



Beneath the Forest

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Edited by Johanna L. Kovarik, Minerals and Geology Management



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CAVE AND KARST CALENDAR OF EVENTS

[National Speleological Society Convention](#)

June 19 - 23 2017

Rio Rancho, New Mexico

<http://nss2017.caves.org/>

[17th International Congress of Speleology](#)

July 23 - 30 2017

Sydney, New South Wales, Australia

<http://speleo2017.com/>

[National Cave and Karst Management Symposium](#)

October 16 - 20 2017

Eureka Springs, Arkansas

<http://nckms.org>

[Geological Society of America Conference](#)

October 22 - 25 2017

Seattle, Washington

[http://www.geosociety.org/GSA/Events/
Annual_Meeting/GSA/Events/gsa2017.aspx](http://www.geosociety.org/GSA/Events/Annual_Meeting/GSA/Events/gsa2017.aspx)

[The Sinkhole Conference](#)

(with the 3rd Appalachian Karst Symposium)

April 2 - 6 2018

Shepherdstown, West Virginia

www.sinkholeconference.com

Editor's Notes:

I am pleased to present our 18th issue of *Beneath the Forest*, the Forest Service cave and karst newsletter, published twice a year in the spring and in the fall. Our next issue will be the spring issue in November of 2017.

Articles for the Fall 2017 issue are due on October 1 2017 in order for the issue to be out in November 2017. We welcome contributions from stakeholders and volunteers as well as forest employees. Please encourage resource managers, cavers, karst scientists, and other speleological enthusiasts who do work on your forest to submit articles for the next exciting issue!

**Cover art: Young cavers Codi Rose and Max Maxwell having a blast in Lick Creek Cave, Helena-Lewis and Clark National Forest.
Image: Bryce Maxwell**

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Wildlife technicians Carrie Voss and Macy Dugan scrub graffiti in Lick Creek Cave. Image: E. Whittle

Beer Bottles, Bats, and Building Relations: An Update on Montana's Lick Creek Cave

Ellen Whittle

Northern Rocky Mountain Grotto

Ian Chechet

Northern Rocky Mountain Grotto

Taylor Woods

Northern Rocky Mountain Grotto

During prohibition, illegal bars were termed speakeasies because their patrons were said to “speak easy,” or talk quietly, about them. Today, we no longer need to protect the location and contents of our bars, but we do need to protect our caves. Montana cavers guard the locations of caves from the general public, and will typically guide newcomers to speak with them rather than reveal their location. This has been tradition for many years, but in spite of this practice, a few caves have become popular and well-known destinations in our state. Lick Creek Cave is an example of the impact when a cave's location becomes public knowledge. A short drive from one of Montana's larger cities and a half-mile hike from a road, the cave has been well-known by locals for decades.

(Lick Creek Cave continued on page 4)



Wildlife technician Ellen Whittle counts bats in the Cathedral Room, Lick Creek Cave. Image: C. Froslie

(Lick Creek Cave continued from page 3)

The relatively easy access results in approximately 600 -1,000 people per year. Lick Creek Cave is mostly horizontal, and also contains the largest room in Montana, the football field-sized Cathedral Room, which makes the cave attractive to cavers and non-cavers alike. Over the years, the cave accumulated candy wrappers, broken beer bottles, fishing line, spent fireworks, and has been plastered with graffiti tags.

With about 400 caves throughout Montana, each with unique and specific conservation needs, cave management presents a problem for agencies like the

U.S. Forest Service (USFS) or the Bureau of Land Management (BLM) to tackle. Lick Creek Cave was an eyesore to local managers, but it remained on the back-burner until January 2013. Northern Rocky Mountain Grotto (NRMG) member James Cummins agreed to lead a group of bat biologists, including zoologist Bryce Maxell (Montana Natural Heritage Program; or MTNHP), into Lick Creek Cave for a winter bat count. The cave was already known to be a hibernaculum, but it had not been fully surveyed in decades. Advances in LED light technology, along with small and portable super-zoom cameras, made it possible to spot tiny bats roosting in crevices on the high ceilings and walls in the cave's Cathedral Room.

(Lick Creek Cave continued on page 5)

(Lick Creek Cave continued from page 4)

Prior to this survey, Lick Creek Cave was previously reported to host about 40 hibernating bats every winter; this time the team counted over 150 bats, placing the cave in the top 10 most populated roosts in the state.

In a November 2014 meeting between the USFS Northern Region (Region 1), bat biologists, resource managers, and NRMG executive officers, the possible gating of Lick Creek Cave became a contentious topic. At the time, groups were threatening large-scale lawsuits against the USFS for keeping their caves open in the region, with the idea that ungated caves have a higher risk of spreading the fungus that causes White-nose Syndrome (WNS). WNS, which has killed over 6 million bats in the eastern half of the United States, continues to spread west and has recently been found in Washington State. However, responsible cavers who comply with decontamination procedures felt that they should have a voice in the gating of individual caves, which may not even be used by bats. Cavers also knew that many remote vertical caves are difficult or impossible for agency employees to survey. Often the only people with the skill, ability, and equipment to collect data from these caves are cavers.

By the end of the meeting, USFS and NRMG folks came to an informal agreement, regarding Lick Creek and other caves on public lands:

- A. Grotto members agree to submit trip reports, monitoring and documenting any changes to caves they visit.
- B. Agencies document actual numbers of visitors to caves, using cave registers and game cameras.
- C. Agencies set out bat roost loggers, which monitor bat activity throughout the winter, in order to look for increases in activity following human visitation.



Top: A myotis roosts on the wall of Lick Creek Cave. Image: E. Whittle Bottom: A bat activity logger placed by the Montana Natural Heritage Program. Image: C. Frosлие

- D. Grotto members install informative bat signs at or near the entrances of caves (modeled on a similar successful program in Washington State).
- E. NRMG assists agencies with an annual cave cleanup at Lick Creek Cave (or other similarly vandalized caves).

Since 2015, the game cameras, roost loggers, and cave registers have provided substantive data regarding cave visitation and bat activity. The game camera has recorded nearly 1,000 individuals visiting the cave during one year; the first real numbers that agencies can use to establish visitation numbers.

(Lick Creek Cave continued on page 6)



Cave cleanup crew in 2015 at the entrance to Lick Creek Cave (behind the group). Image: E. Whittle

(Lick Creek Cave continued from page 5)

The game cameras have also recorded mountain lions, bobcats, bears, deer, elk, and rabbits, sometimes following in the footsteps of the human visitors. From the game camera photos, it is easy to see that most usage of the cave comes from the general public. Many people walk by without helmets or headlamps, wearing impractical shoes such as flip-flops. Others, more serious about their explorations, wear hard hats with flashlights taped on them. And occasionally, there is an NRMG member with a cave pack, cave suit, and three sources of light mounted on their helmet—and they are usually carrying a full trash bag on their way out.

The NRMG’s official cleanup, mapping, and resource monitoring efforts began in 2015. The Lick Creek Cave Restoration Project was organized by NRMG member

Taylor Woods, and was sponsored by REI and Lolo Peak Brewing Company. For that event, the NRMG, Bigfork High School Cave Club, and University of Montana Cave Club partnered with the U.S. Forest Service to spend an entire day scrubbing graffiti and removing trash from the cave. By the end of the day, volunteers picked up 100 pounds of garbage, installed interpretive signs, and scrubbed 50-70 graffiti tags with wire brushes. The high school cave club, led by Hans Bodenhamer, made a cartographic survey which was eventually made into a complete map of the cave’s passages. The 2015 event was reported in the 2016 Conservation Issue of the NSS. In 2016, a second annual clean-up project was organized to focus on biological and geological monitoring of the cave.

(Lick Creek Cave continued on page 7)

Monongahela National Forest forms partnership for WNS Decon Video

Will Wilson

Monongahela National Forest

In 2016, The Monongahela National Forest (MNF) partnered with the Cave Research Foundation (CRF) in developing a training video on White Nose Syndrome Decontamination. Previously, we had searched and didn't find any videos to use for our needs and decided to develop our own and then tailor it to be used widely. The forest requires this training prior to allowing appropriate entry into our caves. The goal was to provide a five minute training video that was easily accessible from the web and consistent with forest requirements for researchers and caving organizations. The forest relied upon our cave committee for professional guidance and used input from cavers' direct experience and lessons learned to develop the video. The forest cave committee consisted of the State of West Virginia Department of Natural Resources, the U.S. Fish and Wildlife Service, CRF, West Virginia Speleological Survey, forest wildlife biologists, and local grottos. The process took almost a year and went through dozens of review cycles to get the finished product. CRF provided their cave/media expertise and actors for development of the video and did a terrific job. We are very grateful for the partnership with Cave Research Foundation in developing this video. A note to agency personnel - if ever you develop a video and want to use the agency logo, it is critical to keep your public affairs officer and the regional office in the loop from the very start! This is a [link to the WNS decon video](#), transcript of video, and more [information about the CRF](#). ▀

(Lick Creek Cave continued from page 6)



Forest Service Northern Region Cave Coordinator Dan Seifert uses brushes to clean graffiti. Image: D. Bobbit

Perhaps due to the informative signs or publicity of the previous clean-up, there was less trash to carry out, and most of the volunteers' time was spent scrubbing graffiti, which will likely never be fully removed. Since then, cavers have encountered local visitors carrying trash out of the cave, saying that they are worried that the cave will be closed unless the locals take care of it. Using the trip reporting system, Grotto members have begun to report seeing less new trash and new graffiti in the cave. The decision to gate the cave, at one time viewed as inevitable, has been postponed due to these positive results.

Lick Creek Cave is valued by many people, cavers and spelunkers alike. Hundreds of families visit the cave each summer, including many parents who visited the cave in their youth and now want to share the experience with their children. Public outreach and interpretive signs seem to have helped well-meaning visitors to understand the fragile nature of Lick Creek Cave. While some have pointed to Lick Creek Cave as a "sacrificial" cave, it should instead be seen as a valuable opportunity to educate the public about the preservation of our wild caves. ▀



CavesLIVE: An Exciting New Distance Learning Adventure, Coming Soon!

Johanna Kovarik
Minerals and Geology Management

The U.S. Forest Service and an exciting group of partners are bringing nature learning to schools across the United States and internationally through our NatureLIVE series of webcasts, webinars, and on-line education resources. For over 10 years our distance learning adventures have focused on topics such as bats, wetlands, climate change, and much more.

Join FSNatureLIVE on a new adventure: following dedicated explorers and scientists deep beneath the forest to learn about the world of caves and karst through CavesLIVE. These unique, diverse, and often threatened ecosystems are the major building block of over 100 National Forests and Grasslands and sustain high productivity of forests, fisheries, and farmlands across the United States.

Forest Service cave and karst resources extend across the country. In the east, caves and karst systems occur from the Green Mountain and Finger Lakes National Forests in the northeastern states down the Appalachian chain through the Monongahela National Forest to the Ocala National Forest in Florida. The longest submerged cave system in the U.S. at over 30 miles long lies beneath the Apalachicola National Forest, where cave divers work to map the movement of water used by residents of the Florida panhandle. In many caves in the eastern and southern areas of the U.S. biologists work to protect threatened and endangered creatures such as salamanders, blind cave fish, and bats from disturbance, habitat loss, and disease. In the western U.S., sea caves on the Tongass National Forest in Alaska reveal secrets of how humans came to the North American continent thousands of years ago. Scientists working in glacier caves high above the Mt. Hood National Forest in Oregon tell the story of changes in climate through ice and discover new microbial forms of life. Explorers have delved into the deepest caves in the United States on the Flathead National Forest in Montana, mapping hydrologic flow half a mile beneath the Bob Marshall Wilderness.

(CavesLIVE continued on page 9)



(CavesLIVE continued from page 8)

While caves draw and enchant visitors, many are unaware of their significance to our everyday life, and how easily these ecosystems can be permanently impaired. CavesLIVE will provide compelling, effective education opportunities extending the reach of FSNatureLIVE to include amazing forest resources underground.

A distance learning adventure – or live electronic field trip – brings the excitement of discovery right to the classroom. You don't need to load up the buses, worry about the weather, or collect money. These electronic field trips have enabled classrooms to go to remote locations and ask questions of the experts – just like an on-site field trip. The programs and resources on the project web sites were prepared to help teachers meet national science education standards. The NatureLIVE series brings Forest Service and partner experts together to teach children from grades four to eight about our forest resources, and gets kids outside in a dynamic learning adventure. Visit the [FSNatureLIVE website](#) to see the exciting diversity of program modules currently available.

For CavesLIVE, the partner group will create a 45 minute children's educational program, a 10 minute adult educational program, and additional live components such as webinars engaging schools, children, and adults live with U.S. Forest Service and partner specialists and scientists. Online webpage content provides a wealth of further educational resources beyond the initial broadcast. Approximately 100,000 – 150,000 children would be reached with English and Spanish language programming, and web content is translated into hundreds of languages. Content remains available on the NatureLIVE website beyond the initial broadcast, with the opportunity to reach millions more in coming years.



Our partners' logos will be visible and present on the website, as well as in the broadcast and wherever we promote the materials. Additionally, and more importantly, our partners will be crucial members of the development team helping us to craft the key messages we want to share with our audiences.

Beyond the programming content, this project is an opportunity not only to bring caves and cave conservation and science to the national forefront, but also to establish a higher-profile, higher-functioning partnership network working to bring attention and awareness to cave and karst issues. Current U.S. Forest partners on the project include Prince William Network, the National Park Service, the National Speleological Society, the Cave Research Foundation, the Cave Conservancy of the Virginias, the Cave Conservancy Foundation, the National Caves Association, the National Cave and Karst Research Institute, Under Earth Images, Project Underground, and the Indiana Karst Conservancy.

How can you join the project? We are looking for cave and karst-related educational materials, film segments on caves and karst that could be used in the broadcast or on the website, as well as partners and creative out-of-the-box ideas to help make CavesLIVE truly special. If you are interested in joining our group of partners, or have materials to share, please get in touch with jkovarik@fs.fed.us. Otherwise, stay tuned for the broadcast in March 2018, and visit the [CavesLIVE website](#) for information and updates! ▪





Lisa Allard (GSA- Guest Scientist) looks into the cave entrance. Graffiti can be found in the foreground on the left side of the photo. Image: W. Wilson

A Cave Loved Too Much

Lisa Allard

Geocorps America Program

Will Wilson

Monongahela National Forest

Nestled in the landscape near the population hub of Elkins, West Virginia, the widely known Bowden Cave can be found. Designated a significant cave under the Federal Cave Resource Protection Act for its biological, hydrological, paleontological, and recreational values, the cave has always been a popular destination for cavers and recreationists. Although the majority of this popular cave is within the Monongahela National Forest (MNF), the main entrance is on private land. Moderating access to the federal portion of the cave is more challenging. During one five month period in 2014 when the cave was closed to the public, traffic counters located within the cave recorded 300 visits. More evidence of Bowden’s popularity can be found by the many YouTube videos posted to the web.

With the spread of White Nose Syndrome (WNS) into West Virginia, the forest supervisor of the Monongahela National Forest issued a Closure Order in 2013 to close all caves on National Forest System lands within the MNF to the public, including Bowden Cave. WNS is a fungal disease which can be carried and spread to other caves on caver’s clothing and shoes. This disease has devastated bat populations all along the eastern United States and recent cases have been identified in the Pacific Northwest. It is for this reason that the all caves are closed on the MNF.

Cave Vandals Charged and Fined on National Forest Lands

“ELKINS, West Virginia, July 25, 2016 -- Two individuals were recently charged under the Federal Cave Resources Protection Act in Federal Magistrate Court with misdemeanors and fines for damaging a significant cave by spray painting graffiti and disturbing bat(s) during their winter hibernation period.

The damage was discovered by volunteers of the WVU Mon Grotto from Morgantown, WV, in June 2015, while they inspected Bowden Cave and cleaned up any trash left by the public. It was discovered that individual(s) had spray painted graffiti on the walls of the cave which the grotto had to clean off. It was later discovered that two individuals posted photos of their vandalism on popular media including photo(s) of them licking a bat. This information was brought to the attention of Forest Service Law Enforcement which conducted an investigation.....”

Figure 1 - Cave vandal article

The forest, with the cooperation of the private landowners, posted cave closure signs at the main entrance to Bowden Cave. However, these signs were quickly removed and continue to be removed when we post new signs. Visitation to this popular cave continues. Every year the forest coordinates one to two cave cleanups which yield several bags of garbage. In addition, reports of illicit activities at Bowden have also been investigated by law enforcement.

(Cave love continues on page 11)



Top Image: A cave closure sign posted at another entrance to Bowden Cave.

Bottom Image: Linda Tracy, retired Forest Service Geologist (left) and Lisa Allard, GeoCorps (right) remove graffiti inside Bowden Cave, September 2016.

Images: W. Wilson

While some of these reports do not appear to be true, others are true which are detrimental to this delicate cave ecosystem as illustrated in the excerpt of the article in figure one (page 10).

Approximately 300 caves are located within the Monongahela National Forest of which 16, including Bowden, have been designated significant caves under the Federal Cave Resource Protection Act.

The forest is committed to protecting the values that make these caves significant. Restricting access to the federal portion of Bowden Cave is challenging. Simply posting cave closure notices at the entrances to this popular cave have not been effective. Limiting access is compounded by the popularity of the cave, the cave’s proximity to a population hub, and the main entrance’s location on private land.

The recreational demand for Bowden Cave continues to be high, and the public and cavers have asked the forest to consider reopening the federal portion of Bowden for recreational purposes. The forest is in the process of evaluating this request with information contributed by our cave committee. The forest’s cave committee is composed of experts on caves and cave biology from West Virginia Division of Natural Resources, United States Fish and Wildlife Service, Cave Research Foundation, West Virginia Speleological Society, U.S. Forest Service, and local grottos. This committee is helping us identify and develop processes to better manage our cave resources including Bowden Cave. ▪

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Field Notes:

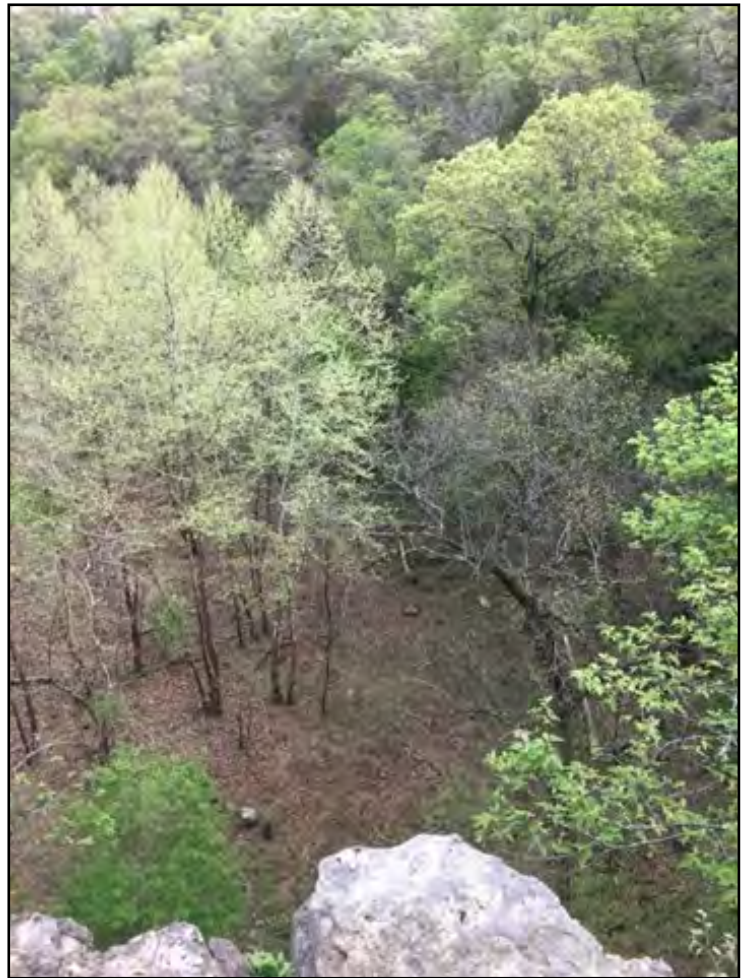
Onyx Cave, Ft. Stanton Cave, Royal John Cave

Onyx Cave, Mark Twain National Forest

The Mark Twain National Forest (MTNF), in Southern Missouri, bears the rich fruit of its extensive karst topography. It is host to more than 500 caves and an abundance of natural springs found in the area. The Ozarks, which covers a significant portion of southern Missouri are home to the world’s largest collection of “first magnitude” springs (those with over 65 million gallons of water daily flow). Almost 3,000 springs feed rivers and streams that flow year round. Many of these streams are so clear that ten feet of depth appears to be only one foot deep.

Greer Spring, the largest spring on the MTNF and the second largest in Missouri, is considered to be the most pristine and scenic in the state. Discharging an average of 222 million gallons of water per day, Greer Spring more than doubles the flow of the Eleven Point River. The importance of the water resource of the MTNF is exemplified by the designation of the Eleven Point Scenic River, one of the first Wild and Scenic Rivers in the nation. These natural features are a destination for many visitors to Missouri.

On Wednesday April 19, 2017 as part of an assistance trip to the MTNF, Sherri Thompson, Washington Office (WO) Leasables Assistant Director, Theresa Bodus, R9 Minerals and Geology Program (MG) Manager, Becky Bryan, MTNF MG Program Manager and Randy Rabideaux, WO Leasables group visited Slaughter Sink (pictured to the right), Conical Sink, and Onyx Cave (pictured to the right).



Top image: The crew standing at the entrance to Onyx Cave in Missouri, from left to right, Sherri Thompson, Becky Bryan and Theresa Bodus.

Bottom image: Slaughter sinkhole from hiking trail looking down into it.

Images: R. Rabideaux

(Field Notes continues on page 13)

(Field notes continued from page 12)

Slaughter Sink is one of the largest sinks in Missouri, formed when the roof of a cave collapsed thousands of years ago, is over ¼ mile long and 160 feet deep. Conical Sink, just a few hundred yards away, is much smaller, with steep sides resembling a cone. These sinks are part of a karst complex that include Onyx Cave and Boiling Springs that the MTNF acquired in 2005. Boiling Springs is the 9th largest spring in Missouri, discharging an average of 55 million gallons of water a day into the Gasconade River. Onyx Cave is a natural cave formed by flowing groundwater cutting through dolomite in an area where there many other caves, sinkholes and springs. Onyx cave has a huge entrance room and two other passageways. One of the passageways leads to an area that was mined for its very rich cave onyx. This translucent cave onyx, which is pure white in some areas, formed magnificent stalactites, stalagmites and columns. Over 7000 feet of passageway have been mapped in the Onyx Cave and some passageways are believed to connect to other caves. Onyx Cave was listed in the National Register of Historic places on May 24, 1999. - **Randy Rabideaux, Geologist, Minerals and Geology Management**

Ft. Stanton Cave Study Project, Lincoln National Forest

The Fort Stanton Cave Study Project (FSCSP) is among our most significant cave partners in R3, and being relatively new to the region I wanted to get to know their work and build a relationship with them. In addition, based on explorations thus far Ft. Stanton Cave is located beneath lands managed by the BLM Roswell Field Office and Lincoln National Forest in southern New Mexico, and given that the Lincoln's Cave Specialist position has been vacant for approximately a year the Forest Service is not currently collaborating as closely with FSCSP as has occurred in the past. Steve Peerman, the Project Director for FSCSP was kind enough to host

me for a day recently, and so I joined him for a day to get oriented to their ongoing work, get to know the local BLM Cave Specialist, and meet numerous members of the FSCSP team. During this visit we talked about the history of the project, ongoing priorities and challenges, visited a field team conducting surface resistivity work, visited a digging project on the Lincoln NF that has been placed on long-term hold due to internal capacity issues, and discussed strategies to try to improve our partnership with FSCSP in addition to our ability to work together given internal capacity limitations. I immensely enjoyed my visit with Mr. Peerman and was grateful for his taking the time to introduce me to the fantastic work that this organization is doing. -**Bjorn Fredrickson, Southwestern Region Cave and Karst Program Coordinator**

Royal John Cave and Mine, Gila National Forest

The main purpose of this field visit was to discuss groundwater issues surrounding the repository of tailings material from the Royal John Mine, with a secondary issue relating to significance designation and management of Royal John Cave. Groundwater concerns relate to potential lead contamination of groundwater in the area, the cave, and potential contamination of the spring and water sources for nearby property owners. Cave management issues include questions relating to whether or not the cave is significant, access of Forest Service and partners, the significant cave nomination process, cave impact/restoration, and cave management planning in the future. The group met in the Supervisor's Office of the Gila National Forest and out in the field at the Royal John mine site on March 21 and 22 2017. Many thanks to district ranger Diane Taliaferro and the staff of the Gila and to Bjorn Fredrickson from the Southwestern Region for a great visit. -**Johanna Kovarik, Caves and Karst Program Lead, Minerals and Geology Management** ▪



Identification and Characterization of the Montana Caver at Cave Camp in Monarch, Montana

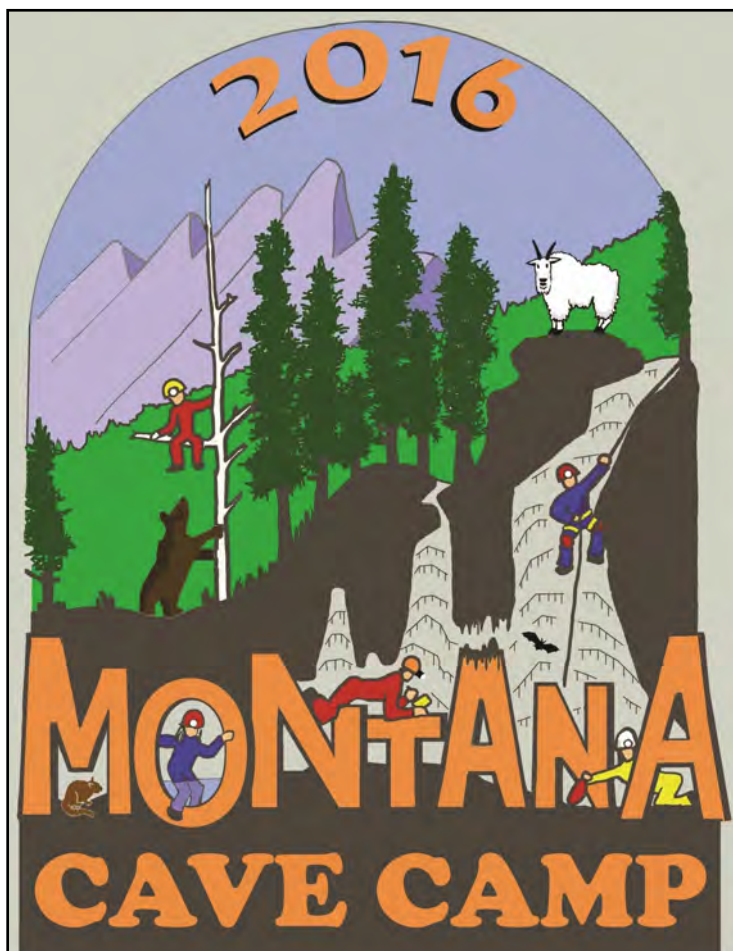
Kate Whittle

Northern Rocky Mountain Grotto

The goal of the inaugural Cave Camp, hosted by the Northern Rocky Mountain Grotto, was to bring together approximately 100 members of the caver community, primarily from Montana, as well as other assorted groups, such as Canadian cavers, Wyoming cavers, random non-cavers such as myself, a scattering of “spelunkers,” and a handful of seemingly apprehensive Californians. As a social scientist of highest order—i.e., I write for an alt weekly—I was invited by the NRMG to examine their strange way of life. (In the interest of full disclosure, I am related to the current vice-chair of the NRMG. Rest assured that I feel comfortable examining cavers as an outside observer, because I am afraid of heights, like a reasonable person.) It’s quite rare to find several cavers in one place, so Cave Camp offers ample opportunity to draw conclusions about their habits. Here follows some notes from a weekend of study, with some additional insights gleaned from previous studies of the caving population. For ease of reference, we’ll refer to Montana cavers—as well as those who strongly resemble Montana cavers, such as Wyoming cavers—as “M. Caver.” Canadians are Canadians.

Habitat

M. Caver is generally unchoosy about their dwelling space, so long as it’s adequately equipped with a warm sleeping bag and lots of high points to set up rope



The Cave Camp Logo from 2016.

climbs. In my personal experience, I’ve observed that most cavers’ personal quarters tend to closely resemble caves themselves. The head of NRMG, for instance, nests in a cozy, underground location festooned with camping gear and bat posters. I theorize this is to closely mimic the cave environment when not actually caving. At Cave Camp, the NRMG procured Camp Rotary, near the miniscule town of Monarch. Monarch can be found somewhere in the middle of Montana, i.e. “nowhere,” as most people would think of it. Monarch and nearby towns, such as Neihart, are all former mining boom towns from the late 1800s and early 19th century. They’re surrounded by Sluice Boxes State Park and Lewis and Clark National Forest.

(Cave Camp continued on page 15)



Nikki Green admires formations in Monarch Grade Cave.

Image: Will Boekel

(Cave Camp continued from page 14)

The area today is sparsely populated by local ranchers, and the landscape holds true to the Montana adage that we have more cows than people. More importantly for Cave Camp, Monarch provides a central location for more than 10 caves in and around Lewis and Clark Forest. The most notable of these is Lick Creek, a well-known and well-traveled cave. Several members of the M. Caver group arrived prior to Cave Camp to spend a morning cleaning up Lick Creek, as cavers prefer to preserve the natural ecology of caves as much as possible.

Physiology

M. Caver varies widely in physical characteristics, but a general disposition toward a surprising level of physical fitness is common. This applies to subadult cavers who were also present at Cave Camp, such as Max Maxell. Max, it should be noted, admirably demonstrated a commitment to conservation during an interview with a local TV news station. He also cried because there were no waffles at Sunday breakfast.

This seems like a reasonable thing to cry about, honestly. Cavers may resemble average humans, but are capable of shimmying up ropes in record times, as was made evident at the Speleolympics, a competitive event hosted at Camp Rotary. Cavers host Speleolympics in order to demonstrate their prowess at crawling quickly and carrying things. The Speleolympics kicked off on the first night of Cave Camp with qualifying rounds for a vertical rope climb, which I only really paid attention to when NRMG Vice Chair Ellen Whittle crushed the competition by climbing 100 feet of rope in four minutes, after eating a big dinner. Uh, I observed this scientifically. Other people won some medals, probably.

Inside or outside of a cave, M. Caver is seemingly impervious to the law of gravity. This was evidenced by Dan Siefert and Jordan Tole's presentation on geology, which they gave while standing on the edge of a cliff in Sluice Boxes State Park during a high wind.

(Cave Camp continued on page 16)

(Cave Camp continued from page 15)

Miraculously, neither fell off, though at least one onlooker was struck with alarming amounts of vertigo, which is definitely why I wandered off to take a selfie at one point. Other caving workshops ran the gamut of daunting pursuits, such as lessons in cave photography taught by Will Boekel, Mitch Brutger and Mike McEachern. Other cavers hosted workshops in such scientific pursuits as cave surveying with James Cummins or Hans Bodenhamer and his Big Fork High School cave club team. Special guests Andy and Bonny Armstrong—possible Canadians, though I am unsure—led a workshop in advanced vertical rescue, while Chris Rost, and Stephen Gladieux provided expertise in wilderness first aid and intro to aid climbing. The esteemed Mary Alice Chester, one of the more senior cavers in attendance, led a biology field hike into Sluice Box State Park along with Carrie Voss and Ms. Whittle.

Cavers don't seem perturbed by common illnesses, as evidenced by Carl Froslic's exuberant activities despite his head cold. Mr. Froslic led several events at Cave Camp, including the morning trumpet reville, which I cannot remember how to spell. Carl and Nikki Green also led the Intro to Vertical workshop on Saturday afternoon, where I spent 20 minutes trying to get into the climbing gear and three minutes climbing to the top of the rope. It was quite nifty and I highly recommend trying it sometime, even if you're not a member of any Caver species.

Modes of travel

Unlike eastern states, where legend holds that most caves are easy to drive to, getting to Montana caves is one of the most rugged activities the average person can imagine. M. Caver relies on four-by-four, high-clearance vehicles to advance as far into wild territory as possible, and then cavers don't hesitate to backpack, climb, snowshoe, ski, rappel, raft or hang-glide



Forest Service Northern Region Cave Coordinator Dan Seifert leads a geology field hike during afternoon workshops.
Image: K. Whittle

(probably) to get to a cave entrance. At Cave Camp, several campers gleefully recounted a summer expedition to Tears of the Turtle cave. Just getting there and back requires a 10-day trip, including 22 miles of backpacking and returning via the raging rapids of the North Fork of the Flathead. Nonetheless, cavers were proud to note that they pushed deeper into Tears of the Turtle this year. Tears of the Turtle is already the deepest cave in the United States, besides some piddly lava tubes in Hawaii, at a confirmed 1,629 feet.

Personal grooming and garments

Cotton t-shirts referencing other caving events and outdoor pursuits are popular among M. Caver. A group of Canadian cavers from Alberta brought along a variety of schwag indicating an inscrutable sense of humor, including a t-shirt that had a banana on it for no reason.

In general, Cavers' wardrobe tends toward practical layers made of various space-age fabrics, most of which was once in good shape but has since been ripped, soaked, slightly burnt or otherwise damaged by the exuberant caver lifestyle.

(Cave Camp continued on page 17)

(Cave Camp continued from page 16)



Forest Service Northern Region Cave Coordinator Dan Seifert climbs rope during the vertical competition of Speleolympics. Image: K. Whittle

A caver might need to snowshoe up a mountain, descend into an ice cave, wade through pools of water and hike through 80-degree weather. Sometimes all at once, because this is Montana we're talking about. As far as personal grooming, M. Caver tends toward the more minimal requirements of hygiene, since it's pretty dark in caves usually anyway, amirite? The most sincere cavers are, however, keen to follow proper decontamination of clothing and gear to prevent the spread of White Nose Syndrome, a fungus that's killed millions of bats. Cave Camp's educational activities inside the lodge on Saturday morning included a charming instructional video on decon procedure, followed by a demonstration outside. Cave Camp Chair Ian Chechet recommends using a turkey fryer (sans turkey) to boil enough water to submerge gear in, or just heating up enough water to fill a big plastic tub. He also recommends that nobody steal his turkey fryer. This was the source of brief angst before he located the missing device.

Dietary preferences

M. Caver is omnivorous. When inside a cave, M. Caver is keen to be conservative with meals and hydration, since it's tricky to use the restroom inside a cave. This was made evident by Ellen Whittle's demonstration of

how to urinate and defecate inside of a cave during a presentation on the second day of camp on Saturday morning. Her live-action demo, involving creative use of a chocolate pudding cup, was quite memorable. Once the day's caving is done, M. Caver demonstrates a voracious appetite for starchy cowboy-type food.

Concluding remarks

Much about M. Caver remains poorly understood, and more study is needed. Putting on Cave Camp was an enormous undertaking for NRMG, since they secured a campgrounds, lodging, meals, beer and activities for more than 100 people during a single weekend, which is an impressive feat. Nonetheless, NRMG is planning to host another Cave Camp next year, perhaps with slightly altered schedules or entrance fees. Here's to another year of caving adventures. ▀

Infra Caves Module Modernization

Cyndee Maki

Washington Office Heritage, Recreation, Volunteer Resources

The NRM Caves application is undergoing modernization to a newer software environment. Integration with geospatial functionality and a more modern look and feel are two of the main benefits to this update. The initial phase will port the existing data requirements to the new interface, along with additional fields for reporting nominated caves.

Opportunities for further refinements will exist after the initial standup of the modernized application. We anticipate there will be an option for initial data migration using a standardized format to help facilitate moving local records to the centralized database. ▀