYCK, it is also clear that we need more time. The UIS has always known that getting UN or UNESCO recognition would be difficult. It requires one of their member countries to submit the proposal created by UIS—outside organizations like UIS cannot make proposals to UN or UNESCO. Also, for an IYCK in 2021, the proposal must be made and approved in 2019 and that does not seem likely. Therefore, UIS will continue to pursue support for 2021 but we are

changing our strategy to assure success and are continuing ahead in three ways.

**1. International Year of Caves and Karst for 2021.** The UIS has decided to conduct this important project on its own together with its partners in 2021, with or without UN or UNESCO recognition. Each UIS member country that voted to support the International Year agreed to organize events and programs in 2021 in their countries with the resources they have available. The UIS Bureau is asking everyone to begin to plan for that. If the UN or UNESCO are not able to support us in 2021, nothing really changes for the member countries and our other partners. We can still celebrate the Year and hold our activities. In fact, in visiting with UN representatives a few months ago, they told me that if we can organize a successful International Year on our own, that would greatly increase our ability to get UN or UNESCO support in a future year (more on that below). So, in principle, nothing changes for UIS and its partners. We will hold the International Year and conduct the same events and activities.

**2. International Day.** The UIS is collaborating with the International Show Caves Association to get UN or UNESCO recognition for an International Day. The exact name of the day is being determined but it would support the same goals as the IYCK, only recognized on one day that will likely be in early June. While international years are more difficult to achieve, Spain plans to propose an International Day to UNESCO. The advantages are that the International

Day will be celebrated each year on the selected day in perpetuity. Additionally, it will make it easier for the UN or UNESCO to recognize an International Year, if not in 2021, then in another year—perhaps in 2025.

**3. International Year of Caves and Karst for 2025.** The UIS is talking to other countries about proposing 2025 or another year to the UN or UNESCO as the International Year of Caves and Karst. We are looking for our member countries and partners’ support too if this proposal is made and accepted. If you think your country may be willing to propose the International Year, and if you are willing to contact your government for UIS to get their support, please let me know!

Some of you may wonder how this affects you, and hopefully how you can help. When the UIS member countries voted on the IYCK, it was with the understanding that those countries voting to support the IYCK would also conduct IYCK activities. If you are interested in working on the IYCK, ask your UIS delegates (listed on [www.uis-speleo-org](http://www.uis-speleo-org)) on their status in organizing activities in your country.

If your country did not vote to support the IYCK in 2015, check with the leaders of your national organizations. Some countries did not vote, others were not members three years ago, and maybe others that were not ready to support the IYCK in 2015 may be are ready now. If not, you can still organize activities with your local clubs and regional organizations, our other partners, or with new partners you find.

As I write this report in the final days of 2018, the UIS IYCK Committee just met. We approved a structure to build the

## UIS Countries Currently Supporting the International Year of Caves and Karst

Australia, Austria, Belgium, Brazil, Bulgaria, China, Costa Rica, Croatia, Czech Republic, France, Germany, Honduras, Hungary, Iran, Israel, Italy, Japan, Korea, Kyrgyzstan, Lebanon, Lithuania, Mexico, Puerto Rico, Romania, Serbia, Slovenia, South Africa, Switzerland, The Netherlands, Ukraine, United Kingdom, United States.

IYCK website and other social media. We are nearly finished creating an IYCK logo, and we are beginning to write materials and collect photos for the website, circulars, and other materials. We expect to have the website ready sometime in Spring 2019. We will announce it widely through the UIS Facebook page, messages to our delegates, commissions, and partners, and by messages they send.

### A UIS Call to Action

The UIS is the International Union of Speleology. What does that mean?

*International—everyone in the world! Union—working together, and for what? —Speleology.*

For the IYCK to succeed, I ask everyone who enjoys and cares for caves to join the UIS in creating IYCK events for your town, region, and country.

The UIS will not make your participation difficult or beyond your abilities. We recognize you represent diverse cultures, skills, and resources. Therefore, as you read the following guidance, please remember that we ask you to do what will be most successful for your culture, appropriate to your skills, and within the limits of your resources. No single group can do everything, but together we will reach people across the world.

The IYCK will have three major themes:

- Sharing Cave and Karst Knowledge: International Scientific Conferences and Public Exhibitions
- Promoting the Value of World Heritage Caves and Karst
- Sharing Cave and Karst Knowledge: Show Caves – Karst Tourism

Start thinking about the best way that your organizations can participate. Here are some examples for each theme of what your organization might be able to do.

**Sharing Cave and Karst Knowledge: International Scientific Conferences and Public Exhibitions.** The UIS' 18<sup>th</sup> International Congress of Speleology will be held in Lyon, France, in 2021 (<http://uis2021.speleos.fr/>). It will be the major

event for the IYCK, but any cave or karst conference can potentially be an official IYCK event too. This includes your annual conferences, sessions at other conferences, and symposia. Slovenia's annual International Karstological School "Classical Karst" is already scheduled as an IYCK event. What about your annual workshops and courses? You can also organize special events of all types, demonstrating cave science and caving techniques, public lectures, visits to classrooms, showing cave videos, and giving interviews about the IYCK to newspapers, magazines, television, and other media. You are limited only by your imagination.

Remember, the main purpose of the IYCK is to educate the public so make sure to invite the public, non-caver scientists, land managers, politicians, and others who normally do not attend cave and karst events but would benefit from attending. And do not just invite them—give them special attention and support. Make it easy for them to attend, and also to participate in fun and interesting ways. The IYCK should educate, impress, and engage them!

**Promoting the Value of World Heritage Caves and Karst.** Do you work with or are you located near a UNESCO World Heritage Site or Global Geopark that was established at least in part because of caves and karst? If so, let us know! We would love your help to tell those sites and parks about the IYCK. The UIS needs them to participate. We will reach out to them directly, but many times your personal connections may be better.

Also, maybe you don't know what to do for the IYCK and they don't know either, but together you can find many things to do. Maybe once a month throughout the year some people can enter the World Heritage Sites and Geoparks for free. Focus on the special cave and karst features there with education programs for adults and kids. Create public participation projects. For example, maybe some research would benefit from extra public help. The same may be true of management work from repairing a trail to cleaning trash from a cave or repairing speleothems. Remind the public that these World Heritage and Geopark sites have such high recognition because they are special, and how caves and karst add to that specialness.

**Sharing Cave and Karst Knowledge: Show Caves & Karst Tourism.** The International Show Caves Association and national show cave organizations will encourage their member show caves to do some special things for the IYCK. Like with the World Heritage sites and Geoparks, this can include free entry and many special

## Current Supporters of the International Year of Caves and Karst

### Supporting Countries:

- Belgium, Croatia, Hungary, and Slovenia

### International Organizational Partners:

- Bat Conservation International
- European Cave Protection Commission
- European Speleological Federation
- Fauna and Flora International
- International Association of Hydrogeologists, Karst Commission
- International Council for Science
- International Show Caves Association
- International Union of Geological Societies
- World Heritage Program of International Union for the Conservation of Nature

### National Organizational Partners:

- Belgium (Belgium Union of Speleology, Flemish Belgium Speleological Federation, Walloon Commission for the Study and Protection of Underground Sites)
- Brazil (Brazilian Speleological Society, National Council of the Atlantic Forest Biosphere Reserve)
- Bulgaria (Bulgarian Federation of Speleology)
- China (International Research Center on Karst)
- France (French Federation of Speleology, Geoparks Group of France)
- Germany (German Speleological Federation)
- Italy (Italian Speleological Society)
- Japan (Speleological Society of Japan)
- Kyrgyzstan (Foundation for the Protection and Exploration of Caves)
- Myanmar (Myanmar Cave Documentation Project)
- Slovenia (Karst Research Institute ZRC SAZU, Slovenian Speleological Association)
- Ukraine (Institute of Geological Sciences of the National Academy of Sciences of Ukraine, Ukrainian Speleological Association)
- USA (American Geosciences Institute, National Cave and Karst Research Institute, National Caves Association, National Speleological Society)

programs. It is estimated that about 150 million tourists visit show caves each year. Show caves and cave and karst parks have the ability to reach the greatest numbers of people. We encourage them to do all that they can and for you, our members and other partners, to assist them wherever possible.



## Caribbean Cave Recovery in Aftermath of 2017 Storms

**Angel D Vega, NSS 67993,**  
*Puerto Rico Cave Conservation Committee*

As you think about activities for the IYCK, think about partners to assist you with programs, advertising, costs, and raising funds to cover any costs. Partnership is also important in getting more people involved, educated, and interested in caves and karst. If you have ideas and support for how the UIS can better promote and conduct the IYCK, we welcome partnering more closely with you. If your country or national or international organization is not listed as supporting the IYCK and wants to join us, please let me know.

We ask you to watch for the IYCK website and social media, which will be the primary locations for information on the IYCK, and how to participate and show its importance to the world. We will post news at these locations and encourage you to share your news and activities.

We are also in a delicate period. With this message we are asking that you begin thinking about what you can do to support the IYCK and begin some basic plans, but we ask you to not reach out to the public at this time. Because our message will reach across the world, our message and its appearance with the logo needs to be clear and consistent. Once the website is posted, you will have access to the logo and information to reach people in your communities and countries in a way where we send a unified message to the world.

### In summary:

- Get involved! This is a once-in-a-lifetime chance to greatly improve understanding and appreciation of caves worldwide.
- Begin thinking about activities you can do in your community, region, and country to support the IYCK.
- Begin reaching out to potential partners for assistance. They do not need to be from the caving community!
- Wait until the IYCK website is posted for access to the logo and other information before reaching out to the public.
- Begin planning now! It will be 2021 faster than you think.
- Please contact me ([gveni@nckri.org](mailto:gveni@nckri.org)) or other members of the UIS Bureau at any time if you need assistance or have questions.

With your help, together we will educate the world through the International Year and International Day about our precious caves and karst areas. Together, we can save the world's caves and karst for the future.

Living in a tropical Caribbean island helps you get acquainted with the idea of periodic natural changes that reshape your surroundings. The warm tropical winds bring cyclic periods of heavy rains, with several peaks throughout the year that block low bridges, flood alluvial plains, or trigger landslides. The warm tropical waters help create and guide storms that use the Caribbean as their highway for six months of the year, with the peak season of August and September bringing strong winds that average 75 miles-per-hour.

September 2017 brought the highest form of these two natural phenomena together, with enough force to move anything out of place: trees, houses, people, rocks, rivers, land, and even the sea. The phrase "to reshape the landscape" finally had a palpable definition for me. Now I understand the scene on the movie *Twister*, when they said that category 5 would be like "the finger of God".

The storm aftermath gave our island homes massive amounts of debris, no water supplies, no electrical power, houses destroyed, leafless trees, roads blocked, rivers out of their paths, no radio signal, and no cellphone coverage. Very soon after the event we realized that recovery will be a long journey and the idea of returning to normal life is a far-fetched utopia.

For many cavers, this situation would be manageable because a day trip requires extensive preparation for the assumption that regular conveniences of modern life are unavailable while underground. Our caving experience gave us the advantage of having most or all that we needed to survive a few days 'off the grid', which gave the outstanding men and women of the caving community the ability to concentrate efforts on helping those less fortunate.

### Within a Few Months Caver Concerns Turned To the Caves

For a few months, the whole island was in 'survival mode'—gathering food, finding potable water, and getting fuel for generators. But for cavers, after the first weeks of survival, minds and hearts turned to the caves, caverns, and underground passages. Spelunkers wondered if caves would still be accessible; explorers saw the opportunity that new cave openings would be uncovered or sumps would be unplugged; conservationists got troubled with the uncertainty if previous efforts were lost; and speleolo-

gists worried if ongoing investigations were completely lost.

We all started heading out to check the caves and reality struck. Secondary roads were partially obstructed by trees or debris. Dirt roads were completely blocked. Access trails and markings were obscured by a thick mantle of fallen trees, branches, and vines. After a few futile attempts, we all understood that any cave entrance farther than 100 meters from the road would need several clearing trips just to reach the dripline. Cave conservation and exploration needed new strategies that aligned with current reality—after survival is achieved, the recovery phase must kick-in. Caribbean Cave Recovery became re-discovery and re-habilitation of trails and paths to eventually re-enter and re-explore caves to assess their status. Cave conservation was no longer the work of a small party, it was 'the calling' that all cavers must answer.

### 'The Calling' of All Cavers

Here is where real cavers stood above the mere mortals to take on the hard decision: postpone all exploration and focus on access trails. The new caving trips included machetes, axes, chainsaws, and flagging, with the mindset that just being close to the entrance would be the best prize. Now, attention turned to the experienced cavers who had walked the trails many times and knew the bearings by heart. Newer cavers who had recorded walking trails using GPS contributed their data, and collaboration provided the means to walk the now obscured pathways.



Cabachuelas rehabilitation

M. Rivera



R. Moreno

**SEPRI at Cueva Clara recovery**



Y. Delgado

**SEUS at Cueva Mapancha cleaning**

What follows are fine examples of voluntary work driven by the caving community.

Robert Moreno gathered people and traveled more than twenty times to Rio Camuy Cave Park, to cut trees, clear the tramway, remove sludge from cave floors, fix lighting, and restore water supplies. Marie Montes called upon SEPRI\* members to clean Cueva Clara and return it to the magnificent show cave that Russell Gurnee envisioned. Even so, the Park is still close to the public today. Rossano and his crew re-opened access to restore tours in Angeles Cave of the Rio Camuy Cave System—their prize was to find the return of the long lost Lake Norman! Workers at Cueva Ventana (window cave) dedicated many hours to reestablish easy access to this tourist attraction. All these initial crews worked long hours on the recovery of several cave tours that offer varying levels of difficulty.

Dedicated cavers like Manuel and Tamara, assembled a small group to continue the work started by Pipo Marrero at Camino La Ceiba, which provides vehicle access to Rio Encantado Cave System and many other caves. For two months they dedicated many hours to cleaning more than a kilometer of road. After completing this great task, they slowly started to re-open the trails to the different caves, work that is still underway.

Miguel and FIEKP\* cavers have made many trips to reopen the dirt road that leads to Cayuco area, the main access to dozens of caves, and yet, many caves have not been reached. This work is still developing, but cave exploration in the area has finally resumed as the group strives to continue halted investigations.

Cavers from SEUS\* group have made efforts to clear paths leading to caves in the southern part of the island, from Cerro Cuevas to the Dry Forest. Jose Gomez and La Gruta (GTNV\*) group have worked extensively around Aguas Buenas Cave System,

opening access trails and exploring passages to assess impact in order to continue cave monitoring and investigation.

Many unmentioned and anonymous good cavers are still dedicating long hours on the weekends or days off, pushing forward this recovery phase.

As side notes, a community group had stalled on a long-term project to transform Las Cabachuelas, a natural reserve with over 20 caves, as an eco-educational alternative. After many hours of work to restore and improve walking trails, they finally launched this beauty to the public.

The Bat Conservation Program (PCMPR\*) has made ongoing efforts to access caves important for bats and document the storm's effect on habitat and population. The group lead by Yanire Martinez has not published the results, but it is obvious that the flower and fruit bats have payed the greatest toll. Most recently, Salvador Lugo, new to organized caving, has partnered with biology experts to start a project focused on finding again the caves of the Guanica Dry Forest, in order to document their status.

### **Machetes and Chainsaws Full Speed Ahead**

One-and-a-half years after disaster struck, most of the important caves have not been entered and most of the cave systems have not been explored to confirm human passage. The island has entered a phase of economic Long Term Recovery that may take 5 to 10 years. Revisiting the caves and cave systems may take that long as well.

Forests of 2016 had a dense canopy that shaded and prevented forest floors from being overrun by shrubs and vines. Forests of 2019 have trees with few or no top branches, so forest floors have many hours of sunlight that has promoted growth of all sorts of vines and weeds that wind around and over fallen trees, creating green

walls. This new situation has expanded the dangers of visiting a cave. Now you have the potential perils of someone throwing around a machete, stepping over obstacles with a gas can, walking onto a covered sinkhole, unexpected fall of rotten branches, or just losing your way because you can't see the path ahead.

The cavers and caving groups mentioned here, most of which are incomplete, are just an example of how the Puerto Rican caving community has responded the calling to "Save the Caves." All this is just a sneak peek of the near future. Previous caving organizational walls have become obsolete because members are crossing lines to help whom-ever schedules a cleanup effort, knowing that the study, exploration, and enjoyment of caves can only happen when you can access them. So, travelers and international cavers who plan to visit Puerto Rico, file your machete and oil your chainsaw if you want to enjoy the wonders of Caribbean caves. Expect your host to ask you for help with the trails and the cleanup efforts.

### **Acronyms and hyperlinks to caver group pages:**

SEPRI = Sociedad Espeleologica de Puerto Rico

FIEKP = Fundacion de Investigaciones Espeleologicas del Karso Puertorriqueño (<https://www.facebook.com/groups/fiekp/>)

SEUS= Sociedad Espeleologica Unida del Sur

GTNV= Gruta Troglodita Norman Veve (<https://www.facebook.com/profile.php?id=100012469324317>)

PCMPR= Programa de Conservacion de Murcielagos de Puerto Rico



# New Mexico Adds “Caving” to Recreational Use Statute

Steve Peerman, NSS 16158

One aspect of protecting caves is protecting cave owners. Many private landowners are reluctant to allow cavers to enter caves on their property because of the liability of doing so. Landowners are afraid someone will get hurt, or worse and they will end up with a lawsuit.

The proper management and monitoring of caves on private lands depends upon actually being able to visit those caves, so relieving the landowner of liability is a big step towards making access easier for cavers.

A similar problem exists for other recreational activities, primarily hunting and fishing. Every state in the union has some sort of recreational use statute (sometimes called “Sportsman’s Laws), that provides liability relief for landowners who allow persons to hunt or fish on their property. Many of these statutes also name other recreational activities in their statutes. (For a list of all the states recreational use statutes, see <http://www.climbingmanagement.org/climbing-information-and-management-plans/recreational-use-statutes>.) Several states specifically include cave exploring (i.e., “caving” or “spelunking”) as part of their statutes, including Alabama, Arkansas, California, Colorado, Iowa, Indiana, Maine, Minnesota, Montana, Nevada, Pennsylvania, Texas, Wisconsin and Vermont. New Mexico can now be added to that list!

The road to getting caving included in New Mexico’s statute began in October, 2016. At a meeting of the board of directors of the Fort Stanton Cave Study Project, the issue of continuing the exploration of Fort Stanton Cave beyond the public land boundaries was being discussed. Board member John Moses brought up the idea of getting caving included in New Mexico’s recreational use statute. Up to that point, I wasn’t even aware that there were such statutes, but the board of directors agreed that getting caving into the statute would make continuing exploration of Fort Stanton Cave under private property much easier.

Shortly after, I contacted my state Senator, Mr. William Soules, and asked him about sponsoring a bill to add “caving” to the recreational use statute. He agreed to sponsor the bill. We hashed out some simple language with his legislative assistant, and he presented the bill to the state’s Conservation Committee at the January, 2017 legislative session. Several cavers offered supporting testimony, including myself, George Veni, Pete Lindsley, and Ron Lipinski. The bill received a “Do Pass” recommendation.

The full Senate passed the bill overwhelmingly, and the House did as well. However, Governor Susana Martinez vetoed the bill, arguing that “other recreational activities” language in the existing statute covered caving.

As has been said many times over the last few years, elections have consequences, and a new Governor was elected in New Mexico in November’s election. In November, 2018, Senator Soules contacted me and asked if I’d like to have the bill reintroduced in this year’s legislative session. I quickly said yes! Once again the bill received a “Do Pass” recommendation from the Senate Conservation Committee, with supporting testimony from Scott Christenson and John and Gretchen Lyles. (In addition to being last year’s Lew Bicking Award winner, John is a cave owner and could speak directly to the issue of liability!)

The bill easily passed both the Senate and the House, and on February 4, 2019, it was signed by Governor Michelle Lujan-Grisham. It will become law on June 14, 2019.

Here is the text of the bill, with the changes provided by the bill in **boldface**:  
AN ACT RELATING TO LANDOWNER LIABILITY; LIMITING LIABILITY OF LANDOWNERS PERMITTING PERSONS TO EXPLORE CAVES ON PRIVATE PROPERTY.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

SECTION 1. Section 17-4-7 NMSA 1978 (being Laws 1967, Chapter 6, Section 1, as amended) is amended to read:

“17-4-7. LIABILITY OF LANDOWNER PERMITTING PERSONS TO HUNT, FISH OR USE LANDS FOR RECREATION—DUTY OF CARE—EXCEPTIONS.—

A. Any owner, lessee or person in control of lands who, without charge or other consideration, other than a consideration paid to the landowner by the state, the federal government or any other governmental agency, grants permission to any person or group to use the owner’s, lessee’s or land controller’s lands for the purpose of hunting, fishing, trapping, camping, hiking, sightseeing, the operation of aircraft, **cave exploring** or any other recreational use does not thereby:

- (1) extend any assurance that the premises are safe for such purpose;
- (2) assume any duty of care to keep such lands safe for entry or use;
- (3) assume responsibility or liability for any

injury or damage to or caused by such person or group; or

- (4) assume any greater responsibility, duty of care or liability to such person or group than if permission had not been granted and the person or group were trespassers.

B. This section shall not limit the liability of any landowner, lessee or person in control of lands that may otherwise exist by law for injuries to any person granted permission to hunt, fish, trap, camp, hike, sightsee, operate aircraft, **explore caves** or use the land for recreation in exchange for a consideration, other than a consideration paid to the landowner by the state, the federal government or any other governmental agency.

**C. For the purposes of this section, “cave” means a natural, geologically formed void or cavity beneath the surface of the earth, but does not mean a mine, tunnel, aqueduct or other manmade excavation.”**

In New Mexico we are celebrating the passage of this bill. I would challenge cavers in those states where caving is not mentioned directly in their recreational use statutes to contact their legislators to see if they can get “caving” added!

## Support Cave Conservation

Donate to the Save-the-Caves Fund!

Caves, cavers, and the NSS appreciate your financial support!

Our Save-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>
- To specify Save the Caves, find fourth item in list after you click on blue link
- 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.

# Bill Austin: One Father of Cave Conservation

Tom Brucker NSS 24892 (RL, LB, FE)

The origin of cave conservation has many roots. William 'Bill' Austin was among the first to promote the idea of cave conservation. His experiences in the early 1950s helped move us to the contemporary logic that protecting underground wilderness assures undisturbed environments for cave science and provides 'wild cave' experiences. To conserve areas of the Flint Ridge Cave System where he at that time controlled access, Austin formulated rules that still stand today as the foundation pillars of cave conservation.

This is the story of a man who influenced the cavers of his time and enlightened today's modern cavers. Austin was a no-nonsense serious caver and a Kentucky cave owner who enforced rules for developing the values of cave conservation. In a sense, he established an early in-cave spelean laboratory of conservation. Austin's intense personality and his devotion to the preservation of his cave discoveries caused his jaw muscle to pulsate when he talked of delicate formations and fragile passages. His principles carry forward a certain motivation that we all recognize today from our own caving experiences.

## NSS C-3 Expedition, Central Ohio Grotto

Austin had achieved certain goals by the summer of 1954. As manager of Kentucky's Floyd Collins' Crystal Cave, Austin and his employer sponsored a massive week-long NSS C3 expedition to map areas beyond Floyd's Lost Passage. Too young an organization to have famous cavers, the NSS nevertheless represented the passionate elite of those times. They primarily searched for cave and passage discoveries, saving the disciplines of science for a footnote.



John DeLong, CKF

One of only two signatures after the 4.5 mile discovery trip. Terminal breakdown beyond was opened within months to bypass the fragile area now known as Bennington Grotto, which even today remains off limits. Tom Brucker and Elizabeth Winkler.

Crystal Cave was now considered one of many major US caverns. Although publicity from the NSS expedition brought increased visitation to Crystal, Mammoth Cave continued to receive the lion's share of tourist dollars.

Over several months, Austin and caving partner, John (Jack) Lehrberger, surveyed some interesting passages in a nearby cave. These survey lines stretched the length of Flint Ridge, but lay only half-a-mile west of Crystal. Now longer than Crystal Cave, the new maps gave Austin and Lehrberger new insights and aided further exploration.

Austin also invited—or more accurately chose—a small group from the COG (Central Ohio Grotto) to continue exploration beyond the boundaries of the C3 expedition under the watchful eye of former Crystal Cave manager and COG member James 'Pop' Dyer.

Lehrberger spent many days exploring a small cave he felt might connect to the end of Austin's mapped passages. Over many solo trips, he discovered a maze of lower-level dusty canyons and lots of elusive air, but the cave stubbornly failed to link with the targeted longer Flint Ridge cave. One rainy day, Lehrberger heard a seasonal waterfall just a few feet beyond the small cave's first pit, and decided to follow the water's path. Through a series of small pits filled with water spray, Lehrberger chimneyed down to a flat-floored canyon. He squeezed through a body-sized tube which dropped into a much larger canyon. From here, the way to go was straight down and would require rope.

## New Discovery

On September 11 in 1954, Lehrberger took Austin and a rope to the small cave in order to safely explore the new, lower levels. At the rope's end, a walking tube beckoned. After proceeding 500 feet, Austin read his compass, and the pair realized that this new passage led away from the target on their map. Another 500 feet of crouching led to a muddy area with child-sized footprints, bare, and very old. The footprints were clear and well-defined because there was no other trampling in this otherwise virgin passage.

They decided to erect two large rocks and scribe a carbide soot warning: "Avoid footprints." Five minutes later the pair reached a major T-junction. Another hour of thrilling caving produced discoveries that seemed more fantastic than possible.

A large hall, featuring an onyx wall, cave pearls, and concealing a three-second

pit promised this would be a trip to remember. The way onward was blocked by a towering sandstone breakdown slope leading up a tremendous dome. Loose rocks shifted as the two managed to climb the slide to reach an alcove with yet another passage.

Almost immediately sandstone breakdown blocked this tube, but howling wind in a keyhole beckoned and soon yielded a breakthrough. The passage grew larger. Sand covered the floor. Gypsum coated the walls. Their careful footprints were the first on the floor of this beautiful elliptical tube.

During the next few hours, Lehrberger and Austin discovered three more miles of walking passage. A narrow trail had to be made through gypsum formations. Massive gypsum crunched below their boots. In several places, formations more fantastic than any known in this area only added to their sense of awe. The experience was humbling. Reaching a final breakdown, the pair left their initials and the date. On the long trip back they followed their own footsteps, and stayed on the narrow strip of disturbed floor surrounded by nature's pristine beauty.

## The Secret Gets Out—Impact Spreads

As with any clandestine cave discovery, the secret soon spread. Austin kept the COG cavers 'in the dark' even as they announced their own breakthrough to the Overlook in Crystal Cave. Lehrberger however, shared the discovery with his Louisville caving buddies.

The Louisville group entered the secret cave for a poorly documented 48-hour trip that discovered even more new passages. Narrow trails became broader, and an underground camp was littered with trash and carbide dumps.

Austin and Lehrberger hastily surveyed much of the new discovery. One passage passed close to the latest COG discovery, Eyeless Fish Trail, and Austin realized he had choices to make.

Austin needed to initiate new rules for the cave.

Cavers from Louisville left their marks. Delicate sediments had already been trampled. Carbide arrows and dumps were everywhere. Austin could not control how the Louisville cavers behaved underground, and preventing further human impact to this new discovery became a necessary condition for access. He knew this was an opportunity to share the underground wonders, but it



could only be shared with cavers who would follow the rules. To date, COG cavers had been easily controlled. The others, it became clear, were not.

### Obey the Rules

Austin had to create rules. How Austin manipulated the two caving groups is another story. When Austin shared the new discoveries in the fall of 1956 with the COG cavers he mandated strict rules: Stay on trails. Stay off formations. Travel only in areas where work is being done. Minimize carbide writing. Keep out of specified formation areas. The most important rule of all was to insist all new caver recruits follow the rules. Unsupervised cave explorers were no longer welcome.

For young cavers like me (my first trip here was in 1963), these rules made perfect sense. But in 1956, conservation rules were a 'tough sell' to old timers. No one yet called these practices 'cave conservation.' Caves existed to be explored and enjoyed, and many were heavily exploited.

This was an opportunity to save and protect a large cave for the sake of sharing in its discovery. It is through emotional learning experiences that cavers understand the necessity of practicing cave conservation. Signs and gates and even secrecy cannot preserve a cave.

### The Lesson

Education is important, but the best kind of cave conservation is individual mentoring by ethical and experienced cavers. Some cavers have reinforced this ethical and emotional wisdom by taking new cavers on cave cleanup trips. Investing time and effort to restore a cave is a conservation lesson that will never be forgotten. Prevention, however, beats clean up every time.



Old Granddad is one of the signature calcite formations accessed via the Austin Entrance to Mammoth Cave.

Under Earth Images

## A Perfect Collision of Forces: Charles B. Henson Cave Preserve

**Amber Lehmann**

Board Director/Southeastern Cave Conservancy

with Contributions by the Chattanooga Times Free Press (Mark Pace)

### Acquiring and Conserving the Charles B. Henson Cave Preserve

What started as a dream of protecting one of the highest concentration of caves in the southeast became a reality for Southeastern Cave Conservancy, Inc. (SCCi) at the end of 2018. Thanks to a generous anonymous donation of over 2,300 acres, along with the facilitation of the Georgia-Alabama Land Trust, Inc. (GALT), the SCCi now owns and protects the entire area now known as the Charles B. Henson Cave Preserve at Johnson's Crook, in Dade County, Georgia.

A recent *Chattanooga Times Free Press* article called the acquisition circumstances "a perfect collision of forces...that paved the way for one of the biggest private conservation projects in the region."

Johnson's Crook was formed as a result of tectonic activity and the weathering effects of wind, waves, and rain. It contains dozens of caves, pits, sinkholes, waterfalls, cliffs, rare plants, and an aquifer recharge zone.

### Part 1 – A Real Estate Development Scam

In 2004, developers subdivided 2,000 acres at Johnson's Crook and, in 2007, began offering lots in an area they named 'The Preserve at Rising Fawn.' The cabin resort was to feature an equestrian center, swimming pool, fine dining, trails, and a luxury spa. What happened next befuddled locals as well as concerned cavers and conservationists from around the region.

It was reported that developers had erected some gates, a barn, 'No Trespassing' signs, and very little else. The area had no roads, electricity, or water, but out-of-town buyers were snapping up the lots and for jaw-dropping sums. From 2008 to 2010, hundreds of buyers, mostly from out of the area, paid \$175,000 to \$250,000 for a couple wooded lots that normally would sell for around \$7,000 to \$8,500.

Following the housing market crash of 2008-2009, the Federal Bureau of Investigation eventually determined that sales were misrepresented in order to inflate land values and then obtain bank loans for new mortgages. The two developers involved in the scheme went to prison, and most of the 300 lots sold currently are vacant. What remains is a grand entrance gate,

a few homes, some cabins, and the ruins of an unfinished community center. The beautiful, undeveloped land contains several large scenic ponds, rolling hills, countryside, pasture, and caves, with picturesque Lookout Mountain in the background.

### Part 2 – Grassroots Conservation Efforts

Early on, cavers worried about the effect hundreds of new septic systems might have on water in the area caves. Residents on the brow of Lookout Mountain were concerned about what hundreds of new homes would do to their view.

The greatest threat from potential development of the Crook would have been from water pollution. Officials estimated that septic tanks for the number of homes that were planned for the area would introduce 300,000 gallons of sewage daily into the Crook's ground water.

If the Preserve at Rising Fawn had been fully developed, it also could have meant the loss of an extensive tract of a mixed mesophytic forest (more on that later in this article) that contains several rare and threatened species. Other possibilities include cave entrances being bulldozed shut, aquifer recharge zones being destroyed, archaeological and historical artifacts being threatened. Equally devastating would have been the potential loss of the scenic vistas that draw tourists from Tennessee, Alabama, and Georgia to this stretch of the Lookout Mountain Scenic Parkway.

Enter Charles 'Chuck' Henson, a well-known TAG caver (Dogwood City Grotto), conservationist, and early advo-



**Chuck Henson**

cate of protecting the land at Johnson's Crook. Being himself a home builder, Chuck predicted the scheme to pre-sell lots with no infrastructure would fail (and he was right).

Worried about Johnson's Crook, Lost Canyon, and many other caves in the region, Chuck quietly started buying land that became available. He bought the lot containing Lost Canyon Cave and donated it to SCCi. Chuck's concern for the Crook inspired other conservation-minded people including the Georgia-Alabama Land Trust, which eventually purchased the remaining cave acreage.

### **Part 3 - The Importance of Johnson's Crook**

Johnson's Crook had been on the radar of conservationists and developers for many years. In 1992, the Georgia Department of Natural Resources (GaDNR) proposed acquiring the Crook's most significant natural areas, but the effort failed due to the landowner only wanting to sell the tract in one piece.

Having one of the highest concentrations of caves in the area, Johnson's Crook is one of the top three karst landscapes in the state, according to the Georgia Speleological Survey (the other two are Fox and Pigeon Mountains). Over 30 caves and pits have been documented in the Crook, including Johnson's Crook Cave, which is at the bottom of a deep sinkhole and extends for over 7,000 feet. Also located on the Preserve is Eagle Cave, which is near the base of the escarpment and approximately 3,000-feet-long, and Lost Canyon Cave, one of Georgia's deepest, at 352-feet.

Johnson's Crook is covered by an Appalachian mixed mesophytic (not particularly dry nor wet) forest, a relic of the ancient forest that once covered much of the temperate regions of the Northern Hemisphere. Examples now only survive in the southeast region of North America and in eastern and central China where they provide a refuge for a wide range of plants, animals and insects. In total, the Appalachian mixed mesophytic forest eco-region represents one of the most biologically diverse temperate zones of the world.

Located in the Lookout Mountain ridge, the Crook landscape is a deep horseshoe-shaped cove with high bluffs. Underlain by limestone bedrock, many of the slopes have been popular among cavers for their varied challenges and remarkable beauty. Unlike the rest of Lookout Mountain's western slope, its steep walls face not only west, but also north and south. This unique aspect allows for the growth of rare flora and proliferation of fauna.

### **Part 4 – Conservation Efforts on a Larger Scale**

The failure of the ambitious and environmentally insensitive housing development provided a chance for GALT to begin large-scale conservation measures. Although the group's interest in the Crook pre-dated the planned development, it was not until 2012 that GALT began land acquisitions with a final goal of creating a cave preserve to benefit the public. Thanks to land acquisition and donations of conservation easements, there is now a permanent conservation easement on the land in the current Henson Preserve.

In case you're wondering, a conservation easement is a voluntary agreement between parties that permanently protects land from development, surface mining, and other practices that would significantly cause harm to the area. The land owner either sells or voluntarily donates the easement, which is a legally binding agreement in perpetuity while the land remains in private hands and whether the property is sold or passed on to heirs.

Conservation easements protect land for future generations while allowing owners to retain many private property rights and to live on and use their land. At the same time, certain tax benefits also may be realized. An easement selectively targets only those rights necessary to protect specific conservation values, such as water quality or migration routes, and is individually tailored to meet a landowner's needs.

In the simplest of terms, conservation easements are a permanent and viable way of protecting land.

### **Part 5 – Georgia-Alabama Land Trust and SCCi's Partnership**

During the early fall of 2015, GALT granted SCCi stewardship of 1,300 cave-rich acres in the Crook. At that time, while SCCi only owned a few parcels and managed some of the land, the majority of the property belonged to a private owner. SCCi's main obligation during this time was to maintain the property it owned and managed.

SCCi named this property the Charles B. Henson Cave Preserve at Johnson's Crook, in honor of the late Chuck Henson. It was a major milestone in the conservation of the land and for Chuck's legacy.

During this period and over the course of three years, SCCi was working with GALT to acquire the land as permanent owners. In mid-December of 2018, the long-awaited dream of owning the cave-rich property came to a reality.

SCCi received a call with the news that the owner of most of the land holdings of Johnson's Crook wanted to donate it before the end of the year. It was an implausible goal—a perfect collision of forces—that

came about through SCCi's forward thinking and strategic purchases by conservationists to protect the caves.

"The partnership with the Georgia-Alabama Land Trust has made it possible for this natural resource to be protected and enjoyed forever by recreational cavers, hikers, and outdoor enthusiasts," said SCCi Executive Director Ray Knott. "SCCi wants the preserve to be an asset to Dade County and the North Georgia community."

"Conserving this amount of land comes with a lot of responsibility and cost," he said. "Stewardship, trails, and basic recreation structures can be costly. We will need the input and support of many partners to make this preserve a North Georgia destination."

SCCi now plans to work with community partners to develop a master plan for the preserve. With the donation, land owned and protected by SCCi has increased to more than 4,475 acres.

With the SCCi board's decision to increase capacity, hire staff, and create better support systems, the group is positioned to accept and manage a donation of land of this size and value. It is a testament to how far SCCi has progressed in the past few years.

Moving forward, SCCi will continue to conserve and protect not only the Henson Preserve but 30 others and more than 170 caves it currently owns or manages. SCCi will continue to seek significant caves for acquisition while providing world-class stewardship to protect caves and karst landscapes forever.



Alan Cressler

**Part of the 130-foot-tall waterfall in Johnson's Crook Cave**



# Conservation Education: Don't Go It Alone

*Dave Jackson*



**A girl falls in love with caving for the first time in CaveSim. Photo courtesy Chelsea Self, Glenwood Springs Post Independent.**

Have you ever been caving alone? I suppose that a few of you might have, but we all know it isn't advisable. I, for one, have never been caving alone (unless you count that hour or so during a small-party rescue of a fellow caver, but that's another story for another day). The point is this: most of us know that the key to successful caving is collaboration with fellow cavers. It turns out that the key to successful conservation education is also collaboration.

Collaboration is the only reason that I had the opportunity to teach well over 5000 people about cave conservation in 2018. It's only because of incredible partnerships that CaveSim was able to travel to five states for 57 days of educational programs in one year. And the list of people who helped make this possible is far longer than the number of days of programs that we did with CaveSim last year. That's why I sent over 220 Christmas cards in December -- because I have a lot to be thankful for. Of course, if I re-thanked everyone, you'd fall asleep quickly, which isn't my goal. Instead, I'll share just two compelling (and related) stories of the power we all have to take a small action to affect big change.

At the 2015 Convention, caver Deitra Biely took a small step that has had a big positive impact on conservation education ever since. Deitra asked if I would bring CaveSim from Colorado to teach her 3rd grade students in Grove, Oklahoma. I think she may have been a little bit surprised when I agreed. Deitra then did the hard work of writing grants to fund the program, and several cavers from around the US helped me teach 200 students during a two-day program in Grove in 2016. The program was so successful that Deitra expanded it

to a four-day program in 2017, and then a six-day program in 2018.

As the program length has grown, so has the educational value. We teach high school Advanced Placement (AP) biology and AP chemistry students about cave biota using several in-class labs that are aligned with educational standards and coupled tightly with the conservation lessons that CaveSim teaches. We do physics lessons on the CaveSim SRT tower that are so compelling that other classes come outside to participate, despite not being scheduled with us. Even sometimes-jaded high school students have so much fun with CaveSim that they become eager to learn both conservation and in-depth science lessons from the CaveSim labs. This past year, Matt Covington was extremely generous in sharing a day of his time to present to the high school students about his experiences in cave exploration and university-level speleology.

Deitra's small initial step of asking for a CaveSim program has also led to CaveSim programs in Oklahoma City, more than three hours away, and these programs have taught hundreds of non-cavers about the importance of caves and conservation.

Like Deitra, caver Cait McCann also took a small step that has grown into an incredible conservation education effort. Cait went out on a limb and asked to have CaveSim at the Austin Cave Festival, a one-day public program put on each year by the City of Austin. Because I believe strongly in being responsible with fuel by making the most of long trips, we worked together to organize not one, but seven consecutive days of programs in Austin, including programs at five schools. In this way, Cait, Jessica Gordon, and many other Texas cavers banded together to help me inspire over 1000 non-cavers to become advocates for cave conservation. Cait and Jessica's effort



Miles Groth

**An elementary school student is thrilled to learn the physics of pulleys on the CaveSim 12 foot vertical caving A-frame.**

has expanded like ripples in a pond. In February of this year, we will be doing nearly twice as many days of CaveSim programs in Austin as we did a year ago.

And like ripples in a pond, the stories of conservation education in Oklahoma and Texas intersect. The Texas cavers introduced me to Mary Hicks, who helped first with the 2018 Oklahoma programs, and will soon help with Texas events. As a result, even more conservation education is enabled than either project could achieve on its own. After all, it takes amazing people to help me do two solid weeks of CaveSim programs.

I'm excited to see who I'll get to work with in 2019. After all, it's really the friendships that I've developed through CaveSim that make it so much fun. Teaching thousands of people about cave conservation is incredibly rewarding, and if you'd like to collaborate with me to make more CaveSim programs happen, just send me a message ([jacksondmit@cavesim.com](mailto:jacksondmit@cavesim.com)). Cave softly!



**Kids enthralled by a speleology lesson given by the author at a 2018 CaveSim program. Kathy Keeler is seen in the background (in blue hat). Photo courtesy Chelsea Self, Glenwood Springs Post Independent.**



## Cave Conservancy of Hawaii Creates Fred Stone Memorial Endowment Fund *text by CCH members, with photos by Peter and Ann Bosted*



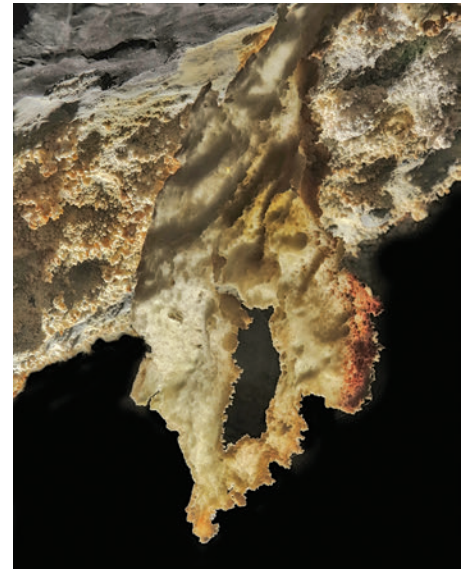
This roadside entrance to a lava tube on the Big Island has been filled with thousands of pounds of trash, including refrigerators, tires, and bicycles.

The Cave Conservancy of Hawaii (CCH) has created the Fred Stone Memorial Endowment Fund in order to assure protection for their properties by providing funds to cover ongoing costs of ownership for the foreseeable future. The Board of the CCH has taken this step as a best means to provide care for these lands in perpetuity. The fund has an initial goal of \$75,000.

The Cave Conservancy of Hawaii was founded in 2002. It is dedicated to the stewardship of volcanic caves and their contents for posterity (or at least until the next lava flow comes along!). Perhaps the biggest threat to caves in Hawaii is development. Even though it's prohibited by the Hawaii Cave Protection Act, developers generally fill in entrances with rocks, debris, and even stacks of crushed cars. Entrances are often completely filled when used as trash dump sites. In other cases, sewage systems either drain directly into caves, or leak through cracks. In one particularly obnoxious case, nasty stuff from a hospital was found washed into the cave.

To preserve caves for scientific study, aesthetic enjoyment, preservation of cultural resources, and education for generations to come, the CCH has been gradually acquiring properties with cave entrances through purchase or land-owner agreements. The properties are managed 100% by dedicated volunteers who do all the work. Management of the properties includes the required administrative work, restrictions on any kind of development, cave access, promotion of serious research, cleaning up dump sites, and removing invasive plants and trees from the surface so that the native trees can thrive.

Roots of these trees are the key ingredient in a thriving ecosystem of more than 50 different cave-adapted invertebrates. They also play a big role in the extremophile



Delicate gypsum crust hanging from a ceiling in the Kanohina System

microbial communities thriving in our cave environments. As the number of properties grow, so do the bills. Many of the properties have obligatory Road Maintenance Fees, and all have property taxes.

As a non-profit conservation owner, the CCH pays the minimum property tax, which was unexpectedly raised from \$100/year to \$200/year per property recently. To make sure that the CCH will be able to pay these ever-increasing bills over the long term, the Fred Stone Memorial CCH Endowment



Cave-adapted plant-hopper on a tree root in the Kanohia System. An active research program has recently identified several new species of cave-adapted invertebrates in Hawaii caves.



Large passage in the Kanohina System, where most of the CCH properties are located



Fund has recently been created, hosted by the National Speleological Foundation. The fund is named to honor the memory and service of pioneering cave biologist, conservationist, and educator Fred Stone. Among his many accomplishments, Fred gave the NSS its first cave: the McFail's Cave Nature Preserve located in Schoharie County, New York.

Once the fund has grown to a sufficient

size, the generated income from the fund is expected to pay the annual bills for generations to come, weathering the ups and downs of the economy and the ability of the CCH to raise funds on an annual basis. In the future it will grow to help with property purchases.

If you would like to support this endeavor, please send a check to the Cave Conservancy of Hawaii, PO Box 7083, Ocean View, HI 96737 (indicate that your donation is for

the Endowment Fund). Please inquire about setting up a donation in your will or recurring credit card donations. Visit our web site (<http://www.hawaiiicaves.org/>) or contact Mike "at" [speleobooks.com](http://speleobooks.com) (phone 518 253 6781). The Cave Conservancy of Hawai'i is a 501(c)3 tax-exempt organization. It is registered in the state of Hawai'i as a non-profit corporation and is a conservancy of the National Speleological Society.

## Clarksville Cave Preserve Addition

*Thom Engel, NCC Vice-President*

On 9 December 2018 the Northeastern Cave Conservancy, Inc. (NCC) closed on an additional 2.44 acres of land for the Clarksville Cave Preserve. This addition protects the land overlying the rest of the Gregory part of Clarksville Cave (See map). It also makes our preserve, which consisted of two separate parcels, into a single contiguous preserve.

Clarksville Cave, which has been known since about 1810, is one of the best known wild caves in the Northeast. The preserve receives about 3500 visitors a year—twenty percent of visitors only walk the surface. The NCC purchased the Ward parcel (11.27 acres) in 2004, which secured the Ward entrance to the cave, much of the upland karst in the vicinity of the cave, and a smaller cave known locally as the Ladder Dig. A month later the Albany County legislature voted to give the original 0.46-acre Gregory parcel to the NCC, creating a two-piece preserve.

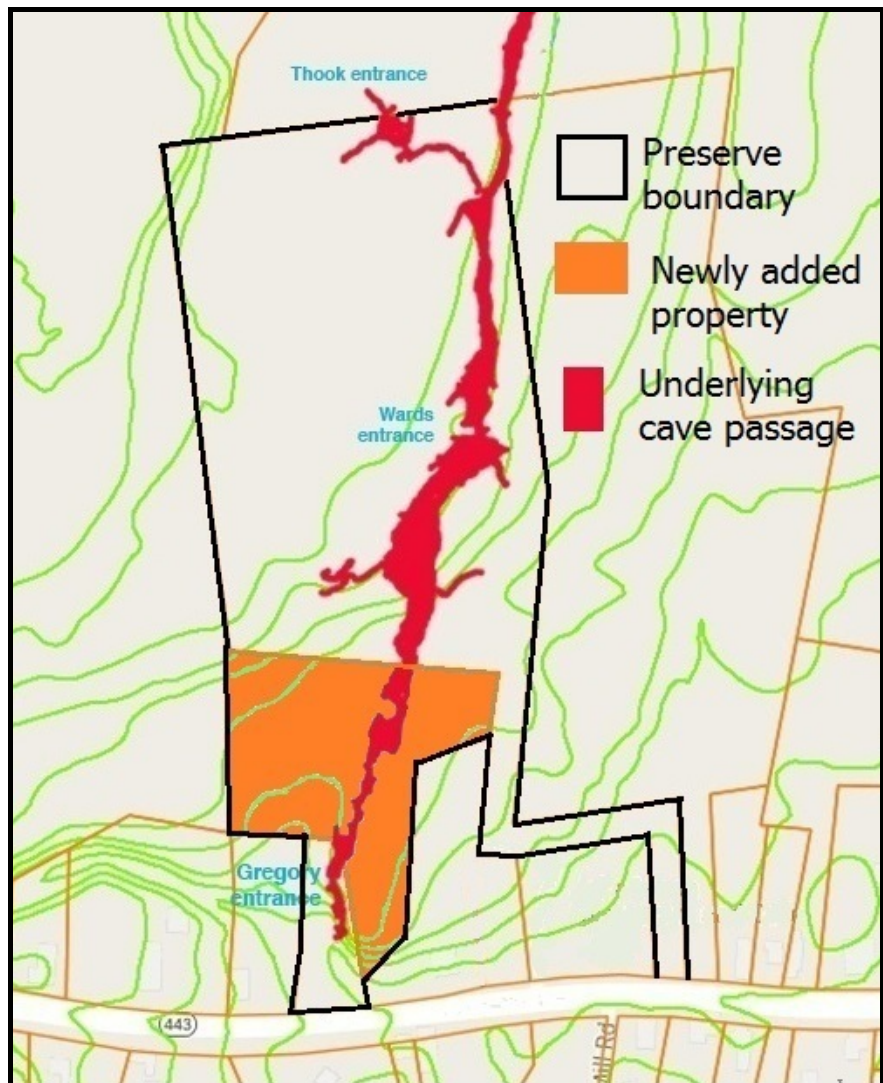
In February 2018 I was contacted by the owner of the land between the NCC's two parcels. He was considering subdividing the land and wanted to know if the NCC would be interested in the rear section of this property. Based on the zoning in this part of Clarksville, the entire property could have been subdivided into three residential building lots. The NCC saw this as an opportunity to connect our two parcels and also to prevent the construction of houses above or near the cave. The NCC board moved quickly on negotiations by Chuck Porter, Acquisitions Chairman, and Bob Simmons, NCC President, and with the landowner settled on a final price.

This initiated a period of intense fundraising. Forty people and groups contributed more than \$19,000. The groups included the Northeastern Regional Organization, and regional grottos, and also included the NSS through an NSS Cave Acquisition Grant as well as the National Speleological Foundation through a Vehslage Grant. We extend a big thank you to all contributors

with special recognition to the NSS and NSF, whose contributions pushed the effort over the top. Also a special thanks to NCC Member Mike Bourgeois, a licensed land surveyor and local caver, who donated his services to survey properties for local planning approvals.

Connecting the two parcels will now allow the NCC to construct a hiking trail extending from near our preserve kiosk

through the woods to the Gregory entrance, eliminating the need to walk along a busy state highway to access this cave entrance. This access trail will become part of the planned karst education trail on the preserve. In addition to the caves, the preserve has some nice exposed surface karst features including well developed clints and grikes (kluftkarren) along its western side, an area that few visitors currently see.



# Lincoln Caverns: Show Cave Committed to Conservation Outreach

Abbe Hamilton

Ann Dunlavy owns about a hundred acres of karst. She has hosted Mid-Appalachian Region weekend events on her property, and has allowed local cavers to dig leads in her two caves. She alerts grottos to fresh graffiti in popular local caves, and is a card-carrying member of the NSS, as were her father and grandfather.

Ann regularly hosts events where participants gather cave data the way geologists do, from measuring temperature, CO<sub>2</sub>, humidity, and drip rates, to conducting acid tests to identify rock types. Who are the participants? They are school groups and birthday party guests—learning, contributing, and having fun! Ann is a show cave operator. She manages Lincoln Caverns and Whisper Rocks, both near Huntingdon, Pennsylvania.

Does this surprise you? If so, it might be that you, like me, were unaware of the tremendous potential for a commercial cave operator to contribute to the greater caving community. Ann revolutionized my concept of commercial caves, and their importance and relevance to speleology.

My previous impressions of show caves were goofy at best, and negative at worst: tours based on “imagination” (“This one looks like the Empire State Building!”). “True” stories about Indian princesses. Exaggerated or irrelevant superlatives: “This is the longest/deepest/heaviest stalactite in the tri-state area.” Stories of cave operators filling in empty spaces with formations stolen from other places, fabricating artifacts and phosphorescence. Patently false geological narratives. I often feel that I have to assure acquaintances that I’m interested in caves for reasons beyond the gimmicky, kitschy treatment they can receive in commercial establishments.

At Lincoln Caverns, I learned about the other kind of operator, one that bucks every stereotype I’d heard about commercial cave management.

Dunlavy isn’t kidding when she describes her business as a “caves and karst educational facility.” Even the annual “Ghosts and Goblins” haunted cave tours manage to slip in some educational content. She carefully studies the latest advances in karst and groundwater science, and in biospeleological knowledge of creatures that call the cave home. It doesn’t hurt that Will White, one of the global authorities in cave science, was a Lincoln guide in the 1950s and regularly drops in for staff trainings.

Ann is quick to mention that although

the features of the cave remain unchanged, staff interpretation of their development evolves with new scientific discoveries. The focus during Lincoln Cavern tours is less about why *Lincoln Caverns* is so great, and more about featuring processes that are *happening everywhere underground*. Many features of the cave were pointed out as examples of universal geologic and hydrologic processes. This strikes me as a more honest depiction of the cave, as is the choice to avoid multi-colored, carnival-like lighting. She is out to show that a cave, sans sensationalism, is an incredible place.

Staff are also quick to recommend the two commercial caves located within an hour’s drive of Lincoln: Woodward Cave and Penn’s Cave. The point isn’t that one is better than another—it’s that they’re so *different*. The enthusiasm is contagious. I suspect that this attitude is shared by the other members of the National Cave Association (Lincoln is a member). The NCA’s manifest touts their cooperative spirit and educational bent. To me, this is a relief, because I want more people like Ann staffing our country’s public cave assets.

Ann’s enthusiasm for caving softly is reflected in the attitude of her well-trained staff. To Ann, it is the show cave industry’s responsibility to promote responsible caving practices. She related a disappointing stop on a road trip with her Girl Scout troop, when they took a “wild tour” at a commercial cave. Her girls were excited to be wearing the helmets, headlamps, and coveralls they’d brought – until they saw the rest of the tour group sporting little more than handheld flashlights. A missed opportunity to promote good technique, she said.

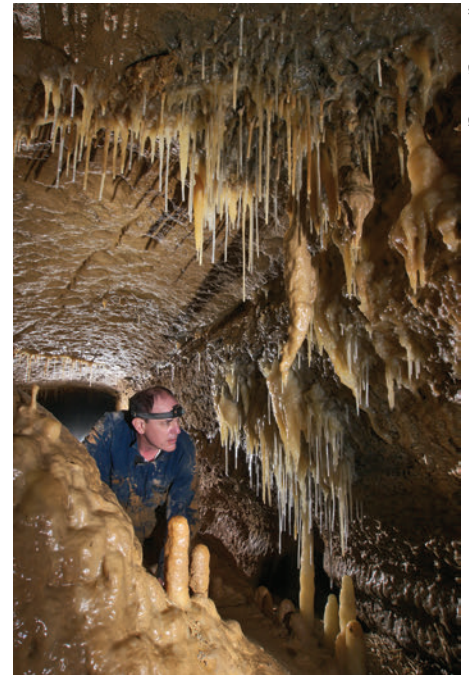
Dunlavy recognizes the irreplaceability of her cave and karst assets more than anyone. To customers, she emphasizes that caves are nonrenewable natural resources. To protect the two caves, her staff will visit student groups prior to a tour to prepare children for their responsibilities while inside the near-pristine environment.

In her eyes, cavers *need* commercial caves. Caving is a notoriously secretive activity, and her role, as she sees it, is to attract the general public with a beacon. “Some people may never go underground other than their experience here,” she says. She seizes this opportunity to educate about groundwater, rare species habitat, exemplary geological processes, and, good cave conservation ethics.

Dunlavy also functions as a gatekeeper

for the noncommercial caving community. She receives calls from customers who seek a rugged, “getting dirty” underground experience. They won’t find that on a tour of Lincoln Caverns and Whisper Rocks, but she encourages them to reach out to their local grotto. It’s hard to imagine a better person for such a position of influence: her business is actively protecting the area’s wild caves for those who are trained to visit them responsibly. (Indeed, an ex-Lincoln guide once hesitated to give me directions to a local cave preserve owned by the Mid-Atlantic Karst Conservancy until I related my own caving resume.)

Through my interview with Ann and my exploration of the National Cave Association, I came to understand that she is representative of the new approach to show caves. Visitors and cave guides alike have grown savvier in the decades following the heyday of gimmicky roadside attractions. It’s heartening that there are more managers like her. I wasn’t sure what to expect when I made Lincoln Caverns my first show cave visit, but the cave operation exceeded my imagination in every way. As a caver and a resident, I’m thrilled to have Ann Dunlavy in my neighborhood.



Dave Bunnell

**This area of pristine formations was dug open by cavers at Whisper Rocks in cooperation with their manager, Ann Dunlavy.**



# Crystal Onyx Cave Reopens in Cave City, Kentucky

Scott & Sara Sendtko



Scott & Sara Sendtko



New steel steps

Scott & Sara Sendtko



Image of Goliath formation from the showcave's website, credited to Matt McClintock. Note person on viewing platform

Crystal Onyx Cave, an established show cave in Cave City, KY, just completed an eight-year conservation—based rehabilitation. Initial efforts began outside the cave. The asphalt parking lot over the cave was removed and replaced with crushed limestone. New land grooming and erosion control practices were implemented.

Inside, the cement-based paths were jack hammered out and replaced with 50+ tons of fresh pea size limestone. These projects allowed for more natural water flow into and throughout the cave. All creosote-treated wood steps were replaced with concrete and steel steps. Unsafe rusty metal and wooden railings were replaced with fabricated steel ones.

The “pit”, the lowest and wettest part of the cave, was used as a disposal area during past excavations and explorations. We found creosote-treated lumber, cinder blocks, tarps, broken tools, bulbs, and other debris buried under 100+ tons of mud and rock. For proper cleanup and development, we hauled it all out, one 5-gallon bucket at a time.

Once the pit was cleared and cleanup accomplished, the cave's (and possibly Kentucky's) tallest formation “Goliath” was once again accessible for tours.

The old lighting system was removed. Consisting of approximately three hundred 100-watt bulbs and aluminum fixtures, the old system produced 450,000 lumens and used 30,000 watts. New PVC fixtures, LED bulbs, and better placement resulted in decreasing output to approximately 150,000 lumens and usage to about 1800 watts, which all adds up to a much improved show cave lighting system.

Traditionally, show caves artificially hide their light fixtures. The new Crystal Onyx cave lights remain exposed to get maximum illumination per bulb. Fewer fixtures are needed with less mechanical impact on the cave. Wires are strategically hidden for aesthetics.

Due to the cave's unique, long, winding, and sometimes narrow trails, as well as its plethora of speleothems, tour size is targeted at 12 people. Previous guides said they could have over 30 people on tours. This may be costing us revenue but it greatly reduces potential formation damage and pilfering from the cave. It also provides for a better user experience.

We have a “no tour” policy if there's any snow or ice on the ground. Any salt or other de-icing agents used on the parking lot and steps would eventually run off into one of the many sinkholes and caves on our property. Additionally, we don't use chemicals above

ground for weed control.

Please Google Crystal Onyx Cave to read some of the many positive reviews on these and other preservation efforts in our show cave. Our Web site <https://crystalonyxcaveky.com/> also has detailed information.





# Colorado Cavers Assist in Battle Against Quarry Expansion Project

*Richard Rhinehart, NSS15822F*

Colorado's commercial Glenwood Caverns and the residents of Glenwood Springs are increasingly concerned with a deep-pocketed proposal to expand the Mid-Continent Quarry northwest of the cave and Iron Mountain.

Located on Bureau of Land Management land approximately one-half mile from the popular cave that hosted the 2011 National Speleological Society Convention Howdy Party, the Leadville Limestone quarry began operations in 1982, providing limestone for coal mining near Redstone.

With the closing of most of the coal mines south of Carbondale, the quarry ceased operations by 1992. Limited quarrying began again in 2009 by CalX Minerals. In October 2016, Rocky Mountain Resource Holdings, with offices in Los Angeles and in Denver, purchased the quarry. By permit, up to 20 truckloads of limestone are currently allowed each day, for a total of 50,000 to 75,000 tons of limestone products per year. Five employees work at the quarry, covering 38 acres on six unpatented placer claims.

## Production Increases Proposed

Announcing the quarry expansion plans in March 2018, Rocky Mountain submitted a Plan of Operations Modification to the Bureau's governing Colorado River Valley office in Silt on November 21. This revised plan requested an expansion to approximately 320 acres of the 440 acres on their claims.

The proposal called for approximately 5 million tons of the Leadville Limestone and the underlying Dyer Dolomite to be annually quarried from the mountain. The life of the quarry is set at 20 years.

To accomplish this task, Rocky Mountain proposes quarrying from the top-down on

the mountain, using 25-foot benches to step their way down the steep slope. Operations are planned for 24 hours a day, 7 days a week, 365 days of the year. They anticipate hiring up to 46 additional employees during their peak operations.

Quarried rocks will be crushed and transported down the mountain on a mechanized pipe conveyor to a mill location below. From there, large haul trucks will be used to move the rock from the mill site to a loading station on the Union Pacific Railroad line in Glenwood Springs. This route will see from 400 to 500 round trips daily at a maximum road speed of 10 to 15 miles per hour. These trucks will cross busy US Highways 6 & 50 across from the Glenwood Caverns tramway loading station and pass over Interstate Highway 70 and the Colorado River on city streets. The proposed Union Pacific loading station is adjacent to a regional shopping complex featuring Target and other popular stores. From there, Union Pacific trains will haul the limestone approximately 170 miles through the Moffat Tunnel beneath the Continental Divide to downtown Denver. Here, an unloading station is planned in the city train yards in downtown near Coors Field ballpark. Rock will be used as aggregate in concrete for road and building construction or transported to other states by rail. The Denver region's exceptional growth in population in the last decade has created an acute shortage of high-quality concrete since many area quarries, including two in the Colorado Springs area, have shuttered operations.

Despite consultation with the Bureau prior to the filing of the plan, the Silt office rejected the proposal on December 20 and returned it to RMR. The Bureau provided a list of 73 items that were not covered in the plan, which an experienced mineral exam-

iner later remarked was the most incomplete he had ever seen. An updated plan is anticipated to be filed in the spring of 2019. Among its many deficiencies was a complete lack of information regarding caves, karst features and underground drainage.

## Opposition to the Expansion

Since the expansion plan was announced, local Glenwood Springs businesses and residents have joined together in almost universal opposition. The Glenwood Springs Citizen's Alliance is the most visible of the opposition groups. A Colorado non-profit organization, the Alliance has been key in alerting residents and visitors of the intended expansion and the potential damage this could create for the popular visitor destination. Glenwood Springs has two commercial hot spring facilities, the Yampah Spa Vapor Cave, and the Glenwood Caverns Adventure Park, which attracts nearly 200,000 visitors annually to the former Fairy Cave and the surrounding thrill rides.

Colorado cavers through direction by the Society's Colorado Cave Survey have also been active in this last year. Member grottos and cavers throughout the state have composed impassioned letters of opposition to the expansion. These letters, mostly in printed format, have been submitted to the public record at the Bureau's Silt office. Cavers have also begun field work in the region, particularly along the east rim of Oasis Creek, to identify and document cave and karst features.

Two small caves are currently known in the immediate vicinity. Less than 200 feet to the west of the proposed western boundary of the quarry is Fountainhead Cave, discovered in the mid-1980s by Pat Kambesis and Larry Fish. To the south, closer to the



Richard Rhinehart

Looking south into the Roaring Fork Valley from the proposed Mid-Continent Quarry expansion site. On Iron Mountain in the center of the image is the access road to Glenwood Caverns Adventure Park; in the distance is Glenwood Springs.



Richard Rhinehart

The eastern rim of Oasis Creek north of Glenwood Springs has high Leadville Limestone cliffs that are in need of additional exploration for potential caves.





Kenneth Headrick

**Ken Headrick in the entrance passage to Cave of the Clouds, a 19th century commercial cave in Glenwood Canyon**



Richard Rhinehart

**John McLean begins the short rappel into Surprise Pit, a short, historic cave along the eastern rim of Oasis Creek.**

city, is Surprise Pit, a pit-entranced cave known since the late 19<sup>th</sup> century. Each of these caves have about 100 feet of passage. Many additional leads are noted on adjacent cliffs; these require ropework to visit and document. Cavers intend to fully examine these features in the spring of 2019, as well as examine Leadville Limestone cliffs and outcroppings within the quarry plan.

### Glenwood Caverns

The owner and developer of Glenwood Caverns, Society member Steve Beckley, finds the proposed quarry expansion to be particularly troubling. In addition to impacting the lower tramway base and parking with heavy and continuous truck traffic, Beckley notes his visitor attractions on the mountain, including a roller coaster, a giant canyon swing and an alpine coaster, depend on a pleasant and relaxing mountain atmosphere. Trucks descending and ascending the Transfer Trail in the adjacent valley, increased dust and smoke, and blasting operations at the quarry will all be negatively received by visitors. In March 2019, daily visitors to the park are anticipated to grow as the new Glenwood Gondola opens, increasing tramway capacity from 18 cabins to 44 cabins.

There is also concern about the impact potential blasting at the quarry may have upon the cave and delicate speleothems. In October 1961, Peter Prebble, Bob Wilber and Bob O'Connell purchased the 80-acre parcel containing the cave, in part to protect it from potential quarrying encroachment from nearby quarry operations.

### Cave of the Clouds

Another nearby former commercial cave, the Cave of the Clouds, was purchased by NSS members Mike and Donna Frazier in January 2018. This Glenwood Canyon cave

is about 3,000 feet from the proposed eastern boundary of the quarry. Although this once beautiful cave was extensively vandalized in the 120 years since tours ended, a recent discovery of a pristine room noted extensive "natural" breakage of speleothems. It is possible this breakage is owing to the extensive blasting at a nearby quarry for a 30-year period from the early 1950s.

### The Right Connections

Rocky Mountain is a privately-owned, national holding company with subsidiary companies that acquire and develop natural resources. They currently operate oil and gas reserves, industrial minerals, chemicals, agribusiness and energy infrastructure. The company chairman is Chad Brownstein of Denver, a Colorado native who has a degree from Colorado State University.

The company is represented legally by Denver law firm Brownstein Hyatt Farber Schreck, of which Brownstein's father is one of the founding partners. The law firm hired Michael Stratton to represent Rocky Mountain's interests; Stratton is very well-connected politically both in Colorado and nationally. Stratton has worked for members of the Democratic Party throughout his long career. In the last four decades, Stratton has represented numerous prominent politicians, including President Bill Clinton and Secretary of State Hillary Clinton, Governor Roy Romer, Senator Gary Hart, Governor Michael Dukakis, Senator Mark Udall, Governor and Senator Bob Kerrey, Senator Christopher Dodd, Senator Floyd Haskell, Secretary of Commerce Ron Brown, Denver Mayors Federico Peña and Wellington Webb, and Governor Bill Richardson.

Brownstein Hyatt Farber Schreck, founded in Denver in 1968 by three University of Colorado Law graduates, has 11 offices nationally and is the second-largest

lobbying firm in the country. It saw record revenue in 2015 of \$172.2 million, with a net of \$58.4 million. The firm helped secure funding for the construction of Denver International Airport, along with Denver's Pepsi Center and Mile High Stadium. While the firm has been closely linked with the Democratic Party nationally including assistance in bringing the 2008 Democratic National Convention to the city, they also lobbied successfully for the Republican Party and President Donald Trump's 2017 Tax Cuts and Jobs Act, changing the federal tax code.

This connection with the Republican Party and the Trump administration is significant. The current Acting Secretary of the Department of Interior is Rifle, Colorado



Kenneth Headrick

**The Christmas Tree in King's Row is one of Glenwood Caverns' most spectacular large stalagmites. This view is looking back toward the commercial trail.**





Richard Rhinehart

The historic Transfer Trail is a four-wheel-drive road from the saddle with Iron Mountain and the central White River Plateau to the north. This road is proposed for major improvement if the Mid-Continent Quarry expansion is approved by the Bureau of Land Management.

native David Bernhardt, who worked for and was a shareholder in Brownstein Hyatt Farber Schreck for eight years through July 2017. Nominated by the President, he joined Interior on August 1, 2017.

### Glenwood Springs Sustained by Tourism

Rocky Mountain estimates the expanded quarry will contribute \$22.5 million annually to Garfield County and Glenwood Springs through employee wages, taxes and use fees. As impressive as this may seem, it is a tiny fraction of the total income from tourism in Glenwood Springs.

The city's 2018 budget indicates that the dominant industry in Glenwood Springs is tourism. Unlike other nearby cities such as Aspen or New Castle that were founded on mining or ranching and farming, Glenwood was created specifically for serving the visitor and recreation industry. The arrival of the Rio Grande Railroad in October 1887 provided for a large increase in visitors who came to the city specifically to relax, visit the hot springs and caves, and to seek pleasure through fishing, hunting, camping and other recreational activities.

In 2012, tourism brought \$95 million in direct spending by visitors to the city. Considering that each dollar brought into the community adds value, state tourism experts project the full benefit of tourism in 2017 was \$175.7 million. This is eight times the value of the expanded quarry operations. In addition, tourism created 1,800 jobs in Garfield County in 2016, with the majority being in the Glenwood Springs area. This is exponentially greater than the 45 to 50 total jobs anticipated for the expanded quarry.

For Rocky Mountain, the financial benefits of the expansion are substantial. If they see only 100 million tons of limestone to be extracted during the life of the quarry operations, this translates to an overall retail value of \$6.5 to \$14.3 billion at current rates of \$65 to \$143 per ton.

In their limited public comments, Rocky Mountain's representatives claim the expanded quarry will not be visible from the city. Although this is mostly true for the current quarry nestled in the valley at the foot of the White River Plateau, the proposed expansion and downcutting to the current operation will leave a massive scar noticeable throughout West Glenwood and down the Roaring Fork valley toward Aspen. For a city that lives on tourism, heavy quarry operations are not particularly compatible.

### Limestone, Claims, and Profitability

The General Mining Act of 1872 governs mining, prospecting and quarrying operations within the United States. Developed specifically to codify local codes developed by miners and prospectors who participated in the gold rushes of California, Nevada and Colorado during the preceding quarter century, the Act sets a price at 19th century rates for placing and maintaining active claims. It also serves as the governing law to developing mines and quarries on federal lands.

The Act specifically allows for free access of the miners to work the public land, regardless of any alternative use or potential use of the land. This right depends on the claim holder's ability to demonstrate that the ore can be profitably marketed. In consideration of Rocky Mountain's request to the BLM to expand their quarry, they will need to demonstrate that the limestone within the claims can be profitably extracted and marketed. The BLM, however, may request that environmental impact studies be undertaken to determine the impact of the proposed quarry on the local environment.

### Potential Groundwater Impacts

If it can be determined that quarrying may negatively impact groundwater flow in the area, an environmental study could effectively block the expansion plan. Given that much of the surface in the proposed expansion is exposed Leadville Limestone, it is likely that most drainage along the descending southern limb of the White River Plateau will be impacted or altered by the quarry removing the soluble rock. In addition, this descending water, be it through fractures and faults in the strata or in undiscovered cave and solutional passageways, may be one of the sources of water emerging from the hot springs.

Colorado cavers will play an important role in identifying cave and karst features in the expansion region and documenting their importance to the environment. Caves such as Fountainhead and Surprise may be home to rare species of cave-adapted animals. Bats appear to seasonally use the caves as overnight roosts. Studies are needed.

Once the Plan is formally accepted by the Bureau, cavers, residents, and businesses must respond formally during the 30-day public comment period. If only a few people oppose the expansion, the federal government, nationally encouraged by the current administration to approve all mining and development proposals, will likely approve. This may happen anyway, but vigorous and impassioned disapproval during the formal comment period establishes to future court proceedings a widespread opposition to the plans of a single private company to turn a profit through the exploitation of pristine public lands.



**SPELEOBOOKS.COM** 518 295 7978. Cave and bat gifts, books, clothing and jewelry. Prompt personal service since 1973.

**West Virginia Cave Books**  
[www.WVASS.org](http://www.WVASS.org)

**FLASHBULBS** for sale. For prices and info email [NormanRThompsonBusiness@hotmail.com](mailto:NormanRThompsonBusiness@hotmail.com) 4

If your Grotto or Region is looking for new caves to explore in the Virginia area, RASS can offer your group a place to camp in Bath County, VA. There are more than 100 caves within an hour drive. We support cave conservation and education. Contact Jason Hart at [JHARTCAVESVA@gmail.com](mailto:JHARTCAVESVA@gmail.com) 3

The Richmond Area Speleological Society (RASS) supports cave conservation, education

and research by offering grants to assist projects aligned with these goals. To receive a grant request application please email us at [rass-grants-committee@googlegroups.com](mailto:rass-grants-committee@googlegroups.com). Applications reviewed quarterly. 12

**New WV Cave Books:** Bulletin 20 Caves & Karst of the Culverson Creek Basin, WV by Lucas, Balfour, and Dasher. 336 pages, 364 caves, 208 photos, 80 maps. Color copy on USB drive. \$35 postpaid; Bulletin 21 Caves and Karst of Mercer & Summers Counties, WV by Schaer and Dasher. 186 pages, 226 caves, 131 photos, 62 maps. \$25 postpaid. WVASS, PO Box 200, Barrackville, WV 26559 [WVASS@PrehistoricPlanet.com](mailto:WVASS@PrehistoricPlanet.com) 12

**AD RATES:** Now based on the number of lines your ad takes up. It is a flat rate of \$3 per line. As a guide, a line holds 43-45 characters + spaces at our font and size. 10% discount for runs of 3 months or more. Payment must precede publication, but copy should be e-mailed to the editor ([nssnews@caves.org](mailto:nssnews@caves.org)), to reserve space. Copy should be received one month prior to publication date (e.g., by May 1 for a June issue). Make checks payable to the National Speleological Society and send to: Attn: NSS NEWS ADVERTISING, 6001 Pulaski Pike NW, Huntsville, AL35810.



# Mammoth Cave Restoration Reaches 30-year Milestone

Story and photos by Gary Gibula



Resto cavers help move historic logs that were used as water pipes during Civil War era saltpeter mining near the Rotunda Room.

One of the most enduring examples of cave conservation may be found at the world's longest cave. For the past 30 years, officials at Mammoth Cave National Park, in southwestern Kentucky, have welcomed the specialized help cavers are able to provide.

With more than 408 miles of passages, the cave and its surrounding 82.6 square miles of land were designated a National Park in 1941. 'Restoration' caver volunteers have assisted with in-cave and above-ground tasks there since 1989.

For example, installation of a new LED lighting system to stop the growth of green moss on illuminated rock at Mammoth Cave left behind thousands of feet of old wire. In an ongoing effort, Resto cavers have methodically gone through the passages to find unused electric cable that might be located in an off-trail crevasse, behind rocks, or buried in the ground along a tour route. The wire is then cut, coiled, and transported out of the cave.

## Resto Camps Four Times Per Year

"I would say our biggest impact was the completion of the Echo River Project," said Bill Copeland, Ozark Highlands Grotto member and former Resto Camp Director. "It most likely would have never been accomplished without the manpower of all



Mammoth Cave National Park Superintendent Barclay Trimble helped cavers dredge gravel to improve the water flow of Mammoth Spring.

the Resto caver volunteers. Removing the in-cave boat ramp and getting the creosote-infused wood out of the water, in my opinion, saved the population of blind cave fish and blind crayfish."

The Mammoth Cave Restoration events occur at regular intervals, four times a year, and are free-of-charge. Saturday-Sunday work days are held on the first weekends of March, May, and November. The August week-long camp requires a nominal fee that covers three meals a day. Volunteers stay at a private on-site campground with hot showers and sleep in a heated and air-conditioned bunkhouse or in their tents.

## Volunteer Value of Cavers

"Mammoth Cave National Park is extremely grateful for the efforts of cavers who donate their time in the ongoing conservation of Mammoth Cave, other caves within the park, and our above-ground resources," said Barclay C. Trimble, Mammoth Cave National Park Superintendent. "The work you perform is a wonderful example of how volunteerism is an essential factor in preserving the natural and cultural treasures of the National Park Service and, more specifically, Mammoth Cave National Park, which is a World Heritage Site and a core component of the Mammoth Cave Area Biosphere Reserve."

During the week-long Restoration Field Camp last August, cavers cut and removed 600-feet of wire, transported 3,200-pounds of gravel, hauled 80 sacks of waterlogged wood, removed eight deteriorated wood staircases, and vacuumed 34 bags of lint from tourist trails. Participants contributed 714 man-hours of work for the week which, at a prevailing wage of \$24.69 per hour, saved the park \$17,628.66.

Current Resto Camp Director Brian Hunsaker said estimated grand totals of material removed from Mammoth Cave over the past 30 years include 13.3 miles of wire, 3.43 tons of gravel, 2 tons of concrete, 1,100 board-feet of creosote wood, and 150 pounds of lint. In addition, Resto cavers have pulled out old light fixtures, removed lead-sleeved anchors from walls, and completed numerous other above and below-ground tasks. He said the total dollar value of Resto caver volunteerism is close to \$1 million.

"It takes a special person to volunteer his time for cave restoration," Hunsaker said. "For us, it is an honor and privilege to contribute our efforts in perhaps the most historic cave in the U.S."

Caver David Irving organized the first official Mammoth Cave restoration effort as



Caver transports a piece of old wood on an unused walkway near the Echo River – photographer unknown.

a pre-convention field camp in 1989. The idea caught on and quickly expanded to the four per year format.

Hunsaker said: "We're always looking for like-minded cavers who want to share their passion for caving and conservation. If you're interested, please contact me at [restoremammoth.com](http://restoremammoth.com)."

Now in his second year as Mammoth Cave Superintendent, Barclay Trimble has warmly welcomed Resto cavers. Trimble helped with work tasks like shoveling gravel from a streambed to improve the flow of Mammoth Spring.

"Without our volunteers and their willingness to help, Mammoth Cave National Park would not appear as it does today," he said. "I cherish my time working alongside our Resto volunteers, and the camaraderie and conversations I've had about preserving and protecting something we all treasure is truly inspiring. All your hard work certainly sets a great example to others about cave and karst conservation overall."



Resto caver and former camp director Bill Copeland uses a drill to remove lead anchors from a stone wall in Mammoth Cave.

# Inventorying Broken Speleothems as a Way to Quantify Visitor Impacts

*Aria Mildice, GIP Intern, Carlsbad Caverns National Park*

Carlsbad Caverns National Park recently completed a project to count the broken speleothems throughout the visitor routes in the cave. Two Geoscientists in the Parks (GIP) interns, Aria Mildice and Jake Tholen were tasked with continuing carrying capacity studies throughout the cave. Part of determining Carlsbad Cavern's carrying capacity is establishing a baseline for the level of impact already seen in the cave. In addition to counting the broken speleothems, we also completed color-coded impact mapping for the visitor routes, and have continued the CO<sub>2</sub>, temperature, and humidity monitoring started in the summer of 2018.

The park had conducted broken speleothem inventories in the past, but the last one was conducted more than 25 years ago, in 1993. Unfortunately, in that time period, many of the previous records had been lost. The park had one report from 1983, counts for all of the breaks up to 1993, and a few anecdotal comments from local cavers and previous managers. We essentially had to start from scratch and determine the best way to count thousands of broken formations in just a few months. We came up with a plan to organize speleothem counting projects with park volunteers.

## Ranger Present vs Peer Pressure

As of 1993, reports noted 36,000 broken formations throughout the cave. Unlike most other show caves, much of Carlsbad is self-guided, meaning visitors are able to walk on the paved and lighted areas on their own without a Ranger escort or guided tour. But, this wasn't always the case. Before 1972, tours in Carlsbad Cavern were ranger-guided. Visitors would join a tour and then be escorted through the cave by park rangers.

National Parks, as well as Carlsbad Caverns National Park, became very popular during the 1970s. Parks saw peak visitation as families traveled across the US to see America's natural and cultural wonders protected by the National Park Service. The parks experienced challenges due to their popularity. In Carlsbad Cavern, the ranger-guided tours started to become too large, and in at least one case a tour was upwards of 2,000 visitors! Cave managers at the time recognized the impracticality of such massive tours, and ended the ranger-guided tours in the summer months when it was prohibitively busy. Part of their thought-process included the hope that peer pressure among many visitors in the cave would deter

others from touching or breaking formations. In the winter months, when the park wasn't as busy, visitors would still take the ranger-guided tour into the cave.

## Counts Initiated in the Mid-70s

By 1975, just three years later, a supervisory Interpretive Ranger, Hiram Parent, started noticing more and more broken formations throughout the cave, and completed the first known broken speleothem inventory. Parent conducted another inventory in 1977, and made counts in the Main Corridor, Scenic Rooms, and the Big Room. As of 2019, we were unable to find any record of his report or his memo to the environmental committee. During the summer of 1983, the Cave Resources Office hired two interns to conduct counts in the Big Room, and later that year they conducted counts for the rest of the cave. Breaks were recounted again in 1985, 1986, 1987, 1988, and 1993. Through these years they used various methods and colors to mark and distinguish the broken speleothems. Of the six counts done during the 1980s and 1990s, we found only one remaining inventory report. We used that one report from 1983 as our baseline for this year's count.

## Questions, Inventory Process, and Lime Green Nail Polish

This year, we decided we needed to complete a full report, so future count projects will have a baseline to recreate and complete another identical inventory. One of our first issues, after the lack of available literature, was actually finding the broken speleothems. While some are very obvious, like a broken drapery or stalactite, others proved to be more of a challenge. How do we count broken crust? Should there be any distinction for very large breaks? How should we mark the broken formations? What's the best way to break down and organize our data?

We decided to create a form to simplify and standardize the data collected. We retained the same sub-sections, we found in the previous inventories, organized by cave location. Plus, we broke down our count data by type of speleothem. This will hopefully give a clear picture to future counters and future cave managers.

We were not able to easily see the previous marks from the older surveys. The china-marker and pencil used in the 70s and 80s had worn off, and in some cases had been consumed by microbes. After speaking

with several microbiologists, we decided to use either a Sharpie™ or nail polish. Both are frequently used for survey stations, have proven to give the type of lasting power we desired, and the volatile organic compounds in these products tend to quickly volatilize and create less negative impact on cave environments than other marking options. We decided on nail polish since it has a variety of colors available for future inventories, and this year we went with a bright, neon lime green. This color is readily visible in direct light, but blends in remarkably well in the lighting conditions throughout much of the cave. It also fluoresces under true blacklight for easy re-detection.

We were much more thorough with our counts than previous years. In the past, some areas of the cave were very thoroughly counted, even marking crust and small popcorn breaks, while others only marked the notable breaks, or in some years, just the stalactites and soda straws. For the 2019 inventory, we counted all breaks, and we specified in the report which areas were excluded from the count. Some of those excluded areas are places with heavy infrastructure, places blasted with dynamite for trail construction, and various other cave project areas. Our primary goal was to create a baseline assessment of vandalism, not a baseline count of everything ever done that's impacted the cave or its formations.

Our original volunteer weekend was canceled due to a looming potential government shutdown; luckily we had a back-up date. The NSS Southwest Spring Regional was the February 23 weekend, and we had 19 volunteers come help count broken formations. Teams of two or three were given nail polish, a clip board, a record sheet, and were sent throughout the cave. We counted breaks within 10 feet of either side of the paved trail. Once teams finished one sub-section they were assigned another. We were able to finish the Big Room with the help of all of these dedicated SWR caver volunteers!

After hours with park employees volunteering their time, we also counted the Scenic Rooms and the King's Palace Tour route. With local volunteers in the weeks preceding our big weekend, we counted the Main Corridor. All of our counts in the Big Room and Main Corridor were done during regular visitor hours and within sight of the visitors. It was a great opportunity to speak with visitors about the damage that has been done to the cave, and nearly every visitor we





Aria Miltice

**Jake Tholen marks broken popcorn pieces.**

spoke with understood the issue at hand and commended our work.

### Statistics

Just over 11,000 new broken formations have been found since 1993. This number comes to on average of about 430 broken formations per year. The total for the entire cave is now 47,407 broken speleothems. While these numbers seem very high, previous reports saw upwards of 2,000 breaks per year. Most of the breaks we found appear to be accidental breaks, many were not scenic formations, and were in areas of high traffic close to the paved trail. While there is no way to determine if a break was an accident or vandalism, we hope that a decrease in breaks indicates a decrease in vandalism.

This inventory showed that the most numerous breaks between 1993 and 2019 were popcorn, which totaled 7,274 breaks. The least numerous breaks were shelfstone, rimstone, and flowstone. The shelfstone and rimstone areas had not been counted in previous inventories, but the count is likely low, both due to the lack of proliferation of these types of formations, as well as their usual sturdiness. Most of the flowstone “breaks” we encountered were scratches or etching into the flowstone, as opposed to broken chunks, and suggested that some types of formations may be more resistant to breakage, but not necessarily resistant to impact.

### Volunteer Training and Volunteer Value

The total time spent on this project in-cave counting formations was 204.2 man hours. This does not count time to travel to the location, or time spent on data management. We created an orientation PowerPoint, and the time taken to orient volunteers was also not counted. The orientation PowerPoint covered how to identify and mark broken formations as well as how to count and record those data.

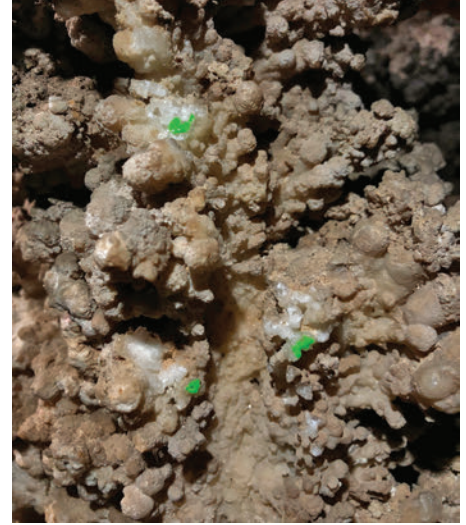
There were constant discussions with team members over what should count as a break. In some cases it was difficult or even impossible to tell if it was a break, or just how the formation looks, or distinguish natural versus human-caused impacts. Some of the particularly difficult areas included massive gypsum, any kind of crust, areas with lots of moonmilk, or areas that had very high impact. The “very high impact areas” were typically counted for breaks, although did not result in high counts, because in many cases, the original formations were totally gone. These areas were also captured in our concurrent impact mapping project.

### Recommendations

While this count was a major effort, it is only the beginning of our work studying the cave’s carrying capacity. This count should act as a new baseline for the cave. Many changes have been made to the cave, including different visitor routes, a lack of ranger-guided tours in some areas and an increase of ranger-guided tours in others, the installation of stainless steel hand railings, and many other projects.

There has also been a change in attitudes regarding cave conservation since the 1970s when these counts began. There has even been a change in the general public’s views on preservation and conservation throughout the US. Interpreters and Rangers have made these topics regular discussion points at Carlsbad Cavern and other NPS sites.

Future broken speleothem inventories will need to be conducted on a more regular



Jake Tholen

**Example of marked broken popcorn**

basis to see a more detailed picture of the impacts that visitation has on this cave. Other types of assessments are needed to move forward. Photomonitoring, trail counters, recording contacts with visitors not following the rules, and noise monitoring will be needed.

For cave managers who wish to re-create this type of broken speleothem inventory, we would highly recommend determining a marking method that will work for your cave, conducting counts in sight of visitors, and breaking down the work based on cave-section and type of formation break. Creating standards of breaks and data collection proved to be vitally important for conducting this inventory, and could be altered for other caves and their environments.

Hopefully, future inventories continue to show decreasing numbers of breaks as visitors increasingly realize the significance of human impacts on these special places and as visitors and cavers continue to help the National Park conserve cave resources for future generations who visit Carlsbad Cavern.



Cathryn A Hoyt

**Laurel McKenzie and Chris Petruccelli mark and count broken speleothems.**



Cathryn A Hoyt

**Colin Walfield looks for broken formations in the King’s Palace.**



## Stalactajack/Speleoclamp

text: Janice Tucker; photos (this page): Cynthia LaCoe



Broken stalactite to be repaired in a NM cave

Mike Mansur, a northern New Mexico caver, has developed some new supports to facilitate formations repair.

Mike has a unique set of skills that make him ideal for working on restoration projects. He has been a caver since 1968, initially in Vermont and then New Mexico. He has been active in rigging, exploration, mapping, impacting mapping, and inventory collection in Lechugilla and many other Guadalupe caves. Mansur is a competitive Olympic Style Weight lifter, a mechanical technician, and, since retiring, a wood worker. Those talents are combined with a warm personality and a deep love of caves and cavers.

Early in 2018, Aaron Stockton, now District Ranger of the Lincoln National



After glue has been applied to attach the broken piece of stalactite, the stalactajack is deployed to hold it in place until it dries.



The stalactajack in place

Forest, asked Mike if he thought he could repair a stalagmite in Hidden Cave. Jennifer Foote mentioned another stalagmite in Black with a failed repair. Mike read the book, *Cave Conservation and Restoration*, edited by Val Hildreth-Werker and Jim Werker (NSS 2006), met with Jim and Val (his long-time caving buddies) for start-up tips, bought the \$800 worth of tools and epoxy, and began repairing formations.

I assisted him on his first stalagmite repair in Black. He had read (and nearly memorized) the instructions for formation repair. He had every possible tool neatly compartmentalized in his pack: battery-powered drill, drill bits, pins, epoxy,



The speleoclamp used to hold together a stalagmite repair-in-progress.



The completed repair

medication cups for measurements, dust masks, and so on. His pack weighed a ton!

We visited Hidden, but the broken stalagmite had five sections and was on a mud base. Mike could not determine how to support the formation to repair it. So, we headed to Black. Initially, we could not FIND the cave. We wandered for a couple hours in hot, sweaty misery. Fortunately, because of his weight lifting abilities, Mike hauled that heavy pack around like it was nothing. Once we found the cave and the formation, Mike pleasantly explained each step of the formation repair to his two assistants, and we successfully completed the repair.

Since that trip, Mike has repaired



Mike Mansur on rope in Virgin Cave



several other formations, but was challenged with how to support them while the epoxy hardened. He developed two supports, the “Mansur Stalactajack” and the “Mansur Speleclamp,” for just that purpose. In September of 2018 he invented and fabricated an adjustable support jack out of PVC, wood, washers, nuts, and all thread. The clamp he built from PVC, all thread, washers, nuts, and pipe insulation. Both of these devices have been successfully used in speleothem repair, as documented in the

accompanying photos. Since these devices are constructed of PVC, they are almost infinitely adjustable in size.

If you are interested in contacting Mike for directions on how to build a Mansur Speleclamp or Stalactajack, contact him at [mcmansur@zoho.com](mailto:mcmansur@zoho.com)

**Right: Mike Mansur provided this closeup image of his speleclamp device.**



## High Guads Restoration Project Update

*Jennifer Foote*



Formations deep in Cave of the Madonna, one of the more challenging High Guads caves. Photo by Jamie Moon.

High Guads Restoration Project (HGRP) is a National Speleological Society (NSS) Conservation Task Force (CTF) that occurs on the Guadalupe Ranger District of the Lincoln National Forest in Southeastern New Mexico. Dave Jagnow founded the Project and ran it in 1999-2000. Susan Herpin ran it 2000-2002 and I started to help run the Project in 2002, taking it over in 2005. We have worked with a revolving mix of USFS cave specialists including Ransom Turner, Aaron Stockton, Deanna Younger, Jason Walz, and now Aaron Stockton is back as the District Ranger. Over the past twenty years, volunteers have donated nearly \$800,000 dollars of volunteer value and we've taught restoration and conservation skills to hundreds of people.

The primary goal of the project is to provide restoration work in caves, but also to train trip leaders for the most sensitive caves and to teach conservation skills. Some of our activities include: removing mud from flowstone, speleothem repair, trail delineation, trail repair, trail stabilization, monitoring for visible impact, re-establishing cave locations, rescue pre-planning, and trip-leader training. We've also helped with scientific studies such as: cave survey, pool studies, assisting with swallow banding, and monitoring caves for bat use including documenting cave temperatures and humidity.

In 2018 we had five trips with 21 individual participants volunteering 399 hours and over \$24,000 in Volunteer Value. We worked in ten caves under the project: we cleaned flowstone, worked on maintaining cave trails, surveyed small caves, and repaired formations.

After a few years with reduced trips and lots of cancellations, in 2019 we are hoping for a return to regularly scheduled trips. Tentative future dates for 2019 include: April 27-28, July 27-28, September 28-29 and October 26-27. If you are interested in helping work on the project, contact [highguads@gmail.com](mailto:highguads@gmail.com).

To find out more about the project, check out our web page at [www.hgrp.org](http://www.hgrp.org) or like us on facebook <https://www.facebook.com/High.Guads.Restoration.Project>.



# Excavating the Richard Blenz House

*Sam Frushour*

When Richard 'Dick' Blenz died, in July of last year, he already had bequeathed the NSS his property that contains Buckner Cave as well as his modest house. A lifelong bachelor, Dick's housekeeping habits were legendary by their absence. The following is a true recounting of the mission to clean the house and prepare it for use by the NSS membership.

Dick was in and out of the hospital during the last two months of his life. Each time, in order to be released, he had to convince the doctors that he could safely navigate his cluttered home. Caver friends already had begun the task of clearing pathways through stacks of magazines, paperwork and other items in the house. We offered Dick further assistance each time he returned home, but the help was gently refused. More than once, he told me that he would rather visit with friends, discuss books, or simply enjoy the company rather than clean. "You can clean this place when I'm dead," he would laugh. I imagine he's probably laughing at us still.

Following Dick's passing, we soon realized the massive amount of cleaning and sorting that was needed in the ever-deepening rabbit hole.

Dick was an electronics whiz who had the curious mind of a true explorer, a combination of qualities that inspired him to build fascinating machines and devices that it seemed ordinary mortals should not possess. With the help of estate executor Greg Hepfer, any gizmos that appeared dangerous were disconnected. This portion of the work was exciting, as I often overheard exclamations such as "What do you think this is?" and "Don't plug that in, we don't know what it does!"

Meanwhile, I rolled up my sleeves and started on the kitchen. Although very small, it was packed with a lifetime's collection of dishes --all of them seemingly dirty. It took me two hours just to clean the sink and clear a spot on the counter where I could put dishes after I washed them. Bag after bag was filled with trash, recycling items, and expired mouse-nibbled food. Eight months later, the kitchen project still is ongoing but progress has been made.

Over the following weeks, volunteers sorted tools, got rid of clutter, and removed some of the Frankenstein-ed creations that Dick had assembled. I spent a fair amount of time cleaning out Dick's bedroom closet and preparing Goodwill donations. I also laundered hundreds of caver event t-shirts.

He must have had one from every event he attended for the last 40 years! By now, many of those shirts have been sold at events to raise money for the Richard Blenz Nature Conservancy and to help pay for needed upgrades to the house.

Another interesting adventure involved excavating six large closets, each jam-packed with books, linens, tools, clothes, paintings, furniture, vintage WWII items, surveying equipment, vacuum cleaners, and antique baskets. Dick was a master of finding storage space where none existed.

We sorted piles of items for the NSS archives, piles for various grottoes, and piles for The Robertson Association (parent organization of Old Timers Reunion, to which Dick was a major benefactor). As of this writing, in addition to numerous trips to Goodwill, more than 100 bags of trash have been disposed of, more than 100 bags of recycling items have been taken away, and five truckloads of metal salvage have been hauled away.

On September 8, 2018, 23 cavers made a huge difference as they contributed to a workday in conjunction with the 60<sup>th</sup> anniversary of the Bloomington Grotto (BIG). Hundreds of books and magazines were sorted and boxed. The hole in the kitchen floor was repaired. Electrical systems were mapped in preparation of upgrades. The deck was power-washed. Trees threatening the roof of the house were taken down. A basement recording studio was dismantled. Mildewed and crumbling ceiling tiles were pulled down.

I can report that two fully-loaded trailers were needed to donate Dick's collection of books to the Monroe County Public Library. Some of his military memorabilia was donated to the Monroe County History Museum. A large quantity of items related to OTR was transported to the 2018 event. Two large shipments of records, maps, files, and rare cave books were delivered to NSS Headquarters in Huntsville. What furniture and household goods that were not purchased by cavers making a donation to the RBNC were auctioned on-line or donated to a local charity that assists displaced persons.

Files of meticulously maintained records have been catalogued. Electronic components numbering in the many thousands have been collected and are in the process of being sorted. Walls and ceilings have been patched and painted, woodwork scrubbed and polished, storm windows installed.

But much still remains to be done. Following countless volunteer hours, the house now is starting to resemble a home renovation project instead of an excavation project. We are at the point where we need funding if the house is to be made livable for a caretaker, usable as a cave library facility, or to be available as an education, training, or meeting location for cavers.

Specifically, flooring must be installed where rotting carpet was removed, the HVAC system needs replacement, extensive electrical upgrades are needed, the basement must be waterproofed, and the two fireplaces need work. As we work, we continue to find more work to be done.

I'd like to remind everyone of how much Dick contributed to the caving community and also helped individual cavers over his long career as a caver, a cave owner, and a benefactor to the NSS, OTR, and other causes. Please consider donating to the RBNC for the maintenance of the Richard Blenz Nature Preserve. Donations can be mailed to Sam Frushour, RBNC Treasurer, 513 West Dixie Street, Bloomington, IN 47403. Thank you to all of the volunteers who have labored in this house and on this project. You know who you are.

For additional volunteer opportunities, please check the BIG Facebook page or contact me ([cavelaw2002@yahoo.com](mailto:cavelaw2002@yahoo.com)) or Sam Frushour ([frushour@indiana.edu](mailto:frushour@indiana.edu)). We'd appreciate your help, and so would Dick Blenz!



The late Dick Blenz

**Thanks to Gary Gibula for his editing work on this and other articles in this issue.**

Gary Gibula



# SOCIETY NEWS

## NSS Conservation Announcements

Submit Abstracts for Conservation Tuesday at 2019 NSS Convention in Cookeville, Tennessee June 17– 21, 2019

Calling for presentations, PowerPoints, workshops, or panel discussions for NSS Conservation & Management Tuesday Talks. Please send Val Hildreth-Werker a quick email 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, outreach, cave management, or restoration. Send abstracts by April 15, 2019 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.

## 2019 Cave Conservancy Roundtable at NSS Convention

The Twenty-second Annual Cave Conservancy Roundtable is scheduled at the 2019 NSS Convention on 21 June 2019, 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."

## NSS Conservation Web Pages and Cave Conservation Facebook Group

All things caving encompass conservation! Stewardship choices always kick in along the way. All of caving is about minimum-impact choices and acts of protecting!

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

Check out the Cave Conservation Facebook Group for cavers across the speleo spectrum! It's a broad, quick, all-in-one, 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/>

## Group and Grotto Cave/Karst Conservation Awards

Now accepting nominations for Grottos and 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, affinity group, insti-

tutional 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 2019 awards, please send a letter of application or nomination summarizing the Grotto or Group 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 April 15, 2019. [lavoiekh@plattsburgh.edu](mailto:lavoiekh@plattsburgh.edu)

## NSS Convention 2019-Led Cave Trips during Convention Week

The 2019 NSS Convention team is happy to provide caving opportunities showcasing the karst of the Upper Cumberland region of Tennessee. With literally thousands of caves within an hour drive there are caves suited for everyone. There will be a variety of led trips offered on a daily basis. These trips will encompass all skill levels and showcase some of the finest caves that Tennessee has to offer. The four longest caves in the state will be available to experience. Everything from a Rumbling Falls through trip, currently the longest through trip in TAG, to daily horizontal trips of differing difficulty, such as the current longest cave in the state, 40 mile long Blue Spring Cave. Sign up sheets will be located at the Cave Info Booth at the campground, and sign up for trips will be made available from Saturday June 15 through the end of the convention. If you would like to experience a nice tourist trip to beat the heat, head over to McMinnville a short drive away to see the 2<sup>nd</sup> longest cave in the state Cumberland Caverns.

The trips being offered and descriptions can be found on the convention website here: [http://nss2019.subworks.com/cave\\_trips.html](http://nss2019.subworks.com/cave_trips.html). We are adding new caves on a regular basis so be sure to keep an eye on that page for the latest additions. Also found on the website are a variety of pre and post convention caving opportunities. Some of these are individual trips to caves such as the SCCi Run to the Mill preserve, while others are camps offering a variety of activities. The sign up requirements for these camps and trips as well as comprehensive write ups are also

found on the web page.

With over 10,000 caves in the state of Tennessee you may find yourself having trouble sorting through all the choices and planning your caving. Our team is here to help. We have chosen a wide variety of area caves and made them available for self-led trips. At the Cave Info Booth, you will find cave descriptions, maps, driving, and parking directions to these caves. Also the booth will be staffed every morning and evening with knowledgeable local cavers to recommend caves suited to your skill levels and requests. A list of area closed caves will also be posted at the booth and we ask that every caver stop by and check that list before going out caving.

We are very excited to share the world class caving of the Upper Cumberland with everyone this June. Whether you plan on a commercial tour of Cumberland Caverns or exploring the hydrology of Cookeville in Capshaw Cave, you are certain to find what you are looking for. If you have any questions or requests regarding caving during the convention feel free to contact the Cave Trip Coordinators at [nss2019caves@yahoo.com](mailto:nss2019caves@yahoo.com).

For those coming from non-white nose positive states, we will have loner helmets and lights for horizontal caving. We will also have a white-nose decontamination station setup in the campground to decontaminate gear.

**Zeke McKee NSS 67250**  
**Jeff Patton NSS 25949**  
2019 Convention Cave Trip  
Coordinators

## 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: Ellie Watson [ellie.thoene@gmail.com](mailto:ellie.thoene@gmail.com)

## Save-the-Caves Conservation Grant

The Conservation Committee is authorized to award up to \$5,000 annually from our NSS Save-the-Caves Fund to make grants of up to \$1000 to Internal Organizations, Grottos, 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.

## 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

## 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. NSS members of CTFs are helping to manage caves on behalf of public and private landowners.

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. Other CTFs lead ongoing projects that continue 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. Due to the ongoing efforts of CTFs, caves are mapped and inventoried; management plans are written and implemented; restoration and cleanups are accomplished: cave habitats are restored. Any cave/karst conservation, management, outreach, restoration, or protection concern fits.

**Join an existing CTF:** <http://caves.org/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)

## National survey of cavers about bats to begin in May

Cavers are more likely than most people to come into contact with bats. Organizations working to conserve bats want to know more about cavers' views and experiences related to bats because it will help them to decide the best ways to protect bats and cave environments.

Next month, organized cavers will have an opportunity to participate in a survey about their perceptions of bats, white-nose syndrome (WNS), and caving behaviors that may impact bats. This survey is being conducted by the Center for Conservation Social Sciences at Cornell University. Study results will inform the ways that wildlife managers communicate with organized cavers and how they try to protect bats and cave environments from WNS.

It is part of a multi-year collaborative effort by an interdisciplinary team of social and natural scientists, wildlife managers, and outreach professionals in several institutions, including Cornell University, the Wildlife Conservation Society, and the New York State Department of Environmental Conservation.

## Your email invitation to participate is coming soon.

The National Speleological Society (NSS) is working with Cornell University to invite you to participate in this survey. You will soon be receiving an email directly from NSS with your invitation. Participation is voluntary, and your contact information has not been released. Your invitation will include a hyperlink to a website where you can join the study and provide an email address, so that the study team can send you a link to the web-based survey instrument. The survey should take less than 15 minutes to complete. Your identity will be kept confidential and the information you provide will never be associated with your name. Your email address will only be used for the web-based survey. It will never be released for any other purpose.

This project is endorsed by the NSS—we encourage you to participate!

If you would like more information about the caver survey or other components of this study, contact: William (Bill) Siemer, Cornell Center for Conservation Social Sciences, email: [wfs1@cornell.edu](mailto:wfs1@cornell.edu); tel: (607) 255-2828.



# PRESIDENT'S MESSAGE

Fellow Cavers,  
I'm very pleased to announce two generous gifts to the NSS.

## Donation by Mr. Kenneth Laidlaw

Mr. Kenneth Laidlaw (NSS 5664RL FE) is making a very generous donation to the NSS to fund scholarships to attend regional and national National Cave Rescue Commission training events. Scholarships will be awarded based on financial need, letters of support, likelihood that training would benefit caving or cavers in general, and need for trained personnel in certain areas, regions, or discipline. Thank you, Ken, for your generous donation and legacy to continued education in this important area. FYI, Ken is a long time NSS member in California. To read about some of Ken's early exploits, I would encourage you to read the *Chronicles of the Old Reading*

*Grotto* where he plays a prominent role. Ken has also been very active for many, many years as a participant and trainer in technical search and rescue in the western United States. There will be more information coming soon on how to apply for the NCRC Scholarship.

## Donation by Mr. Ernie Garza

In addition, long time Texas caver Ernie Garza (NSS 13484RE CM-FE) has provided four scholarships for students at any level (and NSS members) to help them attend the NSS Convention in Cookeville. The scholarships are in the amount of \$500 each and may be used for registration, travel, food, etc.

To apply for the Ernie Garza scholarship, send an e-mail to [President@caves.org](mailto:President@caves.org) and discuss your financial need, general background in caving, your interest in attending during the convention (lectures, vertical

training, caving, session presentation, etc.), your current status as a student, and how receiving the award will benefit you and the mission of the NSS. This must all fit in no more than three paragraphs, or less than 250 words. Most Texas Cavers know Ernie and his long-term commitment to caving in Texas and Mexico.

Deadline to apply is April 15, 2019. A decision will be announced by April 30.

## National Survey of Cavers About Bats

Folks, a national survey of cavers about bats will begin in May. If you are contacted as part of this survey, the researchers would appreciate your participation. Please note that this study is endorsed by the NSS. See the article elsewhere in the news.

Thanks,

**Geary M. Schindel, P.G.**

# NEWS & NOTES

## Australian Cave Animal of the Year

Australian Cave Animal of the Year was launched in January 2019 and seeks to raise the profile of cave animals and draw attention to caves being important animal habitat.

The inaugural Australian Cave Animal of the year is the Tasmanian cave spider *Hickmania troglodytes*.

The program is inspired by the German Cave Animal of the Year program, which was launched in 2008 and is now in its 12<sup>th</sup> year. See: <https://hoehlentier.de/en/>

The Italian Speleological Federation also launched a Cave Animal of the Year program this recent January. Please see: <https://animalidigrotta.speleo.it/> Bulgaria and Switzerland are organising their programs at present. The time-to-shine for animals of the underground has arrived!

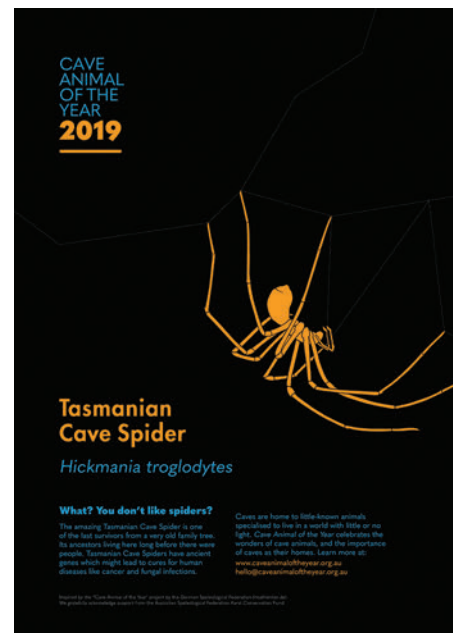
For more details, please visit our website: [www.caveanimaloftheyear.org.au](http://www.caveanimaloftheyear.org.au) and like us on Facebook. (Thanks to NSS members who encouraged me with this project when David and I were at the NSS convention in Montana last year.)

**Cathie Plowman**

Australian Speleological Federation



The Tasmanian cave spider, photo by G.K. Smith.



Right: Poster image announcing the program

## 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 [stevensmith@usa.net](mailto:stevensmith@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 [stevensmith@usa.net](mailto:stevensmith@usa.net)

Who doesn't love dogs? And who doesn't love a story with a happy ending? This one has both. Tony Brocklebank shared a story of a cave rescue in **Cwm Fechan** (Wales.) It seems a dog had become trapped and local cavers pulled out all stops to rescue the wayward pet. Tony tells the story far better than I could; so in his own words... "The dog was located some metres into a small cave complex near the path. This has several entrances, but all filled in with earth and rocks, or too tight for a person to access. Team members started to dig to the dog, initially from two directions, but eventually concentrating efforts on the lower entrance to the cave. This involved working in a small, tight muddy passage, removing a lot of mud and solid rock to gradually excavate a way through. After almost three days of effort from many members of the team, the dog was successfully freed [!] A happy hound, and a brilliant effort by all." Epic! (Feb. 5, <http://bit.ly/2NykKtKC> )

In the journal *Subterranean Biology*, entomologist Alberto Sendra and local caver Craig Wagnell describe a new species of trolobitic dipluran from Vancouver (Canada.) The new species has been named *Haplocampa wagnelli* in honor of Craig Wagnell and his research. Even more remarkable than the discovery of *H. wagnelli* is the location: a group of caves covered beneath a thick ice sheet. This bears implications that these arthropods could very well pre-date the Last Glacial Maximum period some 26,500 years ago. It's worth noting that *H. wagnelli* is one of the most northerly cave-adapted dipluran species. (Feb. 5, <http://bit.ly/2GRQbC2> )

Ecotourism isn't just a western thing. Saudi Arabia has identified five caves where it plans to develop ecotourism destinations in the coming year. The Saudi Geological Survey is remaining very tight-lipped about the cave locations and names for now, however, in order to both protect the caves and resident biota as well as to better prepare the local villages to welcome an estimated 100 visitors per day. Stay tuned! (Feb. 6, <http://bit.ly/2EfUUCy> )

Father and son team Dave and Nick Socky had to abort a planned push of the sump in **McClung's Cave** (WV) due to poor visibility and colder than normal water temperatures. They had hoped to gain a better estimate of the distance between the McClung's sump and the Sweetwater sump in **Maxwelton Cave** (WV.) It was far from a wasted trip, however. In one for the record

books, twelve cavers, in four teams, surveyed 3580 feet in 9.5 hours. (Feb. 10, <http://bit.ly/2t4e4H> )

Dave Howell of the Birmingham Grotto shared some happy news. The Southeastern Cave Conservancy has announced a major new acquisition of more than 2,300 acres known as Johnson's Crook, Georgia. This tract contains more than 30 caves, and has long been recognized as an area of particular environmental sensitivity. The main portion of the property reportedly came from an anonymous donor, with additional acreage from the Georgia-Alabama Land Trust, Inc. (Feb. 2019, *The Birmingham Grotto Newsletter*)

Every little bit counts in a survey, they say. For Randy Macan, Shawn Lamley, Emma Paul and Janis Mankovs the last 953 feet of a 10.5 hour survey in the Half Mile Hall area of **Wind Cave** (CO) certainly holds true. Those 953 feet mean that Wind Cave now has a total length of 150 miles of surveyed passage! (Feb. 12, <http://bit.ly/2TiDPJf> )

Jerry Atkinson of the Texas Cavers shared some interesting news from Congress. A bill was brought to the floor of the US House of Representatives by Representative Darren Soto of Florida on 1/11/2019. It proposes to have the USGS establish a program to map zones that are at greater risk of sinkhole formation in the US. The program would: (1) study the short-term and long-term mechanisms that cause sinkholes, including extreme storm events, prolonged droughts causing shifts in water management practices, aquifer depletion, and other major changes in water use; and (2) develop maps that depict zones that are at greater risk of sinkhole formation. As of February 5th, the bill was sent to the Subcommittee on Energy and Mineral Resources of the Committee on Natural Resources for review. To monitor the progress of the bill, go to: <http://bit.ly/2Hbhtmj>

**Creswell Crags**, a cave system north of London, has a large amount of petroglyphs and similar styled carvings, as well as more traditional letters, words and names, and other forms of graffiti. This isn't surprising considering that Creswell Crags has been occupied for the last 50000 years or so. Prehistoric visitors and others left carvings of birds and reindeer and geometric designs in the caves. Some of that carved graffiti, until recently, has been largely ignored on the

presumption it was of a more recent vintage. But cavers from Subterranea Britannica recognized a large number of markings that some colloquially call "witch marks." These apotropaic marks—protective marks or hex signs to ward off evil spirits—date to the medieval period of England's history. The carvings are found quite literally, almost everywhere in the cave; on walls, the ceilings, inside holes, and elsewhere. The carvings include " 'diagonal lines, boxes and mazes' believed to be 'devices for capturing or trapping evil. There are also VV marks that are believed to represent Mary, 'Virgin of Virgins,' as well as PM, for 'Pace Maria.' " Scientists are saying this could be the largest collection of apotropaic marks in the United Kingdom. (Feb. 25, <http://bit.ly/2GQK3Kn> )

If you're still not convinced about just what amazing creatures bats are, a new study published in the journal *Nature Microbiology* details how scientists from the Duke-NUS Medical School, Singapore, have identified molecular and genetic mechanisms that allow bats to remain healthy while simultaneously hosting deadly viruses such as Ebola, Nipah, and SARS. "Bats' natural ability to dampen inflammation caused by stress and infection may be a key mechanism underlying their long lifespans and unique viral reservoir status," said team member Dr. Matae Ahn. In other words, bats have a higher tolerance for these diseases rather than simply having an ability to fight off the diseases. (Feb. 26, <http://bit.ly/2Xx2KaX> )

Last but far from least, I'd like to take a small bit of editorial privilege and give a shout-out and a hearty "congratulations" to fellow Virginia caver Wil Orndorff of the Virginia Department of Conservation and Recreation. The Karst Waters Institute has announced that Wil is the Karst Award recipient for 2019. Wil is a humble man but his contributions to karst hydrology, his work with the VA DCR Office of Environmental Review, and his contributions as a director of the Virginia Speleological Survey cannot be understated. A formal presentation of the award is slated for March 30 in Blacksburg, VA. A brief CV of Wil's accomplishments can be found at: <http://bit.ly/2H9kMuu>

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, 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!*





Georg Taffet won a Merit Award in the 2018 Photo Salon for *Entrance of Falkensteiner Höhle*.

Laurent Miroult won a Merit Award in the 2018 Photo Salon for *Ressel, France*. Taken in conjunction with Rob Neto.





APRIL 2019

