

# NSS NEWS

February 2020





# CALENDAR

## USA

**March 6 - 8, 2020**—Annual **Florida Cave Crawl** in Marianna, FL. at the Blue Springs Recreational Park. Camping is available onsite. Small campers and pop-ups are permitted, but there are no large RV's permitted. This will mark the 36th annual Florida Cave Crawl. Event details at <http://www.flintrivergrotto.org/florida-cave-crawl/>.

**March 7, 2020**—Spring **Board of Governor's Meeting** at Wind Cave National Park, SD.

**March 28, 2020**—Tennessee Cave Survey - Spring Business Meeting Blackman Auditorium in Woods Science Laboratories / Spencer Hall on the campus of the University of the South in Sewanee from 9am - ~2pm CST. If you are interested in doing a presentation, please contact Chuck Sutherland at [cjsuther21@gmail.com](mailto:cjsuther21@gmail.com).

**May 18-22, 2020**—Conservation of Fragile Karst Resources: A Workshop on Sustainability and Community", informally referred to as **UNESCO Karst 2020**. On the campus of Western Kentucky University in Bowling Green, KY and hosted by WKU, the George Wright Society, and the Mammoth Cave Area Biosphere Reserve. For additional information please visit our website <https://unescokarst2020.com/>.

**May 22-25, 2020**—Speleofest is a 4-day cave event in Bonnieville, KY hosted by the Louisville Grotto and held at the Lone Star Preserve. Early arrival on May 20th & 21st is offered for an additional cost. We offer many cave trips and focus on being a true caver event. Caving, camping, banquet, live band, crate stacking contest, plus more. Breakfast is offered on Sat & Sun mornings. Website: [Speleofest.com](http://Speleofest.com) or if you have questions contact Holly McClintock at [hollymclintock.caves@gmail.com](mailto:hollymclintock.caves@gmail.com)

**June 12th-20th, 2020**—**National Cave Rescue Commission Cave Rescue Operations and Management Seminar**: Camp Pinnacle, Voorheesville, NY. Register at: <https://ncrc.regfox.com/ncrc-2020-national-seminar> or <https://bit.ly/2k6hPI3>

**July 27-July 31, 2020**—**NSS Convention** in Elkins, WV. <https://caves.regfox.com/nss-convention-2020>

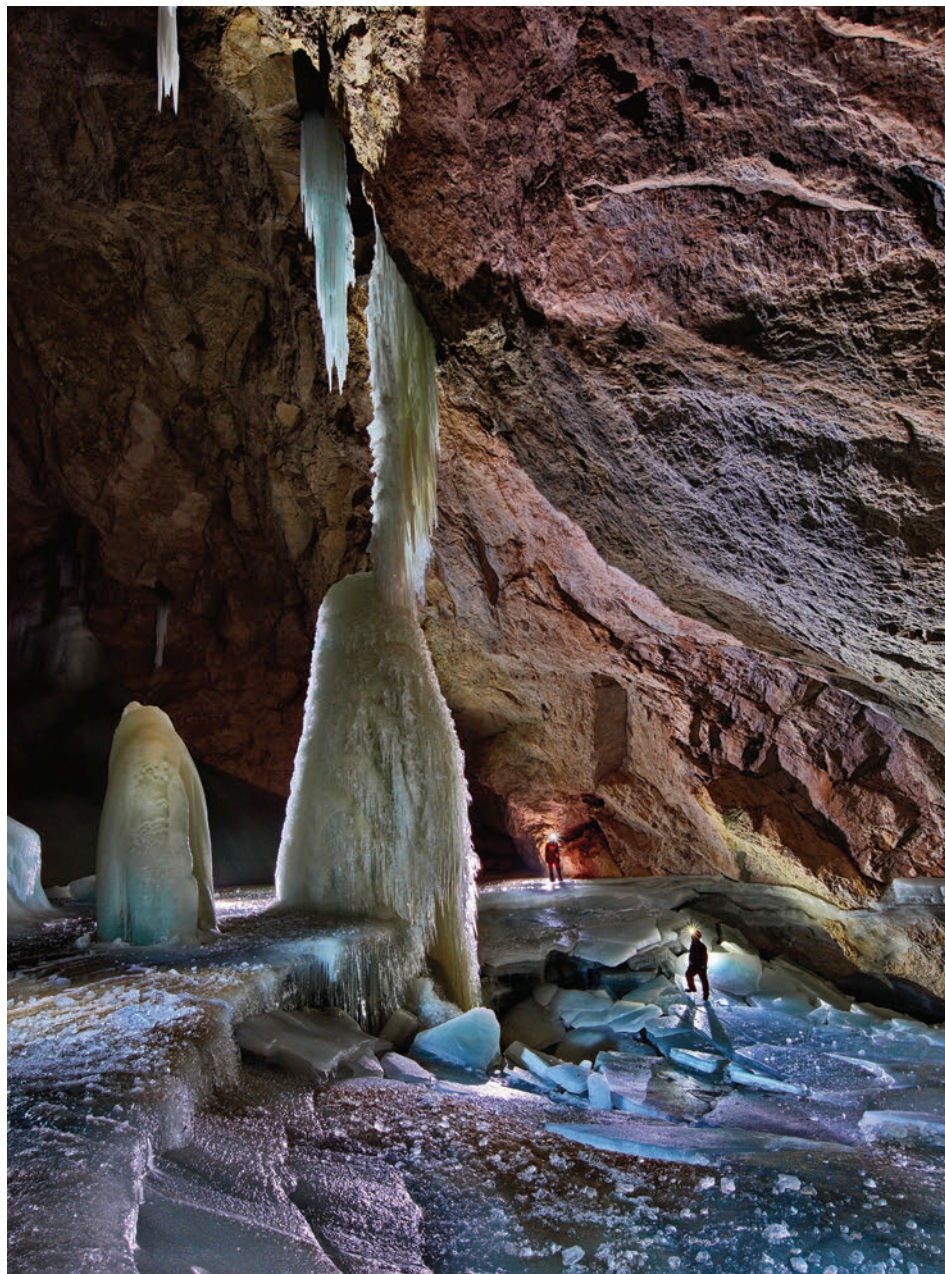
**July 30-August 3, 2020**—**Rescue Technician: Cave I/II course**, Pro-Board Certified, NFPA 1006. Taught by Huntsville Cave Rescue Unit. Location: Union Grove, AL (near Huntsville). Cost to Cavers: \$90. ProBoard certification: \$320 (in-state) / \$540 (out-of-state)

More information: [www.hcru.org/rescueclass](http://www.hcru.org/rescueclass)

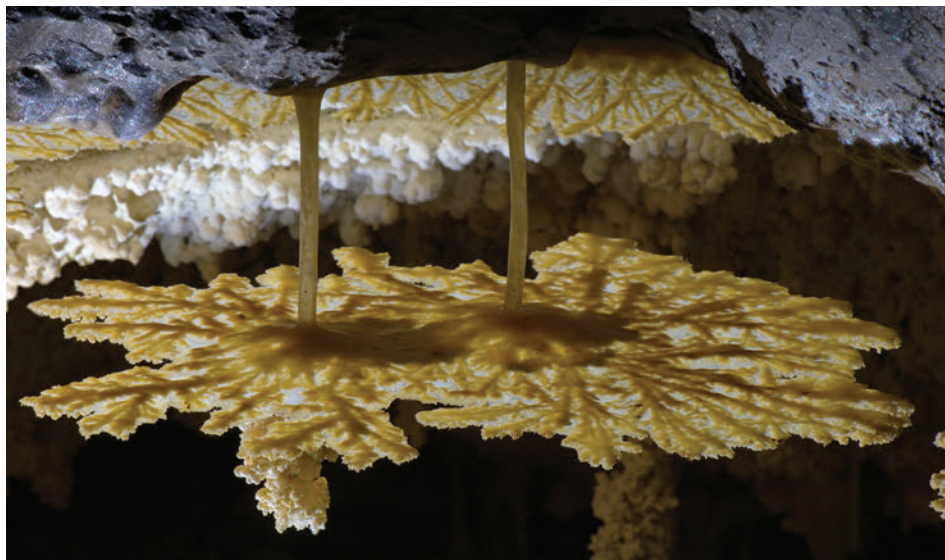
**June 28-July 2, 2021**—**NSS Convention** in Weed, California! Nestled in a pine forest in extreme northern California, the 14,000-foot Mount Shasta Volcano stands guard over the rugged City of Weed. Named after her founder, Abner Weed, this historic lumber town rests at the intersection of California's mountainous limestone ridges and mysterious lava tubes. Hundreds of caves in the nearby hills can provide challenges for a lifetime of explorers. We hope you can join us for the 2021 NSS Convention in Weed, CA. <http://nss2021.caves.org/>

**2022-NSS Convention** in Custer South Dakota. Dates TBD.

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).



Ice Palace, by Georg Taffet, won an Honorable Mention in the 2019 Photo Salon. It's from a cave in the Death Mountains of Austria. Below, another entry from Georg that was accepted for showing, lily pad shelfstone from the Siebenhengste Cave System in Switzerland.





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

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## ABOUT THE COVER

*Front cover:*

This dye released in Elysium was detected in the lower (-600m) La Grieta section of Sistema Huautla, establishing a hydrologic link of this newly found cave to the overall system. Photo by Matt Tomlinson.

*Back cover:*

**Right:** Trying out the new karst adventure at Phu Pha Marn, Laos. Photo provided by Green Discovery.

**Left:** Justin Tucker at the lip of The Abyss in Smokey Hole, Jamaica. Photo by Alfred Crabtree.

**Bottom:** Reilly Blackwell in Cueva de Elysium, a newly discovered cave in Mexico likely to connect to Sistema Huautla..Photo by Matt Tomlinson.



# PESH 2019 – the sixth annual expedition

by **Bill Steele**,  
**NSS 8072 FE-LB-CM-AL**  
& others as indicated

Nita Nash

PESH is an acronym for Proyecto Espeleológico Sistema Huautla, or the Huautla cave system speleological project. Sistema Huautla is an immense cave system located in the northern corner of the southern Mexican state of Oaxaca. The exploration of it began in 1966 by cavers from Texas. PESH is an official project of the NSS.

PESH was the name given to this long-term exploration, mapping, and scientific speleological project six years ago with a reorganization and goals set, including having ten annual month-long expeditions, 2014-2023, supporting Mexican cave scientists, developing techniques and testing gear, and publishing. PESH was founded by Tommy Shifflett (NSS 14207 FE-LB) from Virginia and me, Bill Steele, from Texas.

Being retired from a career, I spend much of my time organizing and obtaining support for the next expedition. During expeditions I'm tri-leader with Tommy and Alma Estrada Rodriguez (NSS 69709, who lives in Huautla and was the 2019 NSS convention keynote banquet speaker), naming objectives, organizing teams and getting them to entrances, gaining access to caves through meetings with locally-elected *jefes*, and constantly dealing with the challenges of multi-millennium-old beliefs in cave spirits held by the Mazatec Indians of the remote Sierra Mazateca.

At the beginning of the 2016 expedition, I was instructed by a *curandero* (shaman) at the end of a solemn ceremony addressing cave spirits, to sacrifice a turkey by dropping it down a 200-foot deep cave entrance pit. This year a ceremony with a *curandero* was followed with instructions to leave cacao beans and other offerings at cave entrances we entered.

An excellent team of cavers and cave scientists from three countries—the USA, Mexico and Costa Rica—stayed busy through the four weeks of April. We discovered a new type of diplomacy: fruitcake diplomacy. One of our sponsors is Collin Street Bakery, a chain of high-end bakeries in Texas. Besides 50 pounds of excellent Costa Rican coffee, I asked them to donate 25 of their renowned fruitcakes. At first, we were using them for high caloric underground camping food, but then we discovered that the Mazatecs love fruitcake, and we started giving them to people with whom we were having difficulties. It worked like magic.

Something else that made us friends this year was the printing of a school primer to be used to teach students how to read Mazateco. On the last day of last year's expedition a local teacher gave me a USB drive which he said contained his "life's work". He asked if we could bring 100 printed copies of it this year. I said yes, not knowing how we'd accomplish it. I turned to our faithful sponsor, Whole Earth Provision Co., headquartered in Austin, and they did the printing very nicely, and in color. We had a ceremony in Huautla and presented 180 copies to the teacher.

There is an artist in Huautla who is a university-educated painter. He is regularly being commissioned to paint murals on walls in the city and they are impressive. We arranged for him to paint a mural of a cave scene on a building in a prominent location. The painter, Jacinto Garcia, based the mural on a photograph taken by Chris Higgins of the 436-foot-deep TAG Shaft, in a cave connected to Sistema Huautla last year. We held a ribbon-cutting ceremony in front of the mural that was well attended.

Cave science-wise, biological collec-

tions were delivered to biologist Dr. Oscar Francke at UNAM in Mexico City (recipient of the 2018 NSS Honorary Member award). We have worked with Dr. Francke for over 35 years since collecting the first troglolitic scorpion ever found. He is one of the world's leading experts on scorpions. He described *Alacran tartarus*, to date only known from Sistema Huautla. They have been seen as deep as 20m underwater and it still isn't known how they do that. Forty-eight new lifeforms have been collected in the Huautla caves, 11 of them highly cave-adapted, meaning blind with little skin or exoskeleton pigmentation.

A prominent Mexican paleontologist with INAH, the National Institute for Anthropology and History, Dr. Ivan Alarcon, spent a week with us and next year will excavate the skeleton of a Pleistocene giant ground sloth, extinct over 12,000 years. The only skull of *Meizonyx salvadorensis* ever found was found by him in a Huautla cave three years ago. This year in a new cave we discovered the skulls of other Pleistocene megafauna: a sheep the size of a musk ox with long curved horns, and a large pig which from its tusks makes us glad it's now extinct.

Through a Mexican cave geologist on the faculty of the University of Nevada at Las Vegas we are helping map paleoclimate patterns for the first time in this part of Mexico by collecting broken stalagmites whose uranium isotope content can be dated. Another Mexican geologist, who is also a top cave explorer and climber, Fernando Hernandez, is in graduate school at Western Kentucky University, one of the top US schools for cave and subterranean hydrology studies. He is writing his thesis on the groundwater chemistry of Sistema Huautla. He did subterranean dye tracings and placed receptors in resurgence in the deep Rio Santo Domingo canyon to the south where the water in Sistema Huautla is known from a prior dye trace to surface again.

The expedition began with a send-off party held at my daughter Audrey's home in South Austin, Texas. The Gary Franklin Band played, I gave a speech about our



The PESH van fully loaded before driving to Huautla

Scott Trescott

Bill Steele





Bill Steele

**Fruitcake diplomacy, asking these boys to take it to their grandmother who owns a 600m deep cave.**



Rune Burnett

**Ribbon cutting ceremony for the PESH wall painting in Huautla**

expedition objectives and recognized Rune Burnett, a long time Austin caver who in 1966 was the first caver to enter a deep pit entrance of what is now known as Sistema Huautla. NSS president Gary Schindel also provided remarks.

The next day we packed two vehicles and headed south. This being our sixth annual PESH expedition, we have a routine. On Sunday following our send-off party we pack the vehicles and drive 235 miles south to Laredo, Texas on the border. We stay in a Motel 6. Early the next morning we cross into Mexico. The border crossing usually takes about an hour. Then we do a long day of driving about 1,000 km (621 miles) halfway to Huautla. The next day we do the same and get all the way there.

We spend three days with a small number of us securing buildings we have arranged to rent, setting up the kitchen, and getting our infrastructure ready to support thirty people at a time. On Saturday people arrive. They either fly to Mexico City and take an eight-hour bus ride to Huautla, or fly to Oaxaca City and take a six-hour commercial van ride. From Huautla it is a half hour taxi ride to the isolated village of Plan Carlota where our expeditions have been based starting in 2016.

We began our 2019 expedition with Sistema Huautla having 25 entrances, 85 km (52.8 miles) long, and 1560m (5,117 feet) deep. Tommy Shifflett and I write and send out team newsletters every couple of months after we select our team members in August each year. Included in the newsletters are our expedition objectives and beginning this year, we named teams with team leaders to hit the underground running in the first days of the expedition. From then on, we see what went, what ended, and what if anything was an exciting new find to which to direct resources.

PESH 2019 first week objectives: A team was sent to each objective with a designated team leader who is in charge of safety,

rigging, lead selection, mapping, handling of survey data afterwards, and writing a report. The first week's objectives were:

- Sotano de Agua de Carrizo section of Sistema Huautla (connected to the system in 2018): continue exploring and mapping leads. Derig when finished.
- La Grieta section of Sistema Huautla - Camp 3: explore/map remaining leads. To get to this lead covers go 400m deep and then upslope 400m
- Plan de Escoba: Look for caves trending toward Sistema Huautla. This is a small, remote village at the northwest corner of the Sistema Huautla karst drainage basin. At the end of the 2018 expedition we hiked to there and arranged to rent a house in April 2019
- Nita Nashi: this 641m deep cave was explored in the 80s. Leads remain and it was hoped it could be connected to Sistema Huautla.

We were up to full team strength by Sunday, April 6, and caving began in earnest.

[Personal accounts by other expedition participants follow.](#)

## **The Maz and the Caves**

**by Abbe Vohl Hamilton**  
NSS 63701

Alma, our local adviser in customs and culture, suggested that we book a group blessing ceremony with a local *curandero* (holy man) to get ourselves mystically straight. Doesn't matter what we believe ourselves, Alma said, the locals would appreciate the gesture as the proper thing to do before exploring the deep-down for a month. We paid for this ceremony, but Bill says that when the locals approach us about doing a ceremony, we agree to it.

So, at 8 am, the whole crew loads into vehicles and travels up the mountain to the

Agua de Sapo (toad) village, the home of the curandero. The PESH veterans tote thermoses of coffee they spirited out of the kitchen. Tiffany surreptitiously snaps photos in the golden morning light as we single-file up the footpath past little viney flowers entwined in a box-spring fence.

The curandero is a small, smiling man with gold front teeth. His white shirt is embroidered in the front with a rosary and mushrooms. The back is covered with an elaborately stitched Jesus. He shakes everyone's hand with a *N'dali* (hello in Mazatec). We file along the steep mountainside past two outbuildings and a chicken coop, into a single-room building. We wipe our feet on a rag at the threshold. All of us go silent, even though our instructions were only to be quiet and respectful. At the far end there's an altar decorated with fresh cala lilies, fourteen images of Christ, Christmas lights, and a red jar candle. A tambourine hangs on the wall



Greg Roemer

**Artist Jacinto Garcia and son**





Scott Trescott

**The Supai Room in Nita Nashi**

over a Spiderman cutout. Three antique car posters occupy peripheral wall space. There's a double bed just to the right of the altar, partially obscured by a curtain. Benches have been arranged in a U around the altar, and more seats are arranged behind. We take a seat.

The curandero begins with an invocation. He speaks reverently, slowly. The Spanish is easy to understand. He lapses into Mazatec, suddenly nasal and staccato, still reverent. The rooster continues to crow outside. Pine resin incense burns in a wood goblet, it swirls in the breeze from the window. He picks up two armloads of olive branches, gyrates slowly before the altar while singing in Mazatec. He then takes a branch from the stack, holds it in front of Bill Steele's face. We've all received beeswax candles, which we hold, lit. He makes a blessing and brushes Bill's front, back, arms and legs with the branch, puts it in Bill's hands, and invokes something involving "work" and "hands", then blows the incense to immerse Bill in smoke from the waist up. Then Alma. Then the rest of us. He works silently with the Americans, speaks aloud to the Mexicans. Vico, standing in the back, scratches his nose with his candle. At one point the curandero runs low on olive branches and his wife disappears to pick more so that everyone has a fresh branch. The olive branches are to purify our spirits, the candlelight to remind us to return to the light from the physical (and moral) darkness of the caves.

Then we get holy water, dabbed from a glass with a cala lily. Sweat beads on the curandero's nose and brow as he makes his rounds again. Black pants, black crocs. Finally, he takes out a teal tupperware bowl

of a bubbly brown liquid and it's clear we're each meant to put our lips to it. For a fleeting moment, I wonder if this is a genius way for the Mazatecs to rid themselves of their gringo problem once and for all. The liquid is incredibly bitter, cacao with plenty, earthy flavor. The cacao, I'm told later, symbolizes the blood of Christ.

Hours later, we reconvene at base camp for a tamale lunch, and to burn our beeswax candles down to stubs. We're instructed to never let them burn completely out, lest we lost all our blessings. We laugh about it, but everybody carefully watches the progress of their own candle.

Impressions on the ceremony are incredibly mixed. I, and several others, felt as though it was done in earnest and seemed to be for our safety and respectful relations with the cave spirits, rather than our entertainment. Others thought it was a crock of *mierda*, but conceded that it was more professionally executed than the last ceremony PESH commissioned, and certainly less disturbing than 2016's sacrifice of a live turkey down the La Grieta entrance shaft. One friend of mine had a powerfully emotional response to the ceremony, but also reports that the curandero made a pass at her a week later in town.

The curandero gave us repurposed soda bottles full of cacao water, and little paper envelopes of blessed almonds and tobacco as gifts for the caves. We were to make an offering at every cave entrance we used. Fernando was tasked with the offering for La Grieta, and promptly forgot the supplies in his truck for two weeks. He was stopped by police at a checkpoint in the interim, and had to explain that, having missed the

ceremony, he wasn't sure *exactly* what was inside the little paper envelopes but they were gifts for a cave...

By this point, three "unauthorized" trips had occurred in La Grieta, and another camp trip was coming up. So, I finally took the packages up to the entrance shaft at the start of Sonia, Paul and my seven-day camp, figuring that winging it would be better than never doing it at all. I haltingly and self-consciously addressed the cave, told it that we had gifts for it and named them as I dribbled the cacao water across the lip of the pit and tucked the packages into an alcove under the dripline. It felt wrong to ask it permission as this would be our fourth time into La Grieta in a month, so instead I told it that we were coming back to find out more about it.

The Mazatec's perspective on caves is steeped in folklore. I spent a couple afternoons studying a chapter from "The Devil's Book of Culture" (Feinberg), which describes the light-skinned earth gods (*chikons*) who own the caves in Mazatec tradition. A person can make offerings to them in exchange for riches (an entire turkey or a turkey egg is specifically referenced), but recipients are then cursed to toil beneath the earth in the afterlife. So, the underground is associated with dirty money, and the author noted that it's not much of a jump to suggest that this is probably why we "rich foreigners" are comfortable there. Some locals assert that the *chikons* have disappeared from the region because "things have changed too much" since the old days. There's a specific myth about El Chato, a goat-man-demon. Men can visit him in his cave and ask for favors, but in exchange, they become El Chato's lover and slowly feminize over the remainder of their cursed lives. There is another legend that, long ago, the Mazatec people went underground to hide from invad-



Bill Steele

**Sonia Meyer and Abbe Vohl Hamilton about to go to La Grieta Camp 3, which is very remote**





Cooking in the underground Nita Nashi camp



Nita Nashi camping crew

ers and some never returned to the surface. Our friend studying karst hydrology in the region was asked on multiple occasions whether he'd met El Chato, or whether he'd discovered any people living underground.

Huautla cave expeditions periodically encounter unfriendly landowners. Most of the recent disputes seem to center on some locals' desires to capitalize more on our presence. Still a far cry from when someone cut the rope at the top of the La Grieta entrance several decades ago. There remains some mistrust about cavers' activities, despite continued efforts to demonstrate good will and cultural respect. One can imagine that some of this mistrust comes from the cave folklore. Then there's the foreignness of hobby-exploration as a concept. PESH participants are frequently asked "Why are you *really* here?" There's a common perception that we *must* be capitalizing in some way from our visits to the cave, because otherwise, why on earth would we be doing this? It probably also doesn't help that the Mexican government relocated about 25,000 Mazatecs to build the massive reservoir Lake Miguel Aleman in the 1940s. Many (one would imagine, bitterly) resettled in the region where we now cave. I began to think of the experiences I've had with rural Appalachian landowners, self-sufficient people who have lived in the mountains forever and want to be left the hell alone.

For the most part, though, our interactions in the city of Huautla and in the villages around the caves were positive. The oldest ladies are the friendliest, in their button up dresses and sensible flats, their heads level with my ribs. They're the ones who smile the widest, and shake our hands in the Mazatec way, which is to slide your palm across the other person's—no grabbing. They carry bouquets of fresh flowers everywhere and most appear to speak no Spanish at all.

## **Jam It! – the connection of Hell's Hammer Hole to the Sotano de Agua de Carrizo section of Sistema Huautla, May 1, 2019**

**by Jake McLeod**  
NSS 64582

It always pays to ask just what it is you're carrying. I learned this lesson the hard way on a trip into Sotano de Carrizo. At the surface, we were six: Tommy Shifflett, Fernando Hernandez, Paul Winter, Abbe Vohl Hamilton, Tiffany Nardico, and me. Once we entered the cave and descended the first drop series, the team split to pursue separate objectives. Tommy was leading a trip to de-rig the TAG Shaft and push leads near there. Paul was working on enlarging a tight lead that was hoped to connect to Hell's Hammer Hole. I like helping enlarge tight places, so that sold me on joining his team. Abbe had never seen the magnificent TAG Shaft, so she went along with Tommy and Fernando. Tiffany opted to come with us to help push the lead.

We reached our lead at the top of a small climb. We had been warned by Tommy that the rope up it was held by a natural anchor that should only be trusted as a handline. The climb itself was a steep slope of limestone interspersed with many layers of chert that severely degraded the integrity of the slope. An attempt at climbing without the aid of the handline caused several large, previously bomber-looking holds to come off in Tiffany's hands. After getting to the top, and noting that Tommy was right about the natural anchor, we gathered at a slight widening of the cave with just enough room for two people to sit in. The lead was just around the bend, at the end of an opening wide enough for just one person, with a small

pool at its base.

About all we could do was whack chert off the walls, closing our eyes just before the hammer landed to keep chips out (safety glasses? Hah! What did we need those for?!) When my turn came up, I squeezed in, looked at the lead, and laughed. It took me back to the entrance at Buckner's Cave, Indiana, my very first underground experience. "I'm expected to go through THAT?!" At first glance, I thought it was never going to happen.

I pushed in as far as I could, and started hammering. When my wrist could take no more, I set the hammer down and wriggled back out. Paul took his turn in the squeeze. After a short pause, he incredulously asked if where I had left the hammer was where I had gotten my body to. It was already at least halfway through the squeeze. We switched places and, sure enough, there was a lot less distance to cover than I thought when I had retreated. As I lay sideways with my neck cranked to the side, and my entire body weight on my left elbow, I could start to see a path though. I backed out and told Paul my plan. I would take several tries, each time getting more and more comfortable with the constriction. After confirming that I could reasonably be rescued from the other side even if I did get through and couldn't return, I decided to push it. I squeezed back in, chose the direction that my head would be facing for the duration (left, for your information), exhaled, and started inching my way forward. Around that time my helmet got stuck. Exhale, inchworm forward, toss the helmet a little further in front of me, find some space to fill my lungs, repeat. That was my life for the next few minutes. I could see void ahead of me, whenever I could actually see ahead of me. The path eventually angled down, and I lay with my left arm stretched out in front of me, my





Bill Steele

After tripping in a cave and cutting her hand on a sharp rock through her glove, Sonia Meyer gets the heat treatment from our landlord, who is also a folk healer. She said it really helped and healed up in a day. The treatment is described in more detail in Sonia's article in this issue, on page 23.

right pinned to my side, and the whole of my left side in a slight stream. I inched forward, and the cave finally opened up into a narrow pit, with a wet, slanted climb up on my right. I took a moment to appreciate the act of standing in unconstricted space and yelled back that I was through. I started looking for stations. We had heard that the last station in Hell's Hammer Hole should be right after the squeeze. To my dismay, I saw nothing that looked like a marker. I was going to have to climb. The holds weren't the best and had water flowing over them, but I grabbed whatever limestone I could, and hoped it would hold. At the top of the climb was a small traverse that led up to a tight, drier lead, where I saw a target drawn in white-out! "We've connected!"

Paul tossed the survey pouch to me, and I set stations, took readings, and shouted them back to be sketched. It only took a handful of stations to connect, which I named

JAM (my initials) after Paul's suggestion. At the connection, I tried to get level with the last station to back-sight. I could see how if you were coming from in that lead, you would be presented with an opening to a sketchy downclimb coming head-first out of a chest-compressor squeeze. As I was surveying, we discussed what to name the connection. Having never named anything in a cave before, I found myself at a loss. Seeing as it was a tight lead, and we were using the acronym JAM anyway, Paul suggested I use that somehow. I went with "Jam It!"

Before that day, no one had ever set foot in that small space, and it is very likely that no one will ever return. I find it fascinating that there could be a place on this planet where only one human will have ever been, and then only for a single moment.

### The best discovery of the expedition was a new cave. Cueva de Elysium and Other Plan de Escoba Caves

by Reilly Blackwell  
NSS 68044

On Ridgewalk Day One (April 8) Elliot Stahl and I found eight caves, several blowing good air, two particularly promising (Cueva Manita and Cueva Elysium; Elysium at that time didn't have a name, just RE4). Manita was found to have significant archaeology inside and was mapped to 150m in length with three entrances. Elysium was always the most exciting due to its picturesque headwall and massive airflow; I found it from thirty feet away because I could feel the cold air rolling down the side of the sink.

The next day (4/9) we returned to Vine Pit, an 85-foot blind pit near Manita, rigged and mapped it, and went immediately back to Elysium with Tiffany Nardico. We rigged the entrance, a 100-foot pit, and immediately it broke out into borehole. That day we mapped 440 feet and stopped at a challenging climb up with good air.

4/10 Elliot did a hard climb-up, rigged it, and the borehole went huge. We mapped 800 feet, ending in the Isle of the Blest, a giant section of borehole 150 feet wide and 150 feet tall.

In the next two days we (Elliot, Mark, Vonny, Jim Smith,

Tristan Stahl and me) surveyed 1300 feet and found Anthodite Hollow, a hugely decorated room. That level of borehole ended at Despair, Hangover, and Ecstasy, and we went back to Plan Carlota thinking the cave was basically over.

Elliot and I went back to check final leads, and at the very end of the trip we wriggled into a hole in the floor and found 1300 more feet of borehole, plus a huge room, Hill of Hope (200 feet wide by 250 feet long by 100 feet high), which would become Camp Bertha. At this point the cave exploded with tons of leads and we brought in Matt Tomlinson, Gerardo Morrill, Audrey Steele, and Fernando Hernandez to help out.

On the first survey trip to the new area (Angel of Black Death and the Rimstone Scene) Georgia Schneider fell and sprained her ankle badly, ~650 feet deep; it had taken her 2.5 hours to get in and it took her 6.5 hours to crawl out with help from everyone.

On 4/20 we put three teams in the cave for a 16-20 hour trip, depending on the team. Our team alone mapped 1700 feet, mostly borehole, and found a deep, continuing pit series. The cave hit one mile long and 800 feet deep.

In the final week of PESH we put 3-4 teams in the cave for a 4-7 day camp trip. During the course of this camp trip we rigged two separate 330-foot-deep pit series routes from camp to the lower borehole, mapped a maze of infeeders, borehole, and continuing passages, and pushed the cave to 1350 feet deep with an aid climb by Gerardo.

On the second to last day Elliot did a super sheer 50 feet free climb and broke into a dry, gypsum-covered borehole with completely insane world-class formations. We mapped 2500 feet in Reverie Alley and the Silver Shadow Borehole, finding formations like:

- gypsum needles, crusts, snowballs, beards, and hair
- anthodite bushes, clusters, and ten-foot columns, including some yellow from sulfur; mostly white
- sparkly silver sharp aragonite bushes ALL OVER the floor, walls, and ceiling for hundreds of feet (we got splinters), including some with moon milk caught in the spikes
- lots of calcite flooring, standard draperies, dripstone, flowstone, etc, including one section of calcite floor that has extremely vibrant Technicolor sparkles
- helictites and other wiggles
- calcified millipede husks, bat skeletons, and bird bones

In other places in the cave there are also large quantities of black anthodites, rimstone pools 45 feet deep, 40-foot flowstone columns, and other weird stuff.



Elysium camp photo (Matt Tomlinson)



## Expedition summary

by *Bill Steele*

### **PESH 2019 Expedition Highlights:**

- Four weeks of intense cave exploration, mapping, and collecting of scientific data
- 42 participants made up of cavers, surface support people and Mexican scientists (scheduled so there is a maximum of 30 people at a time)
- No accidents
- Made new friends among the Mazatec people
- Mapped over 10km (6.2 miles) of passages discovered this year. Sistema Huautla is now 89 km (55.3 miles) long with 29 entrances
- Had five deep underground camps happen at the same time
- Supported Mexican cave scientists in the following fields:

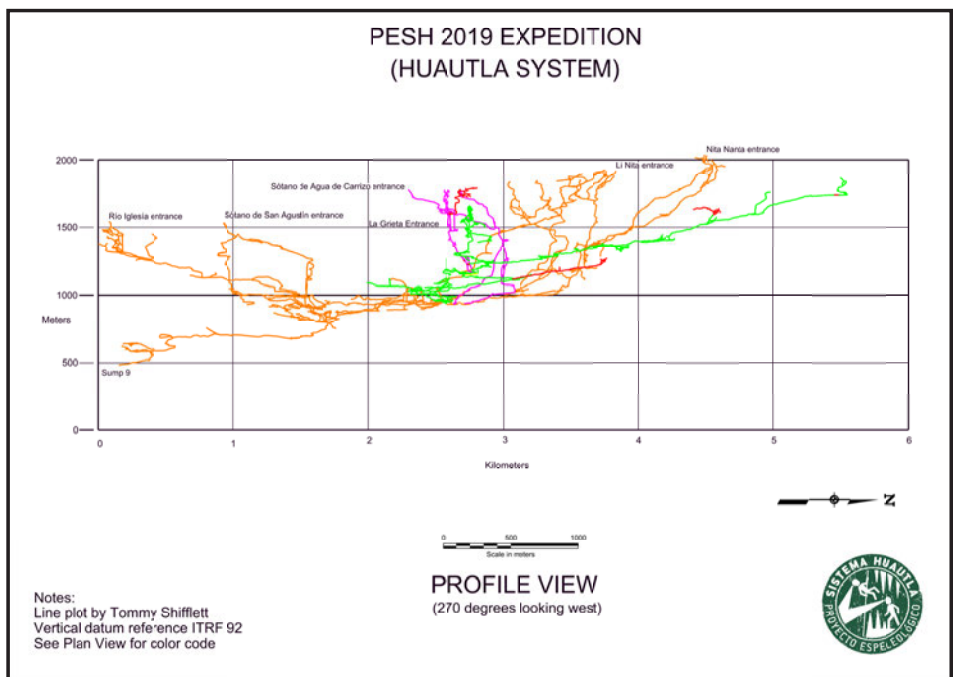
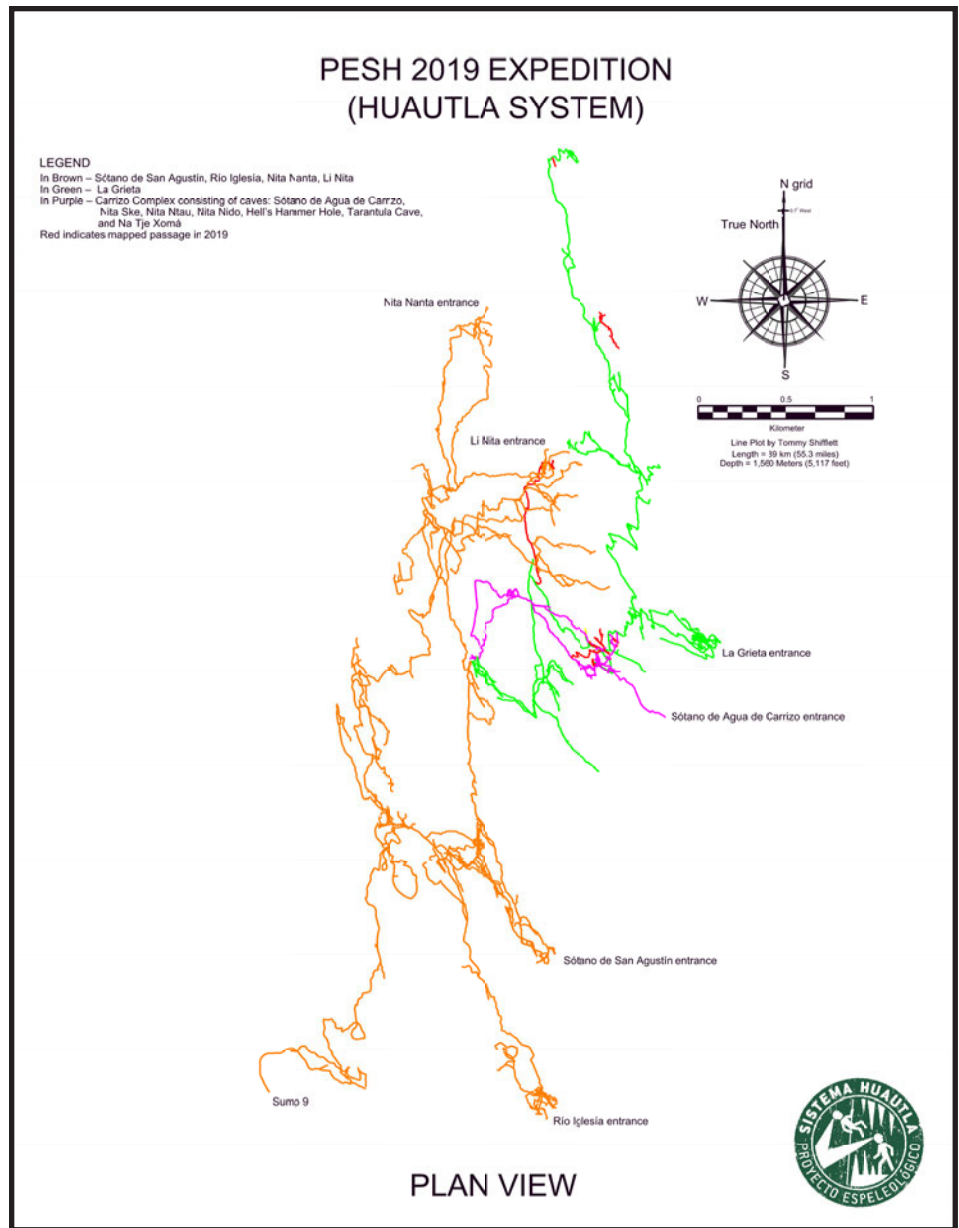
A Mexican geology graduate student at Western Kentucky University, Fernando Hernandez, who is writing his thesis on the groundwater chemistry of Sistema Huautla. He did dye tracings and also caved hard.

Many biological collections were made and the specimens have been delivered to the renowned biologist Dr. Oscar Francke in Mexico City. Dr. Francke received the 2018 NSS Honorary Member Award.

Mexican government paleontologist Dr. Ivan Alarcon spent a week with us and is planning to eventually collect a giant ground sloth skeleton next to where he has already collected the skull. We also discovered skulls of other Pleistocene megafauna this year in a cave.

We collected a stalagmite for paleoclimate dating and are working with a professor of geology and an expert in this field, Dr. Matthew Lachinet, with the University of Nevada at Las Vegas.

- Much work was done from Camp 3 in the La Grieta section of Sistema Huautla, domes climbed, with work remaining to be done in 2020.
- An underground camp was done at Camp 4, La Grieta, 700m deep, with Boiled Nuts Dome (100m+) sized up for climbing eventually. Acting on a hunch of Lee White's, a nice upstream borehole passage was discovered at the "elbow" in lower La Grieta, Sotano de Agua de Carrizo section of Sistema Huautla (connected to the system in 2018) named Blowhard Blvd. (after Lee White) and appears to be heading for Nita Nashi. Cavers were stopped by a waterfall they were not prepared to climb.





- Discovered a new cave in the Sistema Huautla drainage basin with world-class formations, headed toward Sistema Huautla 8 km away, and is now explored and mapped to be 5 km long and 400m deep. A stream in it was dye traced and the dye was received by a receptor 600 meters deep in Sistema Huautla.
- The rigging of Nita Nashi went slow and the leads at its lowest point were not reached. Exploration and mapping will continue in 2020.

The expedition surveyed over 10 km (6.2 miles) of passages in the karst drainage basin and added four more entrances to Sistema Huautla, which is now 89 km (55.3 miles) long with 29 entrances. It is the 28<sup>th</sup> longest cave in the world.

We had five deep underground camps happen at the same time, a new Huautla record, one of the camps being in a new cave discovered this year at the northwest edge of the Sistema Huautla drainage basin. It has world-class formations, is headed toward Sistema Huautla 8 km away, and is already 5 km long and 400m deep. The

total depth of Sistema Huautla remains 1560m (5,117 feet), the deepest cave in the Western Hemisphere and tied with the cave Hirlatzhohle in Austria as the world's 9<sup>th</sup> deepest. Plans are well underway for the *PESH 2020 Expedition*.

### PESH 2019 donors and sponsors

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PESH is saddened by the untimely death of Lee White. He died in a car wreck in September 2019. He was only 31 years of age. He was on the 2017, 2018, and 2018 PESH expeditions. He will be greatly missed. He was an excellent cave explorer, rope rigger, and cave wall climber.

PESH has a challenging list of objectives for 2020. A key one is to reach our project goal of 100 km in length for Sistema Huautla.

### PESH 2019 team

Bob Alderson	USA/VA
Stevan Biggers	USA/VA
Reilly Blackwell	USA/VA
Grace Borengasser	USA/TX
Rune Burnett	USA/TX
Yvonne Droms	Switzerland/USA/VA
Gerardo Gil	Mexico
Isabel Grajales	Mexico
Abbe Hamilton	USA/VA
Blake Harrison	USA/NM
Adam Haydock	USA/NV
Fernando Hernandez	Mexico
Jesse Houser	USA/TN
Vico Jones	Mexico/USA/TX
Noah Landreth	USA/NC
Kyle Lassister	USA/TN
Adam McLeod	USA/TN
Sonia Meyer	USA/CA
Mark Minton	USA/VA
Rolland Moore	Mexico/USA/VA
Tiffany Nardico	USA/CA
Adrian Miguel-Nieto	Mexico
Alma Estrada Rodriguez	Mexico
Greg Roemer	USA/CA
Philip Rykwalker	USA/TN
Cuate Sanchez	Mexico
Georgia Schneider	USA/IN
Tommy Shifflett	USA/VA
Jim Smith	USA/GA
Susan Souby	USA/TX
Elliot Stahl	USA/TN
Tristan Stahl	USA/IN
Audrey Steele	USA/TX
Bill Steele	USA/TX
Matt Tomlinson	USA/TN
Scott Trescott	Costa Rica
Jason Weyland	USA/UT
Lee White	USA/AL
Paul Winter	USA/PA
Brayden Worrell	USA/TX

Scott Trescott



Formation wall in Nita Nashi



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# Incident in Smokey Hole (Jamaica)

*Alfred Crabtree and Justin Tucker*

## Introduction by Alfred

My caving avocation has been very gratifying for over a decade. I live in the heart of TAG, and have visited over 400 caves in that period. Caving came at a good time in my life, after a divorce and when I was seeking myself and an identity. I initially began caving as a means to share something with my children through that tough transition. The kids enjoyed it, but it became so much more for me, it became my passion. I developed self confidence and temerity, met my tribe, even shared love with a fellow caver for a nice period of time. Eventually was involved with a couple of rescues that left me questioning, do I have enough skills to continue caving at the degree I was with confidence and responsibility?

in 2014 I began to look at the cave rescue courses offered in my area. I found that they would cost around a thousand dollars and take a week of my time. I was seeking a change in employment coincidentally, and I came across Bill Putnam's SPRAT course, which was approximately the same investment in time and money, similar skill sets taught, and possibility of finding work with this certificate.

Shortly thereafter I found employment with Rope Partner Inc. based out of Santa Cruz, CA. This wonderful company was filled with individuals much like myself, seeking adventure, good paying work, and lots of time off to pursue my other interests. My coworkers are all fantastic people who have done amazing things in their personal lives, and for some reason there are few egos that get in the way. In the way caving introduced me to my tribe, my fellow rope access technicians at Rope Partner was like going to Convention.

Our company focuses primarily on wind turbines; inspection, repair and retrofit. I specialize in blade services, basically composite repair while on rope. My office is 150 feet off the ground, with a grinder in hand, or laying up carbon fiber, closed cell foam, and fiberglass. I travel all over the country from May to November, and take winters off. 26 weeks a year and I've made my goals for money, and can pursue other interests with my free time, not a bad deal eh?

Sometimes we have work in other countries, and in April of 2019 I found myself in Mandeville, Jamaica for five weeks.

Fortunately, or unfortunately, depending on how you look at it, customs had delayed our departure for four weeks, and when we got to Jamaica, the wind was unrelenting and we did not get to work much at all. My partner Justin Tucker and myself made use of the free time and saw as much of the island as possible. We climbed Blue Mountain, the highest peak in Jamaica (7402 feet, 2256 meters), and talked smack about bottoming Smokey Hole, the deepest cave in Jamaica as well (640 feet, 195 meters). Justin is an accomplished multi-pitch rock climber, ice climber and alpinist, but caving was not in his wheelhouse. We are both SPRAT III supervisors and have thousands of hours of rope access experience, not to mention thousands of hours of SRT experience.

We first went to Gourie Cave, a down-cutting stream cave together and it was clear Justin enjoyed himself and this fueled our decision to go to Smokey Hole, which as it turned out was only ten minutes or so from where we were staying.

A traumatic event occurred, and Justin wrote his account of it, and I follow after with my experience and the takeaway I would like

to share with all of you.

## Smokey Hole: Justin's account

As Alfred was beginning to put on a serious stride through the pools and rock tops, he answered that he'll probably wait to take most of the pictures on the way back out of this, our first caving trip together. "Unless something gives me a chubby," the caveat. Well, I've learned now that he just can't help himself. On our trips together, I end up wondering if he is changing the trip plan to a recon and fixed-line set-up for a team of Nat Geo explorers who also derive satisfaction from graveling in guano and will put the final stamp on what this cave has to offer to the world.

Our second trip, which is really my second real caving experience, has the reputation as Jamaica's deepest cave. Smokey Hole is said to emit a fog like an ancient breath from the bowels of the earth. Suiting up in harness while another flakes rope, the saturated air begins to soak us. There is not the namesake fog on this day, but it certainly feels like parting a curtain while walking around.

We'd come through the overgrowth with two guides, (photo) locals who live on the rim of this sinkhole. We had a map and some instructions about who to talk to from a previous Jamaican caving expedition, but there is nothing like sampling some more local info once one starts to have an intuition about the last turnoff from paved road. Conveniently, a graying man on the side of the road was there to confirm, "Dis is the road you want, mon." So-and-so is at church right now, so he urged us to speak to Chris, her son. Another graying man was sitting along the way further down as



One must pass through the family cemetery enroute to the pit.



From l to r Tajay, Alfred, Shevon. The cave is on their family land, gracious hosts who welcomed our exploration.





**Alfred Crabtree at the lip of The Abyss**

if expecting to give us direction, which he did. When we reach the spot from instructions, we go a bit further and find a family, a woman with a group of kids, and decide to talk to them since it seemed like a good idea to introduce ourselves, for it felt like we had driven up their driveway right to their home. She is very pleasant and her oldest son, a stout 20 year-old young man, insure us that we can park just down the drive and go straight through the yard there. After we turn around to park, the stout young man is joined by his uncle to usher us into the yard.

“Do you have machetes,” they asked. I wondered what we were getting into. But they were undeterred by our reply as a negative. And so we started walking through their family’s yard past the chained dogs and swine tethered to a tree along a path and down a sloping bowl filled with jungle. I was able to make out some very old machete cuts that indicated we were on an overgrown trail, but you wouldn’t have known to look at it. It grew darker and darker as the vegetation filled the canopy, until we could see a limestone wall with vines and roots snaking over it and a cave at its base. My boyhood enthusiasm perks up as memories of ‘Raiders of the Lost Ark’ flood into my mind. I better fill a sand bag...that’s funny, sand-bagging, the climber’s phrase takes on a new meaning.

They took us under some rock to point out the way that they themselves have crawled into it, a side entrance to the main opening. Here we stopped to discuss the legends of Smokey Hole. They explained that thousands of bats live in the cave and that we were likely to see skeletons of animals that they or other family members have discarded in the cave using it as a place to rid the neighborhood of the stench of

death. I believe that they were concerned that we may be shocked to discover these and run away. I grabbed hold of a wrist-thick root attaching the ceiling to the floor; a flake of rock detached above and nearly clobbered my arm except that it hit rock next to it and scratched me from the glance. An omen of things to come. I’m usually quicker in these situations.

We had thanked our guides and sent out notices of our plan to caver friends. We were back with the gear. Having as much rope as we did, we decided to take the direct route straight into the throat of the cave. Alfred immediately wanted to compose a shot, so I waited with flash in hand for direction as he set up. I looked for the bats we expected

to see. I have a subpar headlamp and used it to its maximum effect. In the roof, there were dark depressions in otherwise gray limestone. These dark depressions had black lines like tentacles reaching out from them, the darkness that bats carry around in their souls spread upon the ceiling, for in some of the depressions, bats stirred. The sloping floor was slick with guano.

We fumbled down some short pitches, scrambling through suspended rock jams until we were looking into the Waiting Room. (photo) There was another pit that seemed promising but Alfred recognized the Waiting Room from photos posted by the previous expedition by Jamaican Cavers. Here we set up for some more choice photos, (photo, photo) for this was a most photogenic location having a room with a black hole of promise, or perchance doom.

For some reason, I was chosen to be the first to head down the abyss. I towed our pre-tied double rope-set below me, which meant that I would need to do a knot pass at some point. I was not fully committed to going all the way down at that moment. Soon I was hanging in darkness, swirling down the rope as the bend in my rappel device dictated. It was narrow enough that even my sub-par headlamp could light the walls around me, but there was no bottom, only darkness. Periodically, I’d hear bats whirling around sounding like the rock we’d tossed at the top in the Waiting Room in order to time the fall. It brought home that danger and I reminded my partner over the radio to be careful about knocking rocks into the void. I hit the knot pass just about the same time I came back in contact with the wall that sloped toward me. Then I was back to slowly spinning round and round suspended



**Justin Tucker ascending the Abyss**



again. I was committed now and was anxious to put feet on solid earth again. I had never stopped lamenting the jug yet ahead of me.

A long time ago, I developed this measure for my adventures by which I determine if I am digging deeper into something that I perhaps ought not too. For instance, climbing a peak by either mountaineering, rock climbing, splitboarding, or mountain biking, these have a very obvious point where in my mind the adventure is over and we are heading back. At that point—at least theoretically—the adventure is half over and the difficult and slow half is complete. This is not so for a caving adventure such as this; for every meter descended means hauling, hauling or own butts, and hauling all the gear. This is a new experience for me, for I am used to climbing hills to ride down them.

Finally, bottom. I celebrated with hoots and hollers that echoed through the shaft. I radioed my joy, “Off rope.” The rock fall concern was fresh in my mind, so I found a safe overhang that may take off into another passage and explored it. The bottom of the main shaft was a jumble of rock and guano and muddied me up. It bottomed out, as far as I was concerned, for I was not about to start digging nor squeezing, this is not what I came for, remember, I am not a caver. Soon, I could see Alfred’s light on the walls above and could hear the swirling bats. We celebrated as he hit bottom. Mine was a pensive celebration, for I was eager to take care of input/output and get climbing. It took a long time, a little longer to stop and hold a flash for photos. (photo) I got wet in the process, for the air was saturated, I was working hard, and a bit of continuous dripping came from above. Finally the top, now I felt safe. I embraced the darkness and rest, shutting off the headlamp and not stirring and potentially sending rocks below. Periodically, I’d hear the whirl of bats. Eventually I was joined by my partner. Rope was hauled easily but hauling it through everything else was a real chore. I started to refer to the double rope bag as Anvil Abe, which I remembered from a favorite book, *The River Why*. It seemed so burdensome to lug up pitches and throw on top of rocks. This process, and the long hard work overall had taken its toll upon our moods, you know, when everything your partner does or doesn’t do is beginning to annoy you. Alfred and I were definitely veterans of this result given our preferred activities and our job, so we tried not to make things worse. It’s time to suffer in silence and put the head down until the work is done. I would call this borderline, Type 3 Fun, for those familiar with this scale. For me this usually comes from a combination of dehydration, hunger, and exhaustion. It’s never anyone’s best moment.

I was on the last pitch trying to finagle



The pitch in Smokey Hole where the rock struck Alfred

Anvil Abe with Alfred about 20 feet below when I dislodged a rock from the deep muddy guano. I immediately yell, “Rock, Rock, Rock, Rock.” Alfred was in the line of fire. I watched in horror as he made a move to get away from the wall. The rock caught him on the run on either the back of the head or neck helping to blast his now limp body into the rocky bottom.

Expletives deleted, “Alfred, Alfred. Please be ok. Alfred.” More expletives.

At first he was unresponsive and a stupid, selfish thought comes into my mind. All the hours of tremendous goods times we’ve had up to that point while exploring the beautiful sights of Jamaica—treefern and coffee-covered peaks, waterfalls on the beach, jerkfish—may be dashed away into horror.

No sooner has that thought come into my mind, though, and Alfred is responding with moans. I don’t move for fear of dislodging anything else. He can wiggle fingers and toes and sit up, and is now talking to me. There is blood on the rock under where his head lay. For me that settles it, I’m coming down to have a look at him and now he’s clear of rockfall. I assess his wound, his awareness, and pupils. And agree to send him up the rope while he can still self-rescue. Thank a higher power that were only a half-pitch away from the top. The bats whirled above but I’m sure only I noticed them at this point, for Alfred whirled inside his own headspace. The faint light of dusk that had encouraged us onward through the last hour was now gone. We had made it! The cave had almost smoked us!

### Smokey Hole - Postscript

Justin and I had been charging hard in our adventures in Jamaica; we had topped the Blue Mountain Peak (7402 feet, 2256 meters) and had talked smack about going to bottom Smokey Hole, the deepest cave on the island. Our four-week stint for work had produced few days suitable to work on blade, but perfect for exploring everything and getting to know each other. Our trip to Gourie Cave was Justin’s first real trip, and I enjoyed the enthusiasm and wonder he displayed. We circled back to the idea of caving one day and realized with some more investigation that Smokey Hole was just ten minutes from our suites at Bailey Cole Manor.

I corresponded with Stefan from the Jamaican Cave Organization, who earlier steered us to Gourie Cave. I asked about Smokey Hole, and was warned it was dangerous, he wouldn’t suggest it. I scoured the website and found the expedition report and the map. It didn’t look bad at all, and a 130-meter pitch would be a treat.

Our decision was made, our planning was brief. Most of our discussions and safety analysis centered around the 426’, 130m final pitch, The Abyss. We are professional rope access technicians, so our rescue plans were well thought out. This is the largest rope climb Justin has done, in his second cave. I’d spent weeks with him and had gotten to know him as a tough and resilient multi-disciplined partner who communicated well. I always offer to whomever I’m caving with the control to end a trip, turn around at any point, for whatever reason. There were no “points of no return” so it was straightforward as far as continual risk assessment.

When we got serious, I gave Stefan a



heads-up as hopefully an on-island callout contact. He told me to be careful, don't get hurt, he has had to haul bodies out of other caves in Jamaica. We would be the second group to ever bottom it (conversations with locals suggest otherwise), they did it in a three-day expedition in 2006. Meh, we would plan on six hours to bounce it, but take a few more for photos.

Justin has already described how that trip went...now Alfred resumes narration of his experience after the accident...

I found myself making noises that weren't in my control for a few seconds. I tried to speak and I was still booting up I suspect. My cheek was on a cool rock, my field of view dirt. I started to make sense out of the noise and ringing and understood Justin was yelling if I was OK. "No".

The first time I focused my eyes was when Justin, still 20 feet above me where the rock dislodged said there was blood where I had sat up from. Oh man, it was a large puddle and a chunk was sitting there. what? I felt the back of my head and it had a flap but seemed well clotted and not bleeding much. I still didn't want to open my eyes much, but immediately I knew I had to make moves to finish the last pitch and get out while I could.

I was very lucky. The energy that was transferred to me was more than enough to be fatal, or worse. After exiting the cave I had shock symptoms, ringing in the ears, and the associated bruising from being slammed to the ground, but felt well enough to grab a shower before going for stitches. The hospitals we visited were an eye opener. The government free health care hospital we first went to was overrun with people with real issues and woefully inadequate resources. The second private hospital was a 60's era urgent care. I was happy to get out with stitches and knew I'd be home in a week or so, and would seek further care then.

A severe concussion was diagnosed, and by the time I was stateside, it felt like it. What wasn't diagnosed but was even heavier to deal with was my trauma reaction and the recovery. I had four weeks to heal at home, and I needed low stimulus days. Plenty of time to mull it over, just what I didn't need.

Directly after the event, still in Jamaica, I called my family and friends to share what happened, connect and be grateful. These connections with people, and the ability to tell my story, multiple times, gave me an opportunity to vocalize what had been simmering in my internal dialogue. These connections sooth me and help me edit my take-away as I move through the process. People follow up with me and that's great support. It's important to share for me to process.

The big thing I had to process was my culpability. I was complacent in the hazard

zone. Justin informed me, I heard him say "rock." and I was moving out of the zone and just couldn't get away. My recollection was hauling the tail of the rope up to the ledge I was on so it would haul cleanly up the next pitch I was about to do. I could say my mind was elsewhere. For sure. We had bounced this cave, we were in the twilight, I was on autopilot. I wasn't completely present.

Caving has been a passion for over a decade. Passions are like bell curves, and maybe I was over the hill? When I analyze my motives for caving compared to five years ago, it's completely different. Five years ago, I was still exploring my limits, learning skills, doing firsts, chasing booty. Now it's comradery, guiding newbies, maintaining fitness and skills with my peers. Maintaining my identity maybe? Had I really wanted to drop Smokey Hole, or did I do it because it was an obligation to my caver ego? Half-hearted endeavors are half-assed too.

I had been moving into a new passion, splitting my energy and focus. I'm on the exciting side of the bell curve with paragliding. It's the new patch on the Ego vest, how does this restructure of my identity play into my takeaway from this trauma? Do I even want to take the risk to cave at that level if I'm not whole-heartedly into it? That is not being responsible.

The concussion symptoms had me fearing I had really done some brain damage. Three weeks out I was still feeling like I was interfacing through a space helmet. Searching for words, fuzzy memory, poor balance. My body was stiff, bruises were still coming to the surface, and the hearing issues persisted. I felt physically and emotionally fragile.

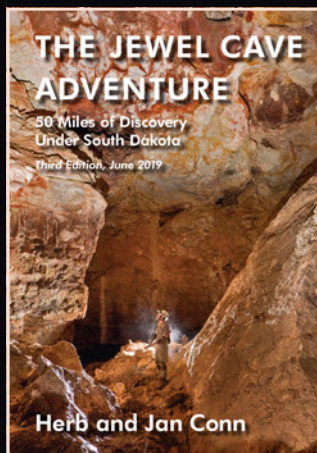
Week four was much better, and follow-ups looked good. I started to get out some more and clarity returned. Fellow Flat Rock

Society member Marion O. Smith came to visit and we compared the finer points of noggin swelling. We will be doing some nerd-holing soon.

My final take-away is two-fold. From the caving/rope access perspective, complacency seeped into my routine, and I could have stayed clear of the hazard zone while Justin completed his efforts on the pitch above. Painful, foundational lesson re-learned. On the personal level, it's good to check in and remind myself how much danger is around me when I've grown accustomed to it and normalized it. Maintaining that humility of the newbie to the environment is key. If I'm feeling half-hearted about it and it's a dangerous endeavor, I need to remember it's likely to be half-ass, so either gen up the energy and enthusiasm to make it right or do something else with my time. With that rule, wherever on the Bell Curve of my overlapping passions I am, I can be as safe as possible.

A final thought about adventure overseas. I enjoy adventure travel, and I've often purchased the additional adventurer's traveler insurance for medical repatriation for peace of mind. My experience tells me even with the best insurance package, the availability and quality of first responders wherever you are dictates your chances of even getting to that jet plane to take you home. Something to consider when choosing who you partner with on adventures, and what self-rescue skill sets you share. What resources do you have in country? maybe the rental car is a good idea. Maybe the guide is a good idea. The Garmin Inreach is a powerful tool for any sort of adventure.

I'd recommend Jamaica as a caving destination, I'd like to go back and explore it some more.



In **THE JEWEL CAVE ADVENTURE** Herb and Jan Conn trace the early history of Jewel Cave. Sixteen excellent maps, including an over-sized folded map, guide the reader through the maze as the cave is extended mile by mile. This expanded third edition has many added photos: it now includes 16 pages of full color images, and over 150 black and white photos digitally remastered from transparencies and negatives.

*Herb and Jan Conn*

*204 pages, softcover, \$20.00*

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# Leave Nothing But Footprints ??

**Burton Alderson, NSS #6583**

On June 29th, 1963 fate handed me, Burton R. Alderson, NSS # 6583, the discovery of the upper level of the Arkansas cave known as Half Mile Cave. Other members of the Memphis Grotto followed me that day. Fearing damage to this beautiful place we kept the discovery confidential but our footprints were discovered and followed by others who claimed the discovery! Our discovery is documented in the August 1963 Memphis Grotto Newsletter! The cave was later purchased by the government and became Blanchard Springs Caverns. The upper level was named The Dripstone Trail after purchase.

The following words I wrote the evening of my discovery.

## The Adventure

*For eons untold it has waited in silent splendor for the chosen few, who, determined by destiny, have finally come to admire its beauty and marvel in its vastness.*

*To be a participant is in itself a glory. With the unknown around us we are associated in an existence and an evolution that inspires respect and deep reverence.*

*We cannot escape humility and as groping explorers we are thankful for the mysteries that still lie beyond our grasp.*

*The cavern that lies about us, visible only in the privacy, the intimacy of eternal night is increasingly vast and the conclusion that its terminus may never be found seems inescapable.*

*We cannot yet be sure whether or not that goal lies within our reach but in any case we are a part of it all.*



**Above and below: Images from the developed portion of Blanchard Springs Caverns known as the Dripstone Trail, taken by Dave Bunnell for the Caverns archives on a special evening trip after closing time. These are the areas first found by Burton.**

## The Impossible Crawl

After reviewing a survey of this Stone Co. Ark cave I pondered the meaning of the the words " too small, breezy ." I decided to take a look for myself and see what was meant by those who surveyed. The following adventure in words, penned in May 1985, should tell the story!

## Impossible Crawl

*The cold wind blows where no one goes, beyond the Impossible Crawl.*

*Too small and breezy the survey did say but the Memphians came that fateful day to push on ahead through places so small and opened at last the Impossible Crawl. The pits lie beyond and where do they go caressed by the darkness that's always below?*

*The wind doth beckon and seems to call; "Come follow me through the Impossible Crawl."*

*So come all you cavers so macho and tall And push on beyond the Impossible Crawl. Come see where we've been and where we must go*

*To explore the cave that lies below.*

*For the wind doth blow but few cavers go Beyond the Impossible Crawl.*



**Left: This faded image shows Burton paddling the stream passage in what was then Half Mile Cave. He has no explanation for the mysterious eyes in the back of the raft...**





# A Unique Karst Attraction: The Rock Viewpoint at Phu Pha Marn, Laos

*Terry Bolger; photos provided by Green Discovery*

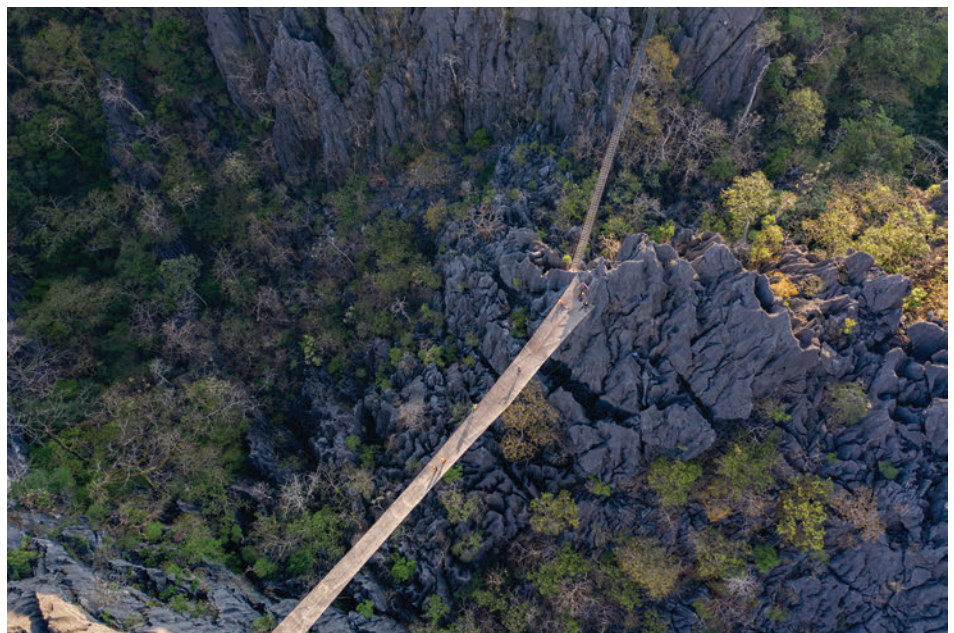
The Rock Viewpoint at Phu Pha Marn is a new adventure tourism attraction in the spectacular karst of Khammouane Province in central Laos. A zipline course has been developed through the rugged pinnacle karst, also called the 'Limestone Forest', and may be unique in the world. The ziplines, suspension bridges, and 'spider net' allow people to explore and experience the incredible landscape of the Limestone Forest, which otherwise is virtually inaccessible.

At the Viewpoint there is a visitor center, restaurant, coffee shop, and viewing platform. The zipline courses start and finish at the Viewpoint. The short course comprises 5 ziplines, 1 suspension bridge, 1 spider net, a *via ferrata*, and takes about 1.5 hours to complete. The long course comprises 9 ziplines, 2 suspension bridges, 1 spider net, the *via ferrata*, and takes about 2.5 hours to complete. Whether doing a zipline course or enjoying a drink on the viewing platform, stunning views are assured.

The Limestone Forest karst has formed over the last 10 million years, the result of tropical monsoon rainwater with dissolved carbon dioxide acting on the pure, massive and compact limestone of Carboniferous-Permian age. This rocky karst landscape is the home of endemic and threatened species such as the Lao Langur (*Trachypithecus laotum*) and the Bare-faced Bulbul (*Pycnonotus hualon*). The zipline courses allow people to immerse themselves in the Limestone Forest landscape, with its amazing nature and unique wildlife, while leaving as small an impact as possible to this natural ecosystem.

Also of interest to cavers, two large, world-class stream caves, Tham Konglor and Tham Nam Non, are located only 40-50 km from the Viewpoint. Konglor Cave is developed for tourism with small, motorized boats taking visitors 7 km through the underground river to a closed valley on the other side of the karst mountains. Nam Non Cave is not developed but is open for tourism or sport caving.

The zipline courses were developed and are operated by Green Discovery, the leading adventure and eco-tourism company in Laos. More information is available at: 'The Rock Viewpoint at Phou Pha Marn' Facebook page, or [www.greendiscoverylaos.com](http://www.greendiscoverylaos.com)







Lao langur on the karst. This photo by terry Bolger.



Part of the via ferrata





# A First-Timer's Perspective on an International Expedition

## Proyecto Espeleológico Sistema Huautla (PESH) 2018

Sonia Meyer

**Ed. note.** *The expedition that Sonia is writing about here was covered in the Dec 2018 NSS News. She was also part of the 2019 expedition covered elsewhere in this issue. But this article is not so much about the caving but the personal experience of being on an expedition and a deep cave camp for the first time.*

**Day One:** I took an eight-hour bus ride from Mexico City to Huautla, then I took a 45-minute, extremely bumpy, taxi ride to Plan Carlot. I was surprised that my taxi driver knew where I was going and pointed me to the correct building. I found myself in an empty kitchen with sponsor logos on the wall, so I knew I was in the right place. Blake Harrison arrived shortly and began giving me my PESH orientation. There were several buildings in which to lay your sleeping pad and bag on the concrete floor. The kitchen was the main hang out, with the gear room attached, and a small office next door where we had the expedition computer and chargers. I was surprised to find that we had a luxurious flush toilet (only for #2 though) and a hot shower (to be used sparingly). There was no running water; a giant water tank was filled from a stream, so water had to be conserved.

I only knew one other participant on the expedition prior, but I quickly got to know my expedition teammates, including expedition co-leader, Bill Steele. I was surprised that Vico Jones, PESH chef extraordinaire, usually served dinner past 9 p.m., but it was delicious and definitely worth the wait. I was caught up on the caving gossip—about the discoveries in Sótano de Agua de Carrizo and the flood at the beginning of the expedition

that trapped several PESH cavers and more seriously affected the Peña Colorada cave diving expedition. The current major pushes of the expedition were to connect Sótano de Agua de Carrizo to Sistema Huautla and to clean up Camp 3 of the La Grieta section of Sistema Huautla.

**Day Two:** A rest day for most of the cavers who had emerged from various camps the day prior. I jumped at the opportunity to go into town and had fun wandering the market befriending locals.

**Day Three:** Bill Steele had Mexican cavers participate in a community outreach effort, so our 10 a.m. departure was postponed to noon. As they say, gentlemen do not cave before noon. I was a tad nervous entering the cave because I had some mild gastrointestinal symptoms that I feared would worsen in the cave (they did).

Lee White and Gerardo Morrill went ahead to work on the crack and rig rope, while Jesse Houser, Josh Hydeman, Tiffany Nardico, David Rose, and I followed taking some time to shoot video for Josh's National Geographic assignment. Going through the entrance series (Son of a Pitch) had several rebelay, and I quickly realized I should've had a refresher on rebelay before entering, but I just as quickly figured it out until it became second nature. We went through a series of pitches called The British Invasion to the infamous TAG Shaft (150 m) and deepest pit in Sistema Huautla. At the bottom, we found that Lee and Gerardo had successfully made it through the crack, and they were beginning to rig beyond the crack (huge thanks to the many people working on the crack for the prior two weeks!). We took a break before beginning our survey—the first

survey beyond the crack when my stomach began hurting. I had to take a very sudden dump so I ran to grab my wag bag only to be told after that they bury it here.

On our survey team, we had David (point), Jesse (front sight), Josh (photographer), and me (book), and Tiffany went ahead to help with rigging. We surveyed only seven stations (54.8 m), which was quite challenging because of the vertical nature (average incline of -58 degrees), vertical profiles were new to me, and difficulties in communication from loud water, before my stomach pain incapacitated me. Jesse suggested I go back with Gerardo, who was leaving because they ran out of rope around midnight. He offered to carry my pack, which I gladly and guiltily accepted, and I carried his empty bag, which had previously held 150 m of rope. I felt better once moving and made it up the TAG Shaft, but then I had some water before the entrance series and the stomach pain hit me hard and fast making the rest of the journey up Son of a Pitch slow and grueling.

We exited at 5 a.m., walked about an hour back to the field house, and Vico made us some proper food. No matter what time you get back from caving, Vico will make you a proper meal. He told us there was a *quinceañera* (celebration for a 15-year-old girl, marking her passage into adulthood) at our house up on the hill. By the time I returned to go to sleep at 8:00 a.m., they had set up a giant tent. I fell asleep almost immediately, and even more immediately, they began blaring the loudest, most obnoxious, painfully loud music you could imagine. The band was set up directly outside our door. I put earplugs in, which eliminated the pain,



PESH kitchen

Sonia Meyer



Cook Vico at work.

Tiffany Nardico





Tiffany Nardico

Gear storage room



Sonia Meyer

Dehydrated ingredients for the breakfast mix.

but not the sound, and managed to sleep until 1 p.m., but my roommates who were also on the trip were not so lucky.

**Day 4:** When I groggily awoke and removed my earplugs, the loud music assaulted me once again. Vico made me a torta, frying the bread in butter, then making a guacamole paste with fried Oaxaca cheese and sliced tomatoes—you can't say we didn't eat well!

**Day 5:** Another rest day as people prepared for multiple multi-day camp trips all departing tomorrow. I was going to join the trip Camp 3 of La Grieta led by Gerardo. I was tasked to fill 4-liter Nalgens with breakfast mix (eggs, potato, beans, flax seed, bacon bits). Jake McLeod and Jacqueline Hawk helped me prepare the food. Unfortunately, some of the bacon had molded inside an unopened but probably punctured bag, however we did not notice until thoroughly mixed. Not wanting to throw away so much food, we consulted Bill Steele who told us a story of how someone almost died from food poisoning deep in a cave and without hesitation told us to throw it away. It hurt to waste so much food, but I didn't want to get food poisoning 1,000 feet deep, so we began again.

Elliot Guerra-Blackmer received the highly entertaining fire treatment for his foot blister where our local landlord and *curandero*, Epifanio, retrieved herbs, then lit a bowl of chopped onions and a special liquor on fire. A *curandero* is a shaman and literally translates to "healer." Dipping the herbs in the bowl of fire, he spread it all over Elliot's foot. Before they started, a little local girl said in Spanish, "We'll see if he is brave enough for this." When it started, he was wincing in pain and the liquid stayed on his skin momentarily turning blue and in flame. The healer did this multiple times, and was funny making faces and funny noises, and by the end we were all laughing. It was such a production with an audience and many photographers.

**Day 6:** The La Grieta section of Sistema Huautla began with a series of pitches dropping a few hundred meters, then leveled off to mostly horizontal passage that continued downward until the Junction Room, which was the lowest point in the cave section (400 m). Just before we approached a pool on the way to the Junction Room, I asked Gerardo if he was serious about the troglodytic scorpions that hunt underwater, thinking it was an urban legend meant to scare noob cavers, and he said, "Yes, there's one right here!" Unbelievably, he was not joking! We tried to collect it, but it scurried underneath the rock and the mud from Gerardo's gloves muddied the water reducing visibility. We continued on, not realizing that would be the only sighting during the whole expedition. This was the *alacran tartarus* scorpion—the effects of its poison are unknown. Gerardo graciously offered to be a guinea pig, but only above ground with access to medical care—if only we had caught it.

From the Junction Room, we went up the Refresher towards Camp 3, our destination. From there, we were ascending through canyon passage over streams and pools that required stemming that would be difficult for the vertically challenged and free climbing, as well as frequent ascents and wading through some chest-deep water. The passage turns to breakdown before Camp 3 with scrambling and crawling and shoving our heavy packs through tight spaces ahead of us.

It takes a fast caver 6 hours to reach Camp 3, Gerardo estimated 10 for our group, but it took us

17 hours to get here! I noticed we were going quite slow on the descent; Gerardo expressed concern and began suggesting alternate plans, but we opted to continue to Camp 3 no matter what time we arrived. Now in more or less horizontal passage, we moved even more slowly, and some even got lost. The faster cavers spent twice as much time waiting as moving, resulting in extreme cold and fatigue. We finally arrived at Camp 3 at 5 a.m.

I set up a sleep kit in my sleeping area, which are areas that were flattened by cavers before us. A sleep kit from top to bottom consists of a sleeping bag, a sleeping pad, and a plastic sheet/emergency blanket. I also brought with me a sleeping bag liner and many layers of warm camp clothes because I tend to run cold. I regretted not having a pair of camp shoes. There were already several clothing lines set up for "drying" wet caving clothes. Please note that nothing ever dries in a cave—I made the mistake of thinking my underwear would dry so I wore my other pair and went through the rest of the trip without dry underwear.

Our latrine was a nice natural slot in the ground so you could squat with one foot on each side just like a Chinese toilet, and we



Tiffany Nardico

Elliot receiving the fire treatment.



had a Darren drum of toilet paper and hand sanitizer nearby. Our kitchen was a nice caver-flattened area with two stone tables in the middle for camp stoves and several stone chairs circling the perimeter.

**Day 7:** We all woke up at 4 p.m. One team took a rest day, but I needed to get some physical activity, or I would not be able to sleep by midnight, so my team did a gear drop at the lead for tomorrow. The passage to the upstream leads was beautiful and fun, black marbled with white and very climbable.

**Day 8:** The other survey team departed. Gerardo and I went to check leads and do a bolt climb. The leads didn't go, but the bolt climb did!

**Day 9:** Back at the same climb, Gerardo began rigging while Ron Rutherford (point/BS) and I (book) surveyed. Unfortunately, he ran out of rope and we had to stop. I went as far as I could go to place the last survey station and finished the sketch (eight stations, 70.51 m), peeking around the corner wondering where it would go and wishing desperately that we had more rope.

**Day 10:** Our last day in Camp 3, I had gotten into a routine of waking up around 8 a.m., taking a dump (camp food made me very regular), and then getting back into my sleeping bag. We all woke around the same time, whether it was natural or because a single headlamp on the dim setting would light up the entire cavernous room. In fact, my favorite thing about waking up in the cave was seeing the outlines of the ceiling lit up from someone else's headlamp.

By the time I got up, someone had water heating on the camp stove, and we all had breakfast together. I had about 1/2 cup of breakfast mix, poured boiling water over, watched it quickly absorb and form a paste, then ate that supplemented by summer



**Jake McLeod passing a rebelay in the entrance series.**



**Our team about to embark on the journey to Camp 3 of La Grieta. From left to right: Ron Rutherford, Jake McLeod, Gerardo Morrill, Amy Morton, and Jacqueline Hawk.**

sausage, cheddar gouda cheese, and/or bacon bits. We were always slow moving and relaxed, enjoying our breakfast, slowly waking up, and chatting. For lunch, I was always away from camp, and had two peanut butter protein-builder bars. Dinner was 1/2 cup of dinner mix (ramen and broccoli cheese soup powder). The ramen never cooked, but I enjoyed the crunchy texture. I had a warming cup of hot chocolate with every meal.

We slowly packed up camp and went to find the other team. We found a note saying they had gone to Camp 1.5, but they left a bunch of stuff (they were planning to return for it later, they later told us). Already our packs were stuffed from cleaning out Camp 3, but we stuffed our packs as much as we could with their stuff. I struggled with the heavier load and learned my weight limit. When we arrived, Amy Morton got out of bed to make dinner for us. It is such an amazing feeling to get out of your wet, stinky cave clothes and into dry, warm clothing. It is only rivaled by the awful feeling of putting on cold, wet, stinky cave clothes in the morning.

**Day 11:** The rest of our team packed up camp and left, but Gerardo and I decided to finish up some leads in the Refresher. We collected the rest of the left-behind stuff, then went to check out our leads. The first two didn't go, but the last was 64.8 m of beautiful formation passage that we surveyed.

**Day 12:** After inventorying camp and packing up, we headed out. We were bummed to find the other group had left a drill, so we were both carrying drills out. Gerardo was concerned with the weight of my pack (again later they said they planned

to return for it).

It felt SO amazing to get out, to see sunlight, and everything vibrated with iridescent green. I walked, head tall, unafraid of helmet checks, daringly placing my feet without looking first. Like daydreaming of water in the midst of a long hot hike, I fantasized about taking off my wet clothes, taking a hot shower, washing 10 days of grime from my hair, and eating Vico's food, of course. I did all those things and it was fantastic.

On approaching the main area, I got caught up on some gossip—Carrizo successfully connected to La Grieta and came out close to Mazateca Shores near Camp 2 in La Grieta. This historic connection was named the Scott Petty Family Connection after one of PESH's biggest donors. Elliot was organizing a trip to Camp 4 through Carrizo to retrieve a drill. I didn't feel up for a camp trip immediately after just finishing one, but Gerardo signed up immediately! I entered my data into the computer and cleaned up my maps, then started taking shots of mezcal with Vico, and managed to send my husband a message on the inReach Explorer satellite texting device to let him know I was out.

**Day 13:** Josh Hydeman, Cuate Sanchez, and I got a ride to La Grieta for a photo trip. This was my first photo trip too and I was very curious about the photography process and technical aspects of lighting a cave. Josh took several photos of Cuate and I on rope and of me in a space blanket (I got cold while waiting!). Back to Plan Carlota for lunch, then to Carrizo for another photo-shoot. Just inside the entrance drop, Josh took several photos of me stemming the





Gerardo Morrill

Sonia Meyer surveying in the formation-filled passage.



Gerardo Morrill

Sonia Meyer and Gerardo Morrill after 6 days underground.

canyon passage until he got one he liked. Check out his awesome article in National Geographic Adventure Online: <https://news.nationalgeographic.com/2018/06/sistema-huautla-cave-mexico-culture/>.

**Day 14:** Rest day. We had mole for dinner—absolutely fabulous—a traditional Oaxaca dish with 30+ ingredients. I think of it like a savory cacao curry. Stayed up late drinking mezcal and listening to caving stories while waiting for Camp 4 team to return.

**Day 15:** Another rest day—packing, inventorying, and dinner at a fancy trout farm. They served moist trout with seasoning wrapped in tin foil or a fried tilapia with tortillas. I had a good time drinking mezcal and listening to the Mexican cavers’ stories (they’re crazy).

**Day 16:** Final day of packing—we packed up the vans and went to Huautla

for our final meal together at Rosita’s Restaurant. It was a lot of fun, but also bittersweet—I was sad the expedition was ending and I had to say goodbye to my new caving buddies. Until next year!

**Author Afterword**

It is now 2019 that I am submitting this article and I have since gone on a few more

expeditions, including PESH 2019. I am happy to report that the bolt climb that we ran out of rope for in 2018, I returned to with Abbe Hamilton. Together, we finished the bolt climb and discovered a very large hall—Sister Midnight, in which we climbed a 50 m dome only to find another 50 m dome. More climbing to be done next year, PESH 2020!



**CALL FOR ISSUES for the 2020 Congress of Grottos of the NSS**

The deadline for submitting issues for discussion and action at the Congress of Grottos (COG) during the NSS Convention in Elkins, West Virginia is April 15th, 2020 to allow time for circulation to NSS Internal Organizations.

Send issues via email to: [cog@caves.org](mailto:cog@caves.org) or by US Mail to Bill Stringfellow, Chair, Congress of Grottos, 204 Lake Court, Woodstock, Georgia 30188-3212

Issues to be acted upon should be from NSS Internal Organizations and should be in the form of a motion, i.e. “. . . Grotto moves . . .” A brief summary of supporting information for the motion is useful, and helps clarify the need for the motion. Please simply state the motion without ‘Whereas . . .’.

Discussion items not requiring a motion may also be accepted, and will appear on the agenda following submitted motions.

**Why is the Congress important and why should your IO consider presenting issues?** Motions passed by the COG as resolutions must be considered by the NSS Board of Governors. Issues discussed by the COG are provided to the Board as well, as a means for them to receive feedback and ideas from members.

The IO Committee will send COG agenda items received by April 15th, 2020 to all Internal Organizations. Items received after April 15th will not be circulated to IOs, but will appear at the end of the final agenda to be addressed if time allows.

If you have an issue you would like considered by the COG, bring it up to your internal organization; grotto, region, survey, or section, and ask them to sponsor the issue or motion.

The Congress of Grottos meets annually at the NSS Convention. Meetings are open to everyone however only IO representatives may present issues and vote. The number of votes allocated to each IO is based on how many NSS members claim that IO as their “primary affiliation.” To change your primary affiliation, or ensure the correct one is recorded in the database, go to [www.caves.org](http://www.caves.org) and click on the link to update your member information.

To read past Congress of Grottos issues and resolutions, visit the NSS website: [www.caves.org](http://www.caves.org). Click “Business Page” and sign in. Click ‘Congress of Grottos.’

**Bill Stringfellow**  
Chair, 2020 Congress of Grottos



Chris Higgins

TAG shaft



## CHUCK SUTHERLAND

*The past two decades has seen an emerging technology called GIS, or Geographic Information System, defined by one industry website as “a framework for gathering, managing, and analyzing data.” How does this relate to caving? Just ask Chuck Sutherland, the creator of a popular NSS 2017 Webinar called Cave Resources of Tennessee.” The Tennessee-based caver, photographer, geographer, and conservationist has become known for using GIS techniques to explain the relationship of caves to the land above to cavers and general audiences. His “FKTAG” and other maps, posted on his blog about “The Origins of Data,” employ location data sets from multiple cave surveys to create visually powerful depictions of cave distribution. His nature photography can be found in many magazines and on the walls of Tennessee restaurants and college dormitories.*

### How did you get started caving?

I had gotten a GPS for my birthday, and I was like, “Cool! I’m gonna go hiking and I’m gonna track lots of trails.” I had a primitive mapping application I wanted to make some maps on, and so I happened to be out in the woods one day and found a cave entrance. I didn’t have anything to explore it with, but I knew that I could take a point on my GPS and find my way back. I thought, “You know? Someone somewhere is probably interested in knowing where cave entrances are.” And I remembered that one of my friends once belonged to the Upper Cumberland Grotto, our local caving club, so I investigated and became a member. A week later I was caving with Kristen Bobo.

That was the unofficial start date of caving for me: July 7, 2007. It was an auspicious day. I shared the point with Kristen, and she said, “We don’t know of anything there.” So I did that. I found my first cave. It was about 800 feet, and morphologically interesting because it was an overflow point for the Caney Fork River. Meeting Kristen was pretty profound for me. It was like I’d been flammable my whole life, and I’d never encountered fire. She set me on fire for caving, and I think that’s what I try to do for other people now. I think we’re probably born being cavers, and if I can find those people who are ready, I’ll get them involved.

**You’ve been quoted by the local press in Cookeville, Tennessee, a city so underlain by caves that many of its**

**municipal problems seem related to managing karst. What’s been your experience with that situation?**

When you have an area where your caves are storm water sewers—that’s the way that they tend to think about their caves—and then you pave over everything, you alter the hydrology by filling in sinkholes. Some of that’s done through construction, and some of that’s just people dumping their trash in them. Either way it alters the environment dramatically. What ends up happening is the sinkholes fill up faster than they drain, and the streets turn into rivers, and so flooding is, in my mind, a fairly significant issue that affects Cookeville. Pretty much every time it rains, Willow Avenue turns into a river.

The good people of Cookeville, in their great wisdom, thought that they needed a Publix in a very particular location right in the middle of town, in a natural greenway that was ameliorating a lot of potential flood damage. They paved the whole thing, and thinking they’re going to inject all that water down into the Warsaw formation. I don’t think it will play out the way they think—it’s going to cause a lot more flooding. When it happens—not if, but when—I’ll be there to say, “I told you so.” I hate to act that way, but we need to think about the long-term implications of how to manage the city. I believe that your freedom ends where someone else’s nose begins, and if I make an alteration to my land which then in turn floods your land, that makes me responsible. This idea of penitence is difficult for people to wrap their heads around, and so I talk about these issues and try to educate people, with marginal success. Cookeville’s not even my city. I just love it, and I happen to work there. I’m an outside agitator is what I am.

**Speaking of work, what is your day job?**

Currently, I work as the Director of Informatics at the Upper Cumberland Development District. I do cartography, GIS analysis, demographics, and I also maintain a database for the state of infrastructure projects. My previous experience has been in conservation. I’ve worked with a lot of biologists, the Nature Conservancy, Tennessee Parks and Greenways Foundation, and that work is where my heart is. I’d love to be in academia. I’d love to eventually work on a PhD.

**How has your professional background influenced you as a caver?**

I’m a GIS guy. I Graduated in 2010 from Tennessee Tech with a degree in earth



science, and then in 2016 from Tennessee Tech with a master’s in environmental science, doing a lot of GIS course work along the way. Doing GIS and being interested in caves, to me, it was a fairly cutting-edge thing to be looking at. We had this really rich data set within the Tennessee Cave Survey that had really never been examined. Jason Record had done a little bit of analysis previous to me showing up, but that was it in terms of analysis. And so I started messing with that. You can’t talk about caves in Tennessee without getting into hydrology at some point, so I managed to finagle a fairly large dye trace data set. We started using that to better understand groundwater in the region, and what was going on. I’ve made all this data available to members of the Tennessee Cave Survey now, so it’s all out there.

**You’re big on sharing data, which goes against some of the traditional caving culture, at least in Tennessee. What are your reasons?**

Well, there’s just too much of it. There’s too much data for one person to parse. Tennessee Cave Survey data does not belong to me. It belongs to all our members. The hydrology data belongs to the state of Tennessee. You know, there’s all this stuff, and none of it really belongs to me. I was involved in teaching while I was at Tennessee Tech as a graduate assistant, so it makes sense to me to share data with vetted cavers, and also it’s crowdsourcing. We can take a complex problem and see how other people look at it. For example: the whole LIDAR thing. When it happened, I saw it on the horizon, because I had been working with the 10-meter digital elevation models. I had been using those to try to find caves, and it was just terrible. It didn’t work that well. But I had gotten a lot of experience working with



those types of data sets, and so when I heard we were getting LIDAR in Tennessee, I was like, “This will be huge.”

So I got Van Buren County and I crunched it. I tried to think of what’s the model going to look like to get this data out to everybody? I could get all these leads and I can just keep them to myself and I can go work them for the rest of my life in Van Buren County. That one county would be a lifetime. Or I could gather those leads and then share them with every single member of the Tennessee Cave Survey. Many hands make light work. This is the way I think about things. Some people worry, “Oh, those people are gonna go scoop my leads!” And yes, that’s one way to see it, but what if they find a really awesome cave and take me to that really awesome cave. Then I don’t have to go to all the hundred terrible dead-holes with them along the way. So I’m getting the best of it here. In some ways, maybe I’m a bit of a tourist caver. I like to go in and take pictures.

### **Where was it in this process that you realized you were living amid the highest concentration of caves in the United States?**

You know, I don’t know. I think I made my first TCS map in 2007. We had got the data digitally, and then I made some tweaks to it and got it into GIS, plotted it out. Seeing the distribution of caves, for me, was very telling. There’s a story in that. I live in White County. We’ve got 1226 caves as of last count, and seeing that big number smack in the middle of the distribution, I was like, “Wow! That’s a lot!” And someone said to me, “Oh, that’s more caves than anywhere else in the United States and any other county,” and that’s not exactly true. Jackson County, Alabama’s got more, around 2000, but it’s also more than three times bigger, so it doesn’t really count. In terms of density, White County, Tennessee is still the densest.

### **So you started branching into neighboring states?**

I think the dream had always been to get a TAG map done, and frankly that was a very simple thing to do, but I was never in the right place at the right time to do the buy-in for Alabama and Georgia. At the TAG Fall Cave-In, I managed to pull that off and I got their data. I’d been talking with people in Kentucky, and I had gotten quad-level data from them, and then Matt Niemiller said, “Hey! What if we do the whole United States?” And so I found myself on the front end of that very ambitious project ... and there are all kinds of complexities, like, “Hey, what’s a cave in Tennessee versus a cave in New York?” Those are two different things. And so you’re comparing apples to

oranges sometimes, and you don’t even always have the data to tell what fruit you’re looking at. It’s an ambitious project, but it’s my goal, when I get these maps out there, that people will see them and say, “Wow! That’s really cool!”

### **Certainly with the first map, the KTAG map, you can see, yes, these things are very much part of a related whole. Is it arbitrary to cut them off at state borders?**

Yes, it is. But that’s also the way we do things in the United States. We have these arbitrary political divisions, and we run different political experiments in each of these little boxes. Some things work and some things don’t work so good, so we can learn from each other. And we do this in caving. If you look at the model for the Tennessee Cave Survey versus the Kentucky Cave Survey, you can see benefits and flaws in each of those. Kentucky has a very different mindset on how they manage their data. They don’t let people do a buy-in and then share the data wholesale with them. I think that Kentucky cavers are starting to see the benefits of maybe adopting a model like Tennessee’s.

### **How did you get involved with Ben Miller’s “Dye Tracing Day” project?**

Zeke McKee and Calla Goins were going out with Ben to work on the dye trace and were thoughtful enough to suggest I tag along. It was a tremendous amount of fun. I had been trying to get together with those guys to do some dye tracing work for some time. I love all kinds of science. I like working alongside different scientists, because I learn a lot. But then, being a photographer and documenting the process is really cool, too. And in particular, with regards to the dye trace that we did from Ranger Falls, where we poured rhodamine in above the waterfall for no other reason than to just paint it. They could have dropped it at the base of the waterfall to do the dye trace, but they said, “No, we got a camera. Let’s do something cool with it.” It didn’t really change any of the impact of the dye, ultimately, but it gave us a really cool photograph.

In some ways, it’s this really nice blend of both art and science, and when you have a good team of people that are work-

ing together with a similar mindset I think it’s very powerful. Ultimately the art that we did is marketing for the science, I think a lot of science doesn’t have good marketing behind it. That’s one reason why I love to do science photography: Let’s get out there and sell this, let people know how interesting science really is.

### **Could you, for the non-technical person, give a layman’s definition of how LIDAR works and why it’s important?**

LIDAR can mean several different things, but what I’m talking about is an XYZ point cloud of data. It could be just in a text file, but you can take that and be able to see the surface of the Earth with it. You can shoot anything. Some people use LIDAR to image objects so that they can render them in 3D for video games or movies, or make 3D prints of them. But we have LIDAR in Tennessee, and a lot of the southeast now, over large portions of land. It’s incredibly high-resolution elevation data. We can produce, using GIS, a hillshade, and the hillshade allows us to do interpretation of surface features at a scale that’s never been seen before, between 600 and 700 times more detailed than the topographic map. I can see individual pieces of cliff that have broken off and rolled down, and they’re sitting on the side of a hill of boulders. Suddenly we can see cave entrances really well if they’re in a sinkhole. Cliff lines, not so much, but it’s become a very, very powerful tool for understanding the way that the world works around us.

We just drill right through the tree canopy. You actually get to see what’s called a bare-earth model, so you see the actual ground. It’ll even drill through leaf litter. I’ve seen sinkholes on the surface that are a foot deep, and if you get into them and dig through them, you’ll have maybe three or four feet deep of leaves. The LIDAR will drill through that. It’s amazing. It’s black magic. It’s so cool.



**One of Chuck’s photos: Alfred Crabtree in Tires-to-Spare Cave, Putnam County, Tennessee. He also took the panorama of Blue Spring on the back cover of our January 2020 issue.**



# The Origins of Data, and the Future of State Cave Surveys

## Chuck Sutherland

In my short ten years of caving I've been witness to a tsunami of new cave data. Being the data-hoarding geek that I am, I have tried to surf that wave.

Data doesn't come easy though. We need folks like Gerald Moni, of the Tennessee Cave Survey (TCS), to solicit, collect, organize, manage, and distribute the data. Data collection, or as Gerald calls it, "Doing the hard part," is honestly the hard part. The joke seems lost on some people—caving is hard to do physically. We crawl, scrape, fight our way into and hopefully back out of these holes—and then that's the end of it. We often don't record our trip, which in a strange way makes it as if it never happened. So weekend after weekend Gerald organizes trips, and sits patiently at the cave entrance while we have fun. Upon our muddy exit he asks in his inimitable way, "How far did you go; how tall was the passage, how wide?"

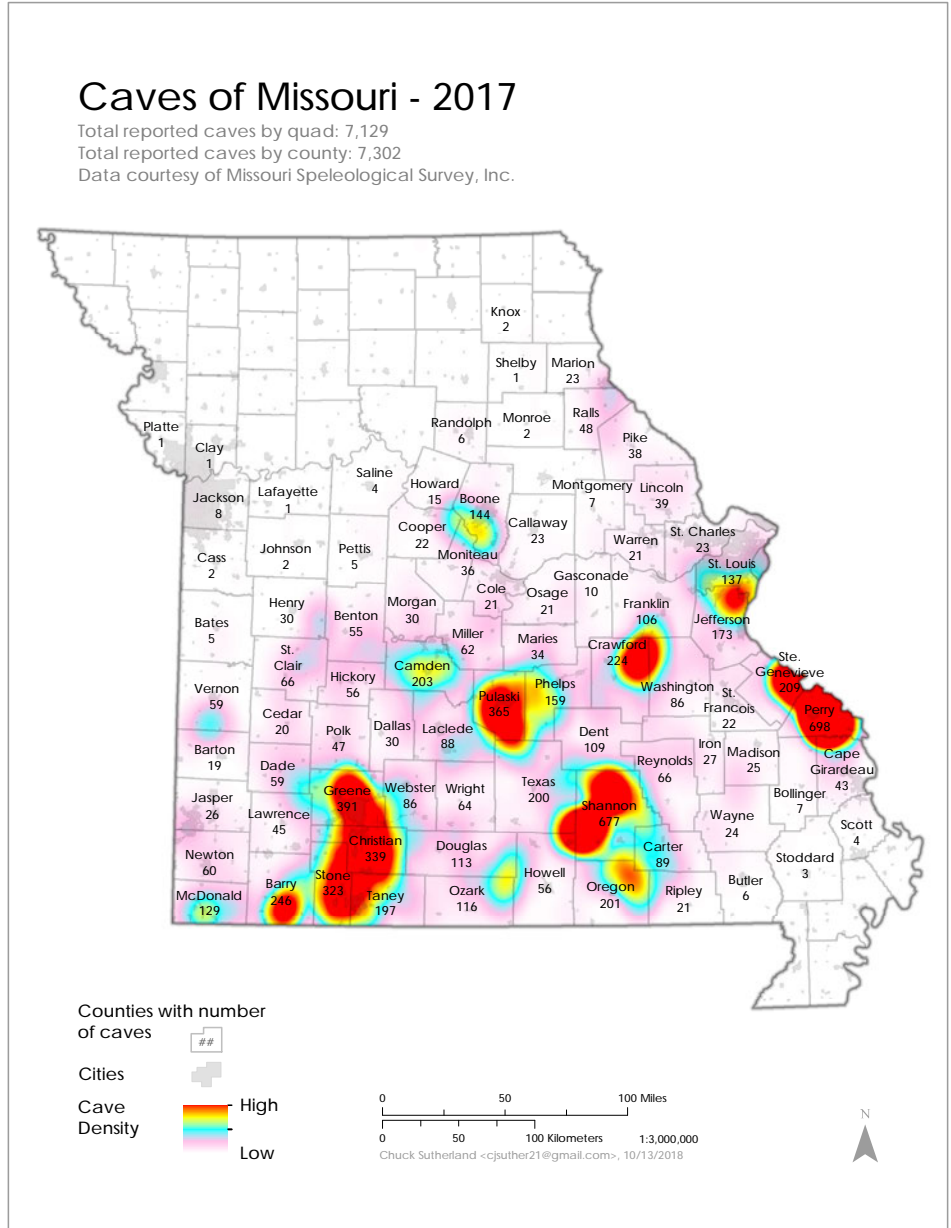
Descriptive science is the most basic form of science, but it's the place where the more detailed science all stems from. As cavers, we are working with landowners, collecting and recording data. The TCS and other state surveys are the mediums by which this data is arranged and distributed. It's a model that accounts for landowner privacy, and conservation and safety needs—we vet cavers. Vetted cavers get access to cool data. Cavers share data back to us. Wash hands, rinse, repeat.

At the writing of this, I've been recently contacted by my friends Alexis and Uriah Pryor, former Upper Cumberland Grotto cavers who've moved to Florida. They are attempting to reboot the Florida Cave Survey. This is exciting news, because it's another vessel for organizing and understanding data. Those data have all manner of uses from recreational use to scientific study.

This is my attempt to encourage other states to adopt cave surveys. Huge holes exist in our shared knowledge of caves. The biggest obstacle to developing cave surveys is managing the human element. Everyone has a different idea of what should be done, but it turns out we've developed great tools for managing groups of people with different ideas. Democracy, Robert's Rules of Order, committees, elections, these are all tools to accomplish a stated goal.

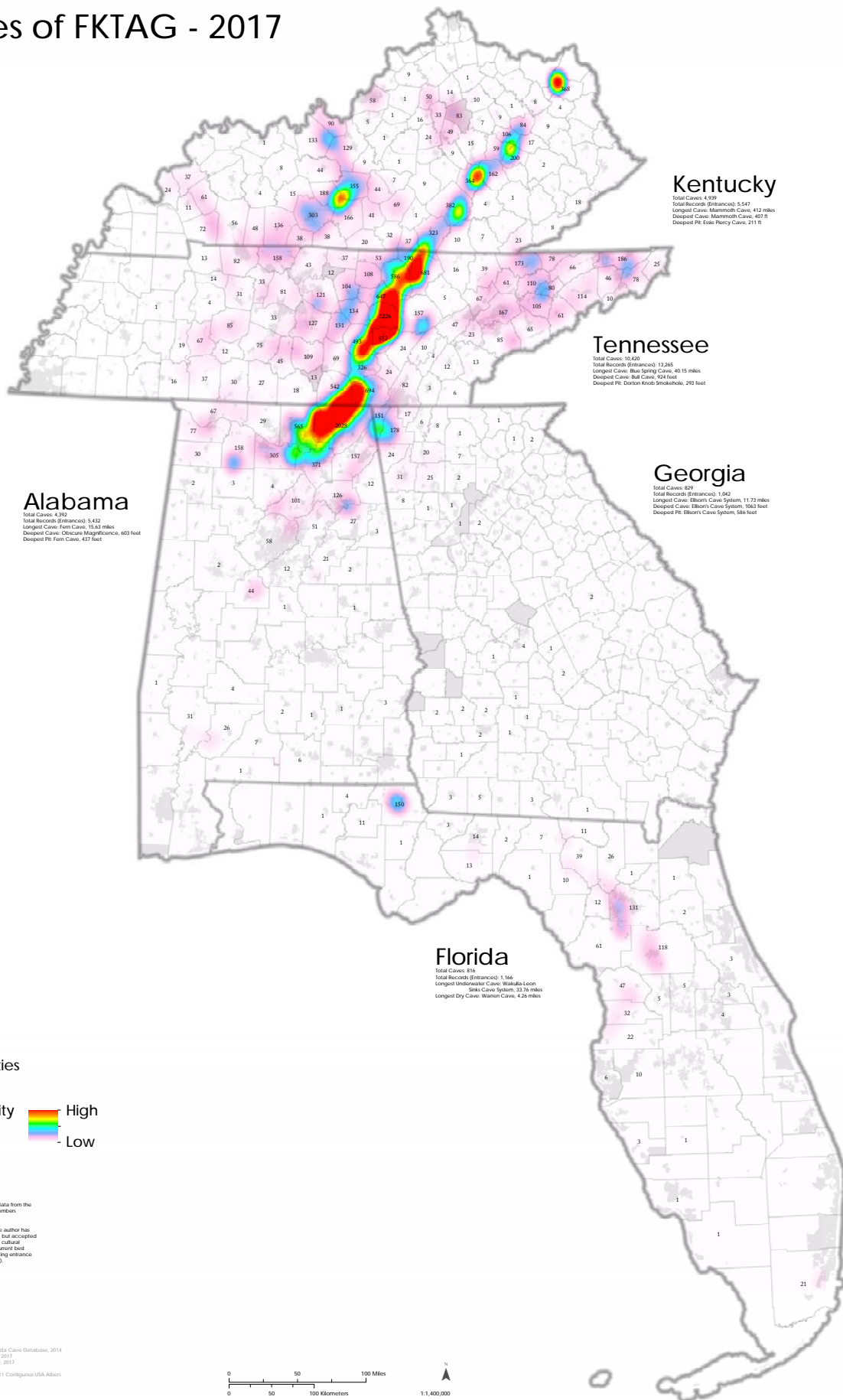
I like to remind people that we're all in this together. I like to work with people instead of against them. Let me show you what a few years of working together can look like.

As a final note, Gerald Moni (pictured on the right) has asked me to share that he does in fact go into caves sometimes, if they are large enough. We love Gerald. :)





# Caves of FKTAG - 2017



**Kentucky**

Total Caves: 4,939  
 Total Records (Entrances): 5,547  
 Longest Cave: Mammoth Cave, 412 miles  
 Deepest Cave: Mammoth Cave, 407 ft  
 Deepest Pit: Esau Percy Cave, 211 ft

**Tennessee**

Total Caves: 10,420  
 Total Records (Entrances): 13,265  
 Longest Cave: Blue Spring Cave, 40.15 miles  
 Deepest Cave: Ball Cave, 524 feet  
 Deepest Pit: Dorton Knob Smokeshole, 293 feet

**Georgia**

Total Caves: 877  
 Total Records (Entrances): 1,042  
 Longest Cave: Elbert's Cave System, 11.73 miles  
 Deepest Cave: Elbert's Cave System, 1063 feet  
 Deepest Pit: Elbert's Cave System, 584 feet

**Alabama**

Total Caves: 4,292  
 Total Records (Entrances): 5,432  
 Longest Cave: Fern Cave, 15.63 miles  
 Deepest Cave: Obscure Magnificence, 603 feet  
 Deepest Pit: Fern Cave, 437 feet

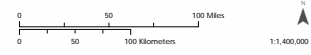
**Florida**

Total Caves: 876  
 Total Records (Entrances): 1,164  
 Longest Underwater Cave: Wakulla Leon  
 Sinks Cave System, 32.26 miles  
 Longest Dry Cave: Wamoon Cave, 4.26 miles

- Cities
- Counties
- States
- Cave Density High
- Low

All cave numbers represent raw data from the respective state's Cave Survey. Numbers provided are not standardized.  
 Cave definitions vary by state. The author has attempted some standardization, but accepted that the world cave is ultimately a cultural construct. Displayed here is my current best estimation of cave density (counting entrance one, not each entrance to caves).

Date: 10/13/2018  
 Data courtesy of:  
 - Alabama Cave Survey, 2017  
 - Cave and Karst Resources Florida Cave Database, 2014  
 - Georgia Speleological Society, 2017  
 - Kentucky Speleological Society, 2017  
 - Tennessee Cave Survey, 2017  
 Coordinate System: NAD 1983 2011 Contiguous USA Albers  
 Central Meridian: -84.5142  
 Author: Chuck Sutherland  
 Email: csuth@cs1.igml.com





# Caves of Arkansas 2018

Total reported caves by county: 1,450  
 Total reported caves by quad (7.5', 15'): 457  
 Data courtesy of Association for Arkansas Cave Studies, Inc.,

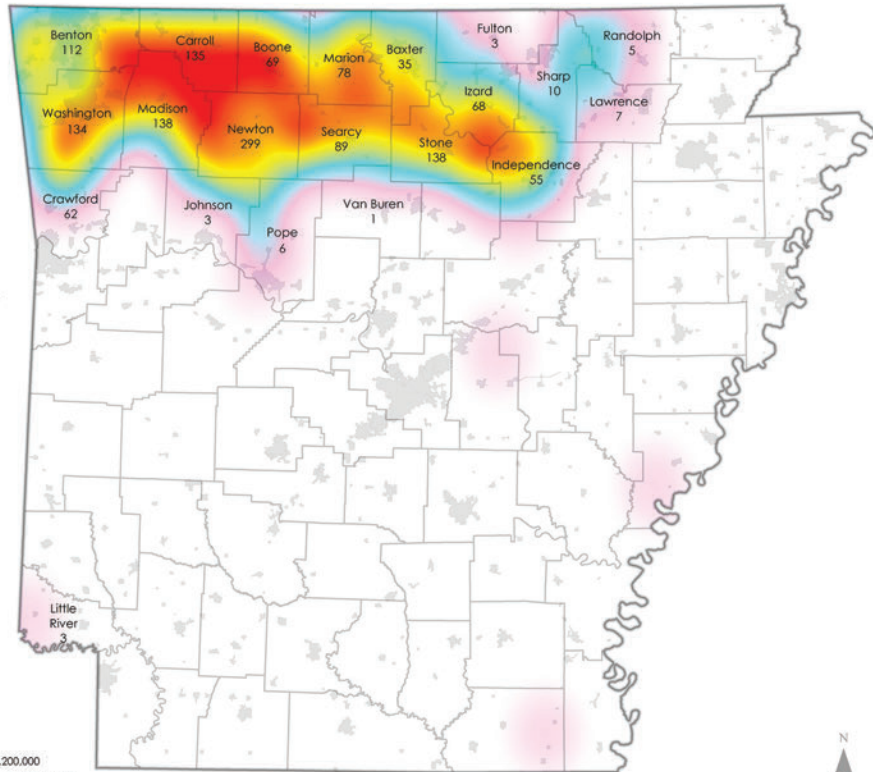
Cave means any naturally formed cavity beneath the surface of the earth which is enterable by people by a natural entrance into the bedrock. Cave also includes any rock shelter formed by an overhanging bluff whenever the bluff is undercut by at least twenty feet (20'). Cave does not include any mine or other human excavation.

Counties with number of caves

Cities  
 Cave Density



Chuck Sutherland <csutherland21@gmail.com>, 10/10/2018

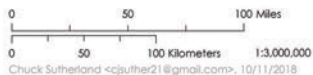


# Caves of Utah, 2018

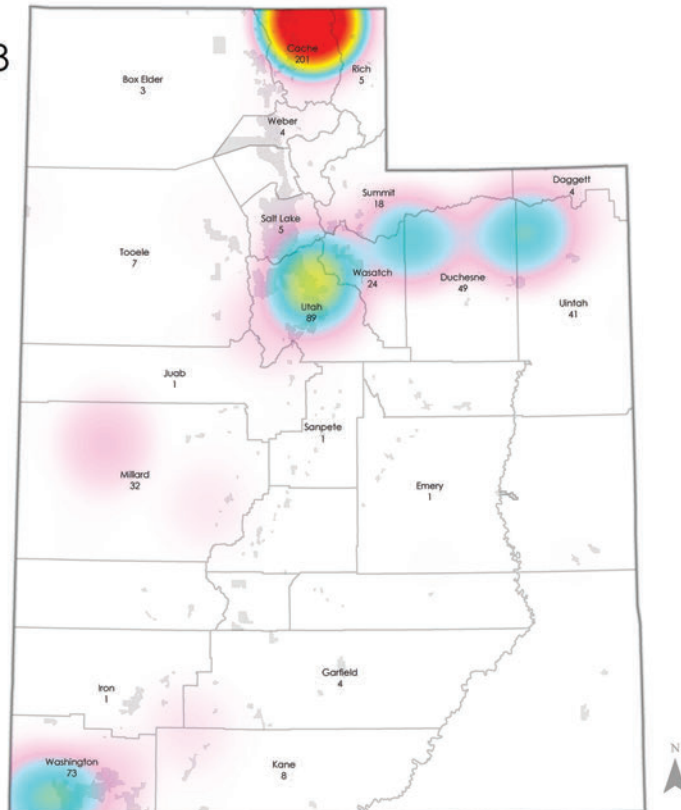
Total reported caves: 560  
 Data courtesy Utah Cave Survey  
 No formalized cave definition exists for Utah.  
 No data is available for regions managed by NPS.

Counties with number of caves

Cities  
 Cave Density



Chuck Sutherland <csutherland21@gmail.com>, 10/11/2018





# Caves of Indiana - 2017

Total reported caves: 2250  
 Data courtesy of  
 Indiana Cave Survey

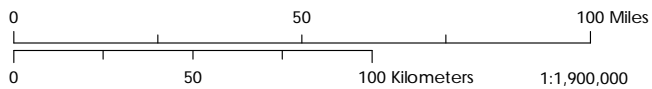
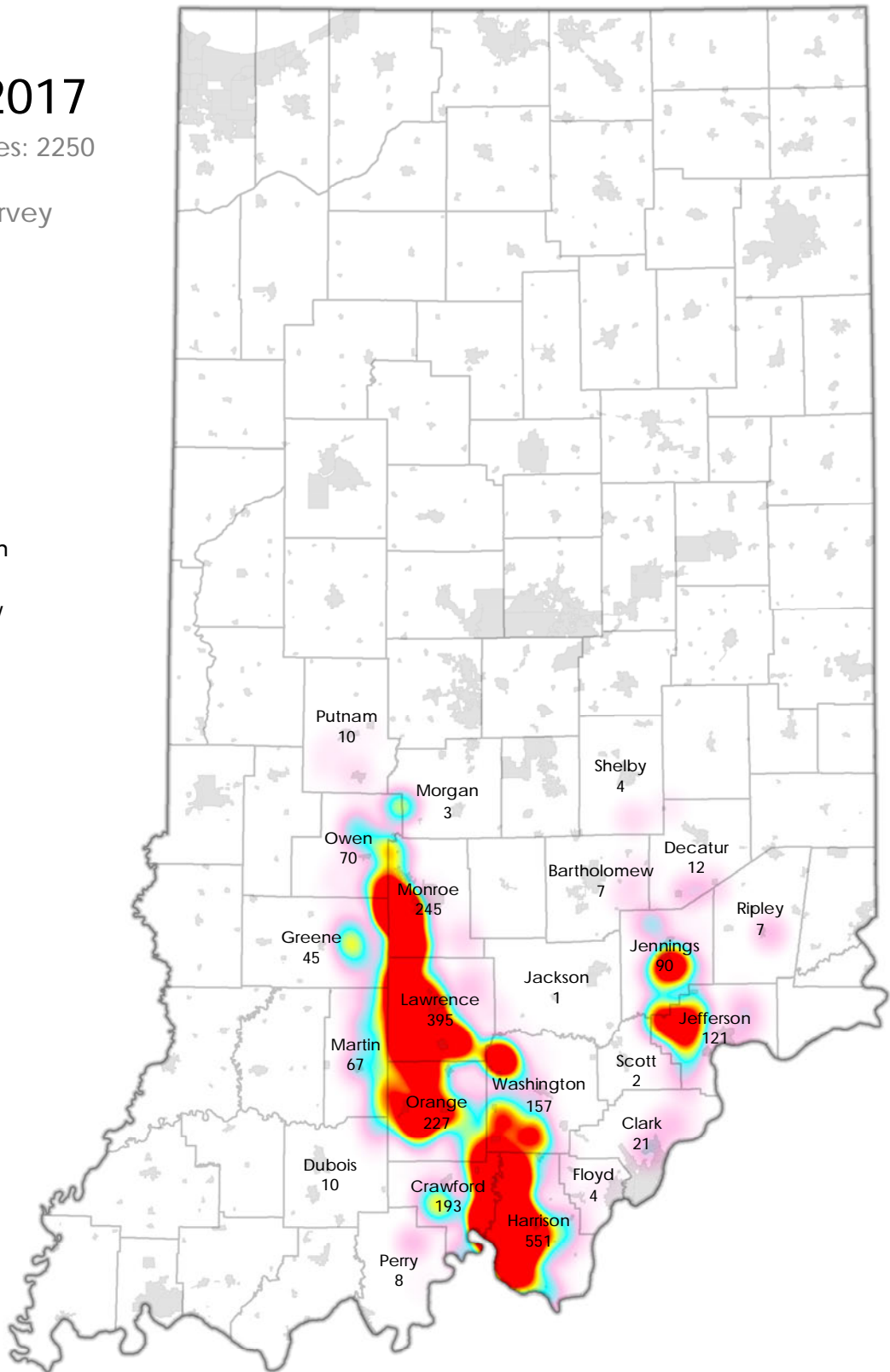
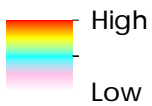
Counties with number  
 of caves



Cities



Cave  
 Density



Chuck Sutherland <cjsuther21@gmail.com>, 10/13/2018





# Caves of Illinois 2018

Total reported caves: 738

Data courtesy

Illinois Speleological Survey

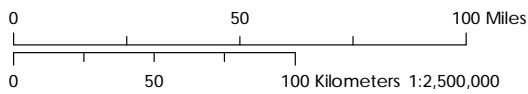
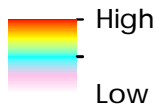
Counties with number  
of caves



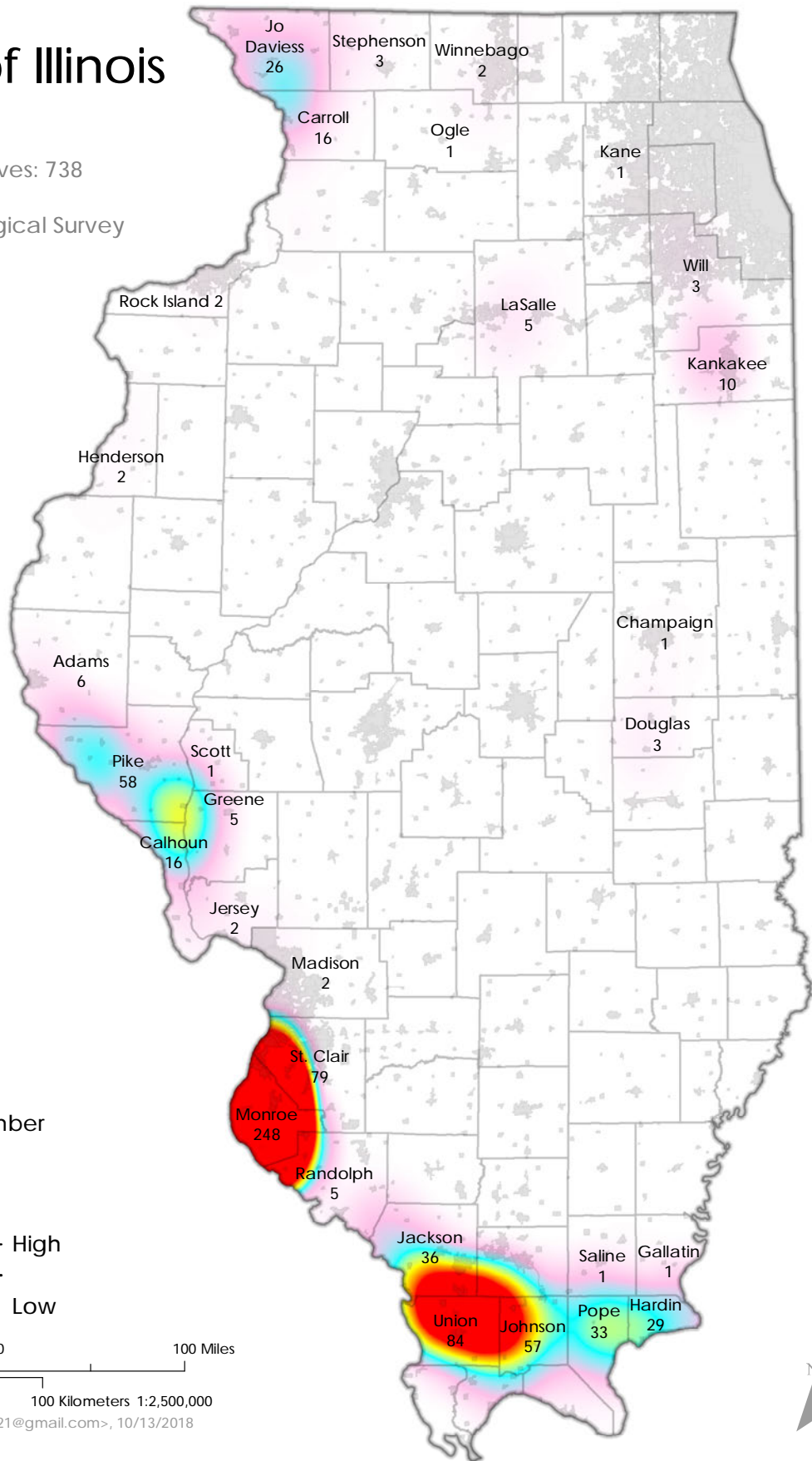
Cities



Cave  
Density



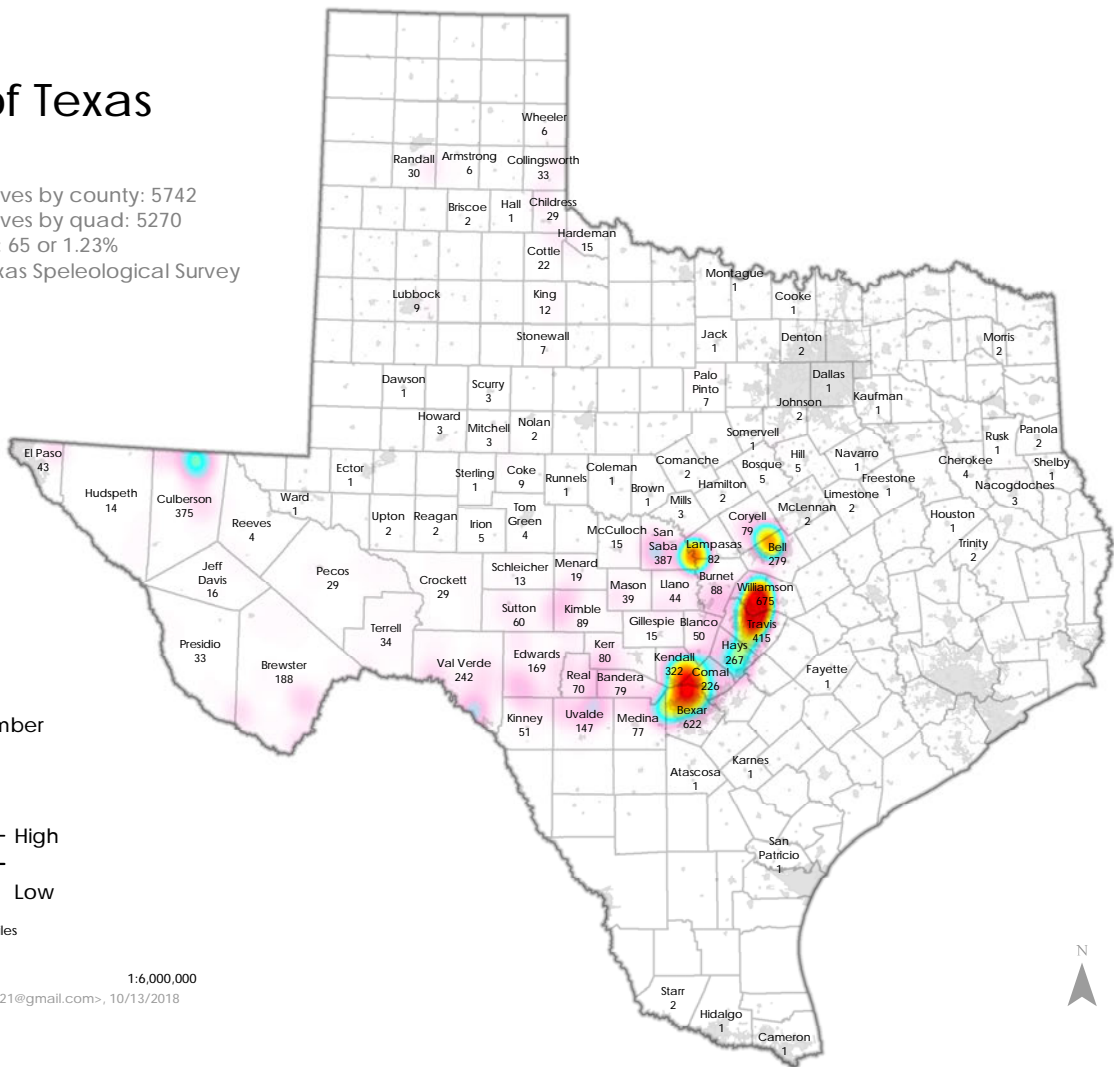
Chuck Sutherland <cjsuther21@gmail.com>, 10/13/2018





# Caves of Texas 2018

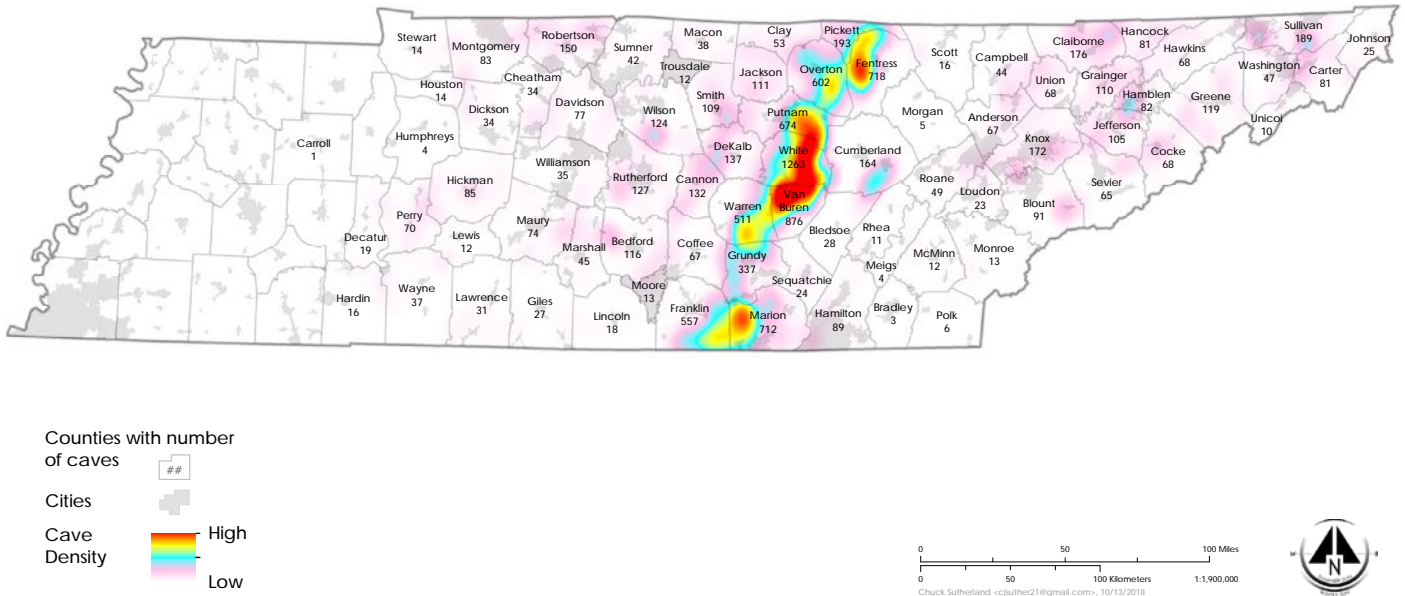
Total reported caves by county: 5742  
 Total reported caves by quad: 5270  
 Errors by quad: 65 or 1.23%  
 Data courtesy Texas Speleological Survey



# Caves of Tennessee - 2018

Total reported caves: 10,519  
 Total reported entrances: 13,404  
 Newly reported caves: 153  
 Removed from survey: 50  
 Data courtesy Tennessee Cave Survey

Caves are features of total horizontal extent of 50', total vertical extent of 40', or a pit depth of 30' or greater.









# UNDERGROUND UPDATE

Ian Reuter

## The Northeastern Caver

Northeast Regional Organization of the NSS

December 2019, Vol. 50, Number 4

After years of digging on a sinkhole riddled property in the middle of New York State, cavers have finally been well rewarded. Jumping atop the record books, the newly discovered 92-foot pit, Miracle Dome, is the State's deepest pitch. Miracle Dome and the rest of **Marshall Cave** boast an impressive collection of formations and passageways with the potential for more discovery still remaining. The impressive find would not have been possible without a dedicated team of cavers, who spent countless hours mining through hard rock and dirt, excavating 15 feet down into two separate karst features. A rock collapse and pooling water were just a couple of the formidable obstacles the diggers had to overcome to bring to light the new underground jewel.

Nestled behind the 30-foot high Bridal Veil Falls, **Bridal Veil Cave** is a well-hidden gem in New Hampshire's White Mountains. Explored and mapped by Steve Higham in 2019, the scenic moss-coated entrance more than makes up for the cave's lack of real passage.

Four small talus caves on the broken-up slopes of Eagle Mountain were discovered and mapped by Steve Higham in the past year. All take their names from the mountain, as Steve named them **Eagle Mountain Cave 1-4**.

## Western Caver

Western Region of the NSS

Summer 2019, Number 262

The **Lilburn** winter expeditions of 2018 saw a small amount of new survey, amongst a variety of other activities at the cave and the nearby cabin basecamp. Of interest, earlier in the year, Greg Roemer and

Marcia Rasmussen found themselves alone in the cave when a 7.1 magnitude earthquake hit Ridgecrest, California, less than 100 miles from their location. Greg reports the experience was "very disorienting... due to the lack of auditory and visual clues to indicate any actual motion." Lucky for the duo, their exit route remained passable, despite the presence of ominous-looking breakdown.

Oregon's **Cave Next Door** is perhaps one of the most impressive dig projects in the western United States. Discovered through a dye trace in the 1990s, David Hodges and friends have been searching for an entrance to the cave's marble passages for nearly 30 years. Access was finally achieved in the early 2000s, through 100 feet of tunneled-out passage. The cave was quickly mapped, with close to 1,200 feet of passage surveyed, before a collapse of the entrance tunnel halted further exploration. Through the mid-2000s work on the cave waned due to government regulations, however, Hodges is now back at it, attempting to gain access through a new dig, which currently stands at over 90 feet deep. A strong airflow leads him to believe he is close to regaining entrance to the elusive cave.

A photo essay by Tiffany Nardico tells part of the story of the 2018 PESH trip, highlighting the discovery of a lead at the base of the TAG Shaft which snakes its way back to camp two and the main cave system. Nardico reckons this is the most significant connection in the history of the PESH project.

## Carbide Flash

Paha Sapa Grotto

December 2019, Vol. 43, Number 4

Returning to the western edge of **Wind Cave** for the first time since the mid-1990s, Hazel Barton and friends have made one of the largest breakthroughs in the cave in nearly 30 years. Exploring a windy lead that was overlooked in 1996, due to its delicate aragonite-coated floor, cavers discovered large borehole and an abundance of walking-sized leads. Two return trips have netted 3,500 feet of survey, and redefined the western edge of the cave. The area, over four hours travel from the entrance, is particularly notable for its numerous bat and small mammal skeletons. Cavers speculate that the nearby **Persistence Cave**, which is now less than 1000 feet from known passage in Wind Cave, could be dug open, providing a second natural entrance to the 150-mile long system.

Armed with newly released Lidar data, K.M. Emanuel has scoured the karst fields of the northern Black Hills, finding an incredible number of both karst and manmade features. Over 2,300 prospecting pits have been identified, in addition to 55 sinkholes, the latter of which all hold the potential for horizontal development. To date, 9 new caves have been located, the most significant of which is the 269-foot long **Crook Mountain Sink Cave #1**. Emanuel's data will be put to good use, ensuring the newly documented karst resources are adequately protected in the face of future timber operations.

## Salon Gallery

Three images from Western USA caves that garnered Merit Awards in the 2019 NSS Photo Salon.

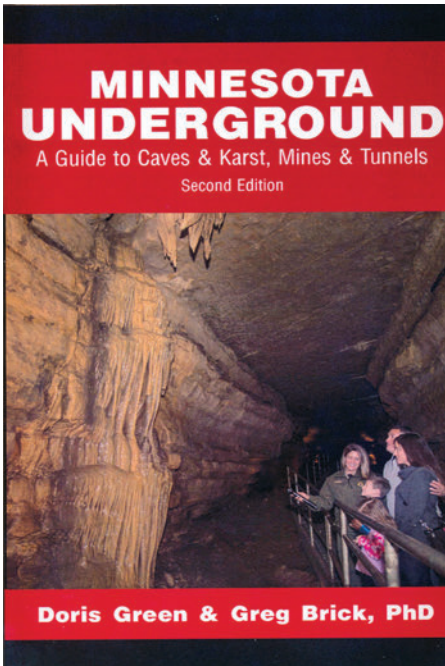
Left, top: Rapelling into Double Bopper Cave in the Grand Canyon. Photo by Adam Haydock.

Left, bottom: Kyle Voyles in a pool basin in a remote Grand Canyon cave. Photo by Dave Bunnell. Most of these formations were submerged after formation and coated with orange spar crystals.

Right: Entrance chamber of Leviathan Cave in Nevada. Caver in the distance spread his arms to make him more visible. Photo by Dave Bunnell.







## MINNESOTA UNDERGROUND A GUIDE TO CAVES & KARST, MINES & TUNNELS," SECOND EDITION

By Doris Green & Greg Brick, PhD  
 Copyright: 2019; HenschelHaus Publishing, Inc., 6540 W. Forest Home Avenue, Suite 102, Milwaukee, Wisconsin 53220; six by nine inches format, 191 pages softbound. ISBN: 978159598-746-4. Available from the publisher for \$19.95, plus \$6.75 for flat rate shipping.

The Second Edition of *Minnesota Underground* has been highly anticipated by cavers and the public who are familiar with the fine first edition. This new and improved edition covers just about everything in Minnesota that relates to, or is, underground and available to the public. This includes surface features like museum exhibits, and cave-related mining features and buildings. In fact, 40 additional listings exist in this new edition. As for the 99 illustrations or photos in the book, you will find 86 color photos, three black and white photos, two historically reproduced cave maps, six reproduced old cave postcards, and two artistic cave sketches.

The state is divided into five main sections: Southeastern Minnesota, Southwestern Minnesota, Minneapolis-St. Paul Area and St. Cloud, St. Croix River Valley, and finally, Northern Minnesota. All together, an impressive 81 sites in 23 different counties are covered. A total of 13 museums are also included that present cave and mining replicas, and geology. For each

site listing, accurate directions, the season/hours the site is open, length and precautions if appropriate, amenities, and other information are provided. I can only imagine how much research and traveling co-authors Doris Green and Greg Brick poured into the production of this book. For biologists, White Nose Syndrome as it relates to bats is well covered, and one of the 21 special sidebars covers the native tan camel crickets of Reno Cave.

It is appropriate that a picture of the lengthy Mystery Cave near Spring Valley, Minnesota, is featured on the front cover. Cavers will also enjoy reading about Niagara Cave with its 60-foot-high underground waterfall near Harmony, and even the extensive details on caver John Ackerman's Minnesota Cave Preserve. Did you know that his properties exist in both Iowa and Minnesota, and encompass 42 caves, 714.3 surface acres, and 1,274 acres of underground rights? The book is very current, even including his recent purchase of the Hiawatha Caverns near Witoka, Minnesota. This cave used to be open to the public, and undoubtedly more cave will be found.

I learned an interesting new fact about scenic Niagara Cave. Here I quote: "In 2015 Niagara Cave became the first commercial cave in the world to use solar energy to fully meet all its energy requirements. A 210-foot photo-voltaic solar panel array produces 45,000 Kilowatts per year." Although it might seem picky, I do have to point out that for many years now, "commercial caves" are typically referred to as "show caves."

I was pleased to see some of the neighboring state show caves featured as well. These include Wisconsin's longest cave, Crystal Cave near Spring Valley, Wisconsin; Spook Cave near McGregor, Iowa, and Crystal Lake Cave near Dubuque, Iowa.

This book answers so many questions. Where was a prehistoric man crushed by a giant boulder? What about Red Wing's underground river? Where is an almost 1,000 foot long "Tunnel of Love?" Can a lava tube be found in Minnesota? Going further, caves or sites are featured that were used by prehistoric animals, storage shelters for everything from books to dynamite, as well as restaurants, and even for boating and kayakers. Speaking of books, can you imagine two man-made caves dug out and finally opened in 2000 to store books? One cave alone holds over 1.5 million books in shelves 17.5 feet high! Yes, it is 85 feet underground and yes, the public can tour it.

Mines and the mining landscape of Minnesota are nicely featured, but in review-

ing this informative book, I must comment on one such mining site. This is the Soudan Underground Mine State Park in St. Louis County. It has to be the deepest public underground tour attraction in the entire U.S. for sure. I know it was the deepest penetration I have ever made in my lifetime into the earth's crust. You ask how deep? Well, a rickety, dimly lighted mining cage takes you down 27 levels to a depth of -2,341 feet. This is almost half a mile underground and well below sea level! You can actually see the mine levels fly by you as you descend! You can then board a train and off you go...but wait, you can also visit a huge subterranean laboratory. I have never seen a laboratory as unbelievably elaborate as this. On the other hand, Greg talks about his rather basic Banshee Cave Subterranean Laboratory set up to study springtails and other cave life. Nearby is the Ice Box, a rather unusual cave on the banks of the Root River in Southeastern Minnesota.

This book certainly has a tremendous and very broad public appeal due to its extensive coverage of literally all aspects of underground Minnesota. If you like natural caves and the unusual, including man-made features, then this is your ideal guide. The authors seem to have literally not missed anything!

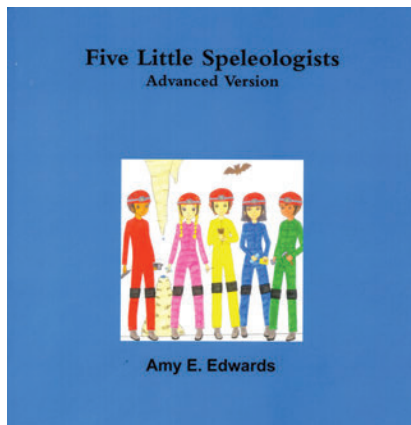
Authors Doris Green and Greg Brick are cavers and are well known in the caving community.

Doris Green was a communications specialist with the School of Human Ecology at the University of Wisconsin – Madison. She holds a Bachelor's Degree from the School of Education, and a Master's Degree from the University of Wisconsin – Madison. Her Master's Degree is from the School of Journalism and Mass Communication. She has also written many previous books, including two different editions of "Wisconsin Underground."

Greg Brick has a PhD. and was employed as a hydrologist. He has also taught geology at local colleges and universities. He is the 2005 Peter M. Hauer Spelean History Award recipient, and currently edits *The Journal of Spelean History*. He is the foremost authority on the natural caves and manmade tunnels that exist in the Twin Cities area. He has written many cave books, including *Subterranean Twin Cities* and *Minnesota Caves: History & Lore*.

**Gary K. Soule**





## FIVE LITTLE SPELEOLOGISTS

By Amy E. Edwards. Published 2019 by Happy Caver Publishing. 36 pages, 8.5x8.5 inches, color. Softbound. ISBN: 9781794720770 (beginner version) 9780359625314 (advanced version).

Educators and parents alike will appreciate *Five Little Speleologists*, a pair of books (one available in 3 languages) aimed at introducing students to a key element of caving: science.

Amy E. Edwards, herself a PhD in environmental science-chemistry, has prepared two versions of the book. The Beginner Version is short and sweet...perfect for

elementary school age students first experiencing or studying caves. It offers the promise of exploration, cave mapping with drones, lab work with specimens collected underground, and the reality of publishing research.

The Advanced Version is jargon-filled, each reference a great jumping-off point for an assignment into the world of such terms as paleoclimate, chemographs, CRISPR, or meiofauna (reader: you may pause a moment to google that one!). There even is a subtle Star Wars reference.

While Edwards has published journal research papers on cave science, she wanted something for a larger audience, using illustrations, to show how STEM (science, technology, engineering, math) is used in caves. "I knew I couldn't end *Five Little Speleologists* in the cave—I had to show all the work that goes on after the cave trip: sample analysis in the laboratory, hours on the computer writing and researching, analyzing data with statistics and computer models, and making presentations and publications to report findings," she says. And she makes it fun. "STEM is rapidly changing how we do science, so I wanted to show current technology," she adds.

She loves that current cave science has moved from compass and tape to Distos and drones. "Technology is a beautiful thing," she says.

The Beginner book is available in Spanish and French. She is comfortable enough with the romance languages to use Google Translate to translate the basic book. She avoided translating the advanced book because it rhymes and it is nearly impossible to translate rhymes between languages. A member of Richmond Area Speleological Society (RASS), Edwards hand-drew the identical illustrations used in all versions.

Each book sells for \$14.99 per copy plus tax and p/h on LULU.com. Bulk pricing is available for classroom use. Her marketing strategy came after Edwards downloaded Phil Lucas's *Caves and Karst of the Water Sinks Area* from a link to LULU.com on the Butler Cave Conservation Society website. That drove her to self-publish. Her book also is available at Amazon.com for a somewhat higher price.

Edwards is working on a second book, *Speleocats*. The cats will be on a survey expedition and will contend with mishaps like a "batnado."

**Curt Harler**

# OBITUARIES



## Steve Martin MacDonell

Sept. 11, 1951 - Nov. 28, 2019  
NSS 32367

Steve moved with his family from Florida to Tennessee in 1987 to take a job as a master mechanic with Turner's Chrysler in McMinnville. His parents were already living in Spencer and Steve and his father built a house beside theirs.

It was a customer at Turner's who sparked his interest in caving. Tank Goren often brought his vehicle into Turner's to have it serviced and he related to Steve about the thrills of finding and exploring new caves.

He became interested enough to buy a copy of Barr's book, *Caves of Tennessee*, and he and a coworker began exploring local caves in the book.

It didn't take long to put him on a mission. He and Rosemarie started going to grottos, at first Chattanooga Grotto and then Upper Cumberland Grotto in Cookeville.

I also had caught the bug and was doing a lot with Upper Cumberland Grotto but may have already had some contact with them before they started coming. I don't remember which came first but Steve left a note on my 4Runner when I was working on a dig in the Lost Creek area, and Bill Walter introduced Steve and Rosemarie to Rosie and me at a Cumberland Caverns Christmas party.

They had also met and started caving with the late Mark Moore, who lived in Spencer, and it was on a caving trip to Lost Cove when they ran into Tim Curtis, who worked in Spencer. That encounter led to the birth of the Spencer Mountain Grotto. It was chartered on October 12, 1995, and Steve was the first chairman.

Spencer Mountain hosted the SERA business meeting on February 23, 2002. Steve was awarded the Alexis Harris Conservation Recognition Award on February 18, 2006 by the Southeastern Regional Association of the NSS for conservation at Camps Gulf Cave.

He was a member of the Riders of the Wind Motorcycle Club and rode with the Christian Motorcycle Association. Steve's ham radio license call sign was KE4GZD.

He participated in the discovery, excavation and exploration of many caves, including Wagon Wheel, Mossy Oak, Crucifixion, Resurrection, Widowmaker, and his namesake, Big Boy Canyons. In addition he worked on the second entrance to Blue Springs and the bridge spanning the chasm in Blue Springs.

Having a master mechanic along on caving trips is not a bad thing either. Besides pulling stuck vehicles out of mudholes, Steve could be counted on to rescue stalled vehicles too. He drove all the way from Spencer to England Cove late one afternoon when my vehicle would not start.

His size and strength were also handy. He could pull big rocks out of a dig that nobody else could. His size on the other hand kept him from getting to explore some areas but that will no longer be a problem since he can now go anywhere he wants to.

If we could tell him how much we are going to miss him he would surely respond like he most often did, "I heard that!"

**Jerrell Killian**  
NSS 31386



# PRESIDENT'S MESSAGE

For this month's column I thought it might be nice to review some information about how our Society is governed. We are always looking for members interested in serving in these positions, and if you have suggestions, questions, or concerns regarding Society activities this will help you know which officer to contact.

**Geary Schindel**  
NSS President

## Governance of the National Speleological Society

The NSS is a 501c3 (non-profit) corporation based in Huntsville, Alabama. We are a complex member-driven organization governed by a twelve-member Directorate and a five-member Executive Committee (officers). The directorate and executive committee compose the NSS board of governors (BOG). Directors are elected by the membership to three years terms. Directors can serve two consecutive terms before they must sit out for one three-year term. The day to day operations of the NSS are conducted under the direction of the NSS officers. The BOG elects the five officers to one-year terms that can be extended on a year by year basis. They serve at the pleasure of the board. The officer positions include the President, Administrative Vice President, Executive Vice President, Operations Vice President, and Secretary-Treasurer. The President and the Secretary-Treasurer positions represent the corporate officers which have account signature authority for the NSS. The NSS officer structure is flat with all of the officers being of equal status and reporting to the chair of the directorate.

Governance of the NSS is directed by the Board of Governors Manual, available on the NSS members page ([caves.org](http://caves.org)). The board meets three times a year, including a summer meeting during the NSS Convention. The other two meetings occur in the spring and fall of each year and are commonly hosted by grottos in various parts of the country. This provides an opportunity for the directorate and officers to meet with local cavers and encourages local participation at board meeting.

## Responsibilities of NSS Officers

### President

The President acts as the spokesperson for the NSS; is the primary contact for media inquiries, represents the NSS with external organizations, chairs the NSS board meet-

ings, is responsible for the board agenda, minutes, and scheduling of board meetings, the NSS legal Committee, Public Affairs Division, Membership, and Fundraising committees also report to the President. The President is one of two officers that has signature authority to commit the NSS to MOU's and contracts. The President serves from year to year at pleasure of the Board of Directors. Geary Schindel is the current President of the NSS and took office at the Rio Rancho Convention in 2017. He can be reached at [President@caves.org](mailto:President@caves.org).

### Administrative Vice President (AVP)

The AVP is responsible for four major divisions of the NSS. They include the NSS Convention, NSS Preserves, Conservation, and Education division. The National Cave Rescue Commission also reports to the AVP. The AVP has the largest and most diverse program of the five officers. At any given time, they are working with current and future convention chairs. All of the NSS preserves are maintained through the AVP program along with the Cave Acquisitions and Cave Landover committees. We also have an extensive Conservation Program that is active throughout the US and internationally. Our Education Program has a new division director and are working hard to define our educational program. Dr. Kat Crispin is the AVP and can be reached at [AVP@caves.org](mailto:AVP@caves.org).

### Executive Vice President

The NSS News, NSS Journal of Cave and Karst Studies, special publications and books, and also our research grants fall under the responsibility of the EVP. The NSS News has been consistently published every month for decades. The Journal of Cave and Karst Studies is our scientific publication which has a very high impact rating for an academic journal. The EVP works with authors of special publications to make sure they meet the high standards of the NSS.

### Operations Vice President

The OVP is responsible for our office staff, the Headquarters and Conference Center along with the grounds, the library, website and Information technology. Our three office staff include Christy Starr, Michelle Vaughn, and Kelly Problete. They process memberships and donations, track expenses, process book orders, handle shipping and receiving, and work with our renters.

### Secretary/Treasurer

The NSS Sec/Tres was responsible for the general finances of the society and is one of two officers with signature authority of the NSS. This position may require the most number of hours per week of any officer. They work closely with the office staff to assure that our income and expenditures are correctly accounted for. Over the last few years, we've transitioned from a spread sheet accounting system to using Quickbooks. This transition has required the Sec/Tres position to also work closely with our accounting firm. The current Secretary/Treasurer is Gaylene Speaect. Gaylene is stepping down at the spring board meeting and Kristine Ebrey will be the new Secretary/Treasurer.

### Running for the Board of Directors

Serving the NSS as a director or officer can be very rewarding. Serving does require a significant commitment of time and resources to travel to various meetings. Board members are not compensated for attending BOG meetings. We are always in search of qualified individuals that are willing to serve. Business, accounting, marketing, fundraising, and experience serving on other boards are always helpful.

Elections for the directorate are held in the spring of each year. Four positions are contested during each election. Officers are elected by and serve at the pleasure of the board. The NSS Nominating Committee obtains candidates for the director elections ([nominating@caves.org](mailto:nominating@caves.org)) and the Executive Search Committee locates officer candidates ([execsearch@caves.org](mailto:execsearch@caves.org)). Additional information regarding running for the NSS directorate or an officer position can be found at [www.caves.org](http://www.caves.org).



*Temporary Splendor* by Charles J. Kahn won an Honorable Mention in the 2019 Print Salon



# NEWS & NOTES

## A Drop does not fall in a straight line: a rationale for the width of stalagmites

20 November 2019: An article published in the *Proceedings of the Royal Society* addressed the issue of stalagmite width. Using high-speed imaging, the authors showed that stalagmite widths are a function of the dispersal of drips hitting the top, as might be expected. What surprised them, however, was that the dispersal of the drops is not simply explained by ceiling height but also the influence of the drops going through the friction of an atmosphere caused them not to fall in a straight line. Note that this is different from the influence of a cave wind that might cause predictable deflections in the growth of stalagmites and stalactites.

**summarized by Dave Bunnell**

## New National Park of American Samoa Quarter



National Park of American Samoa is located some 2,600 miles southwest of Hawai'i and is one of the most remote in the U.S. National Park System. The site includes sections of three islands—Tutuila, Tau, and Ofu. Almost all of the land area of these volcanic islands—from the mountaintops to the coast—is tropical rainforest. The park's area totals 13,500 acres, 4,000 of which are underwater.

The reverse (tails) design depicts a Samoan fruit bat mother hanging in a tree with her pup. The image evokes the remarkable care and energy that this species puts into their offspring. The design is intended to promote awareness to the species' threatened status due to habitat loss and commercial hunting. The National Park of American Samoa is the only park in the United States that is home to the Samoan fruit bat. [ED: Or perhaps any fruit bat?]

**United States Mint Web site**

## The Albert and Ethel Ogden Undergraduate Research and Geography Scholarship in Geology and Geography

This scholarship has been established to encourage karst research by geology and geography undergraduate students. A \$1,000 award is available for summer research conducted in the United States. The applicant must be a member of the National Speleological Society. Example projects include dye tracing, spatial analysis of karst landforms, water quality of springs and cave waters, cave sediment analyses, etc. Applications describing the proposed research are limited to three pages of text. Send or email your application to John Hoffelt, 208 Cheatham Ave., Smyrna, Tennessee 37167-4766; [mossyguy@comcast.net](mailto:mossyguy@comcast.net). A letter of recommendation by the professor overseeing the research should be included in the proposal. Application deadline is April 15th, 2020 with the award being announced the first week of May.

**Al Ogden**

## Underground Extension of Hang Son Doong (Vietnam) found by British Cave Divers

Hang Son Doong is often referred to as the "world's largest cave," not for its length (a bit over 5.5 miles) but because of its vast passage size throughout its length. Your editor visited the cave on the first photo trip offered to tourists and wrote a large article with photos in the June 2016 issue of the *NSS News*.

The cave has just a short segment of

stream passage but is mostly dry, fossil passage. Where the water went has been a mystery, but was thought to connect to a nearby cave called Thung. In April 2019 a team of 3 UK divers (Chris Jewell, Jason Mallinson, and Rick Stanton) were part of an expedition to find out just where the water goes. They were surprised to find an extensive tunnel system that was not heading towards Tung and which they did not have sufficient oxygen to explore. They had to turn back at a depth of 77m but estimate it went as deep as 100m. A return expedition is planned for sometime this year.

**summarized by Dave Bunnell**

## Cutting Edge Exploration

*X-ray Magazine*, which is free online, has a major feature article on a diving expedition to the Rio Uluapan resurgence in Mexico, which had a number of Society members participate. The 11-page article (<https://tinyurl.com/u2j2k58>) was written by Andreas Klocker and Steve Lambert with numerous quality photos by Adam Haydock.

The divers were following up on a dive by Bill Farr in 1995, who went through the first sump to reach a large room with a waterfall climb beckoning. No one had attempted it since. Armed with rebreathers and lots of technical climbing gear, the team found the waterfall room after four dives, scaled it, and found a second sump. This one was pushed to over 100m in depth and about 1.3 km in length before decompression limits forced a turn around. A return trip, and an *NSS News* article, are planned

**summarized by Dave Bunnell**

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

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

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