

# THE MSS LIAISON

## VOLUME 61 NUMBER 3-4

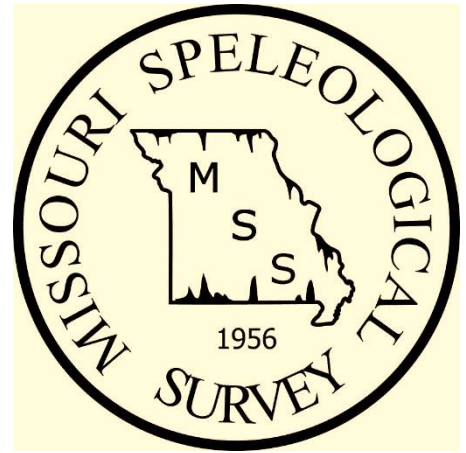
March – April 2021

### AFFILIATE ORGANIZATIONS:

CAIRN – CCC – CHOUTEAU – DAEDALUS – KCG – LEG – LOG – MCKC – MMV – MSM – MVG – OHG – PEG – RBX – SEMO – SPG.

Distributed free on the MSS website: <http://www.mospeleo.org/>

Subscription rate for paper copies is \$10.00 per year. Send check or money order made out to the Missouri Speleological Survey to the Editor, Gary Zumwalt, 1681 State Route D, Lohman, MO 65053. Telephone: 573-782-3560.



# Missouri Speleological Survey

## Spring Meeting 2021

The spring 2021 MSS Meeting will be held at Lake Ozark State Park the weekend of June 4-6. The weekend will center around a project to resurvey Ozark Caverns CAM-002, a tour cave operated by the state park.

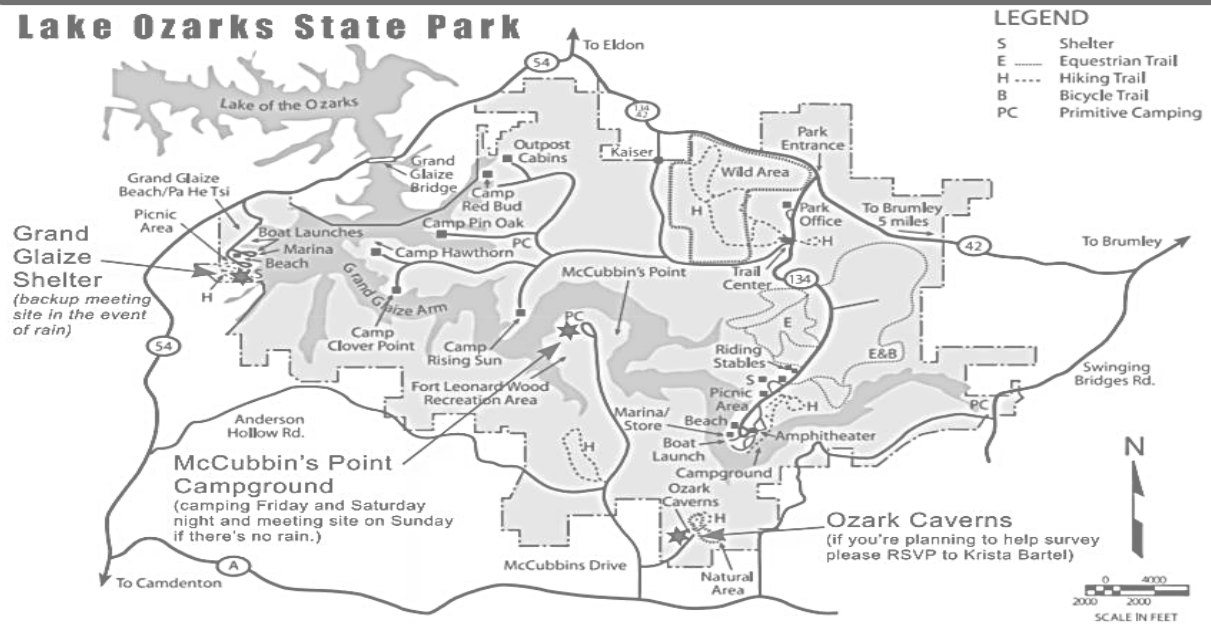
The MSS has 5 campsites reserved for us at McCubbins campground for Friday and Saturday nights, June 4 and 5. We also have the Grand Glaize shelter reserved for Sunday June 6 as a backup meeting site in case of rain.

The plan is to survey in Ozark Caverns on Saturday and have the MSS Board Meeting on Sunday at 10:00 AM in the McCubbins campground. If it is raining on Sunday morning we may move to the Grand Glaize Shelter. If we've moved sites there will be a sign at the junction of Hwy 54 and Hwy A that states "MSS at Grand Glaize" Otherwise, we'll see you all at the McCubbins campground.

Dinner will be provided on Saturday night for those who RSVP to Krista Bartel - [kbartel1088@gmail.com](mailto:kbartel1088@gmail.com)  
If you have questions about the mapping contact Scott House - [scott\\_house@hotmail.com](mailto:scott_house@hotmail.com)



Formations in Ozark Caverns. Source: MSS digital archive



## Identifying Cave Life: Part 7 – Arachnids

This is another installment in an occasional series to help those doing cave monitoring, or who are just interested in knowing what they are looking at. As always for invertebrates, a small hand lens will assist greatly when you are looking at these critters.

Last time we looked at some of the spiders inhabiting our caves; this time let's take a look at the spiders' arachnid cousins – the harvestmen, mites, ticks and pseudoscorpions. As for all arachnids, these have in common a one- or two-part body (no clear division of the head and thorax) and eight legs – except not always! A lot of the mites you see will be juveniles, and in most species these have only six legs – but you will need a decent hand lens and a steady hand to be able to count the legs on such a small speck.



*Leibunum flavescens*

Harvestmen, also known as opilionids or more colloquially daddy long-legs are familiar sights and fairly easy to identify, at least as an order. As noted last time, they are easily distinguished from spiders by their one-part body – it's just a single spherical blob, not clearly divided into the two parts seen in all spiders. What you'll notice first though are the ridiculously long legs, seemingly way out of proportion to the small orange colored body.

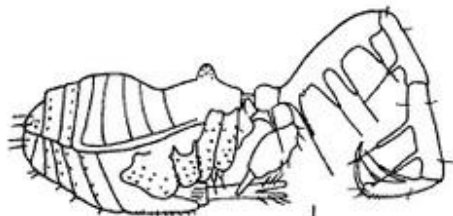
Species of *Leibunum* often hang out in entrance areas, usually on the ceiling. In Missouri they are usually seen in small numbers but in warmer climes, Texas for example, they can completely cover a ceiling with an oscillating mass of legs and bodies. This has been known to freak some



**A close up of the *Leibunum* body shows the tiny eyes perched in a black tubercle on top.**

people out, especially if the ceiling is low! But harvestmen are of course, harmless, though you probably still wouldn't want one to get down your coveralls.

While harvestmen are by and large predators of small invertebrates, unlike other arachnids some species also get food from scavenging or even from vegetable matter such as lichen or rotting fungi. One species reported from St. Louis County caves is known to prey on earthworms, but the exact dietary requirements of different species is not at all well known.



**Generalized cave adapted harvestman – note the very long mouthparts (palpi). Legs omitted for clarity.**

You won't find these typical harvestmen much beyond the entrance, but we also have at least three cave adapted species, much less frequently seen. Taney County seems to be a hot-bed for these creatures; two of them, *Crosbeyella spinturnix* and *Erebomaster* sp. have been reported mainly from that county. *Crosbeyella* also extends into Arkansas. The third species, *Sabocon cavicolens*, has turned up only in caves of the Lower Ozarks – Shannon and Oregon Counties. Although the legs on these species are much shorter than those of the *Leibunum*

daddy long-legs, they are longer and more slender than those of their nearest surface relatives. The bodies look similar except that the jaws are much more prominent, the color is generally paler, and the eye spots may be unpigmented or rudimentary.

Pseudoscorpions are another group of arachnids you may come across, but only if you are looking closely! These creatures with their prominent pinchers resemble tiny tail-less scorpions. Like most arachnids, they are venomous, carrying venom-injecting teeth at the tips of those pinchers. Unlike the harvestmen, the cephalothorax (head plus thorax) and the abdomen are clearly distinguished. The commonest species by far is *Hesperochernes occidentalis*, a relatively robust species. You will find them in areas with high levels of organic material which attracts the small invertebrates such as springtails and mites that the pseudoscorpion preys upon, often hiding under rocks. They are fairly common in fresh bat guano piles, where prey is abundant.



We also have several less common species from a different family (Cthoniidae) showing a higher degree of cave adaptation – a somewhat more slender body, paler color and relatively longer appendages, especially the pinchers. *Apochthonius* sp. are widespread, while *Mundochthonius* are known only from only two Missouri caves, one in Lincoln County, the other in Oregon County. The Oregon County cave is the only known site for the species, and despite several follow up visits, has only been seen once.

*Hesperochernes* left, cave adapted *Cthoniid* right.

Finally, there are the mites, and here we have a real identification problem. Mites are very diverse and tough to identify, and available taxonomists working with this group are thinly scattered. Mites are commonest in bat guano piles, where they can reach astronomical numbers. These guano mites are tiny, generally globular, slow moving and colored deep brown. Species at all levels of the food chain exist – guano eaters, fungi eaters and predators. One group is fairly easy to identify, though not to species level – these are the oribatids, or beetle mites, so called because they resemble tiny, shiny black beetles, though they are much



*Robustocheles* - actual size about 1.5mm.

smaller than any cave beetle you will come across. Another mite you can be pretty confident of is very unlike the slow-moving mites of the guano habitat – you will see these tiny white creatures running around rapidly and ceaselessly on floors where there is a fair amount of organic debris. They are often mistaken for tiny cave spiders. Cave biologist Tom Poulson's name for these is crazy-legs mites, and the name fits. More formally, our common species is *Robustocheles hillii*, but there may well be a hidden diversity, which will need some serious taxonomic work to sort out. So, if you are looking for a lifetime of work in cave arachnid systematics, there is no shortage of work to be done with the mites (though maybe a shortage of funding!) --Mick Sutton

**Missouri Speleological Survey Files Report for May 1, 2021.** If you have **new information** on any Missouri caves, my email address is **slagrush@gmail.com** . We need your help to improve the database and make it more complete. I can and do work with Facebook entries, but for information or photos to be incorporated I need to be “private messaged” with the cave name and county. **Kirsten Alvey-Mudd sent:** -With an assist from Shawn Williams, 2 new caves for Washington Co.: Steffie and Pics Last Call Caves. Alvey-Mudd included GPS, some directions, descriptions and almost 20 faunal records. -About 30 photos and 20 faunal records for 3 Stone Co. caves: Fossil Spring, Maples and Ailshie Caves. -30 photos and 8 Faunal Records for Belle Star and Cathedral Caves in Stone Co. -A report on a new cave in Stone Co., called Lost Fox Cave. Along with the report she sent 10 photos and 5 Faunal Records for the database. -2 new caves in Washington Co.: Pic’s Last Call and Steffie Caves. Kirsten included about 15 photos and 15 Faunal Records. -About 15 photos, 33 Faunal Records, brief descriptions and reports on 4 caves on County Line Cave in Washington Co., and Dawes, Hornet and Woods Caves in Crawford Co. Four of the photos became “cover” photos for the database. -A collection of cave reports along one bluff in Pulaski Co. with 30 photos (1 video), 30 Faunal Records and GPS locations for: Roam #1 and #2, Roam Bluff, and 3 new caves, Roam Waterfall, Just A Hole and Island Perch Caves. She also sent some earlier vintage photos for 2 other caves farther down the bluff from Roam. Clusters of caves are generally a lot more difficult to straighten out, without good GPS and some statement of the sequence of caves; Kirsten cleared a lot of confusion on this bluff. -Sent Faunal Records for a number of caves in the northeast of the state: Frankford (10 records) and Fisher (8) Caves, Pike and Ralls Counties, respectively. -As a summary for Alvey-Mudd, over 500 faunal records for 2021, including trips with CRF, so far. **Jon Beard sent:** -4 photos of White Oak Onyx Cave in Barry Co., soon to be seen in an upcoming MoSpeleo issue. He also confirmed the existing GPS location. **Matt Beeson sent:** -New map of Lost Lake Cave (CL=170), a remap of the previous “100 ft” long cave, first surveyed in 1974 in Ozark Co. **Martin Carmichael sent:** -A 39-page photo-report on Railroad Cave in Pulaski Co. A nice report with 6 Faunal Records were among the 30 plus photos and map-segment references. He also forwarded a copy of some small passage reported by another caver on the trip (see Zaloz below). -A 3-page return on a trip to Kiesewetter Cave in Pulaski Co. A second perspective was provided by Kohl Mitchell on the same trip. **Shelly Colatskie sent:** -4 pictures of Little Scott Cave via Facebook and without identification publicly. **Spike Crews sent:** -Information for a new cave in Oregon Co.: Spring Creek Cemetery Cave. **Ken Grush sent:** -37 “missed” records from J Harlen’s Bretz’s Caves of Missouri. In part of capturing all of the filed cave reports in the St. Louis Cave Files, I also wanted to add all of Bretz’s cave reports. Since 2014, 447 of Bretz’s cave reports have been added to the database; this last 37 “seems” to make it complete. There is a bit of conflict here though, in that, Vineyard reported that there were only 437 caves reported by Bretz. I believe the difference lies in the “multiple” caves under one name in Bretz. -I’ve been auditing Jefferson Co. records; I’m comparing LIDAR imagery with our locations and found lots of JeffCo pits that are related to LIDAR anomalies. There are many small corrections being made along the way. **Scott House sent:** -Over 260 modifications to the main table like updating ownership, entrance elevations, dimensions, directions, alternate formats for “point sets” (mostly from GPS locations in different formats, district/unit designations for agency work, survey data, etc. He made these modifications while working in the operative database. Almost a third were in Shannon Co., where updates to directions, comments on name, first reporter and cultural were made. -3 new Faunal Records and 2 Use Monitoring “imports” to the database for Nature Trail and Owls Bluff Caves in Ozark Co. **Gary Johnson sent:** -4 new caves for a conservation area out in Hickory Co., including photos, locations, descriptions of the new caves. He quickly followed up with a new map of “MS” Tunnel Cave (CL=69) and MS Bend Cave (CL=69). **Mark Jones sent:** -via Scott House, 108 Faunal Records, 30 Monitoring Reports (for 30 caves) and 32 reports representing work done while at Winona working for the 2 agencies, MTNF and ONSR. **Ed Klausner sent:** -3 cave maps for 2 new caves and Hidden Nest Cave (25=CL); Latrine (90=CL) and Besmer (220=CL) Caves are the 2 new ones. **Dan Lamping Sent:** -A Report and a Faunal Record for the database for Shady Valley Cave in St. Louis Co. **Joe Light sent:** -All the data (GPS, brief directions and description) for a new cave in St. Louis Co.: Tragus Cave. And included a report on nearby

Phoebe Cave, along with 6 photos. With the density of caves in Mo., it is always important to at least recognize nearby caves. This information confirms that a new cave is indeed a new cave and not a misplaced older cave record. -Four “old” articles from the newspaper on Onondaga, Meramec, Cliff and Rankin Caves. The last 2 are from St. Louis Co. -A photo collection, report and (city of) Manchester’s “welcome packet” information on Manchester Cave in St. Louis. It is in Seibert Park in that city! **Alex Litsch sent:** -3 Faunal Records and a brief report of Salamander Cave in Jefferson Co. **Ben Miller sent:** -Eight new caves, 4 in Stone and 4 in Taney Co.: Cashew Chicken Breezeway, Tip of the Ridge Resurgence, Linchpin and Acorn Abyss Caves in Stone; Dead Dill, Moonshine Fall, Moonshiner Mansion and Bluff Top Caves in Taney. **Pam Saberton sent:** -Several reports on Perry County projects including: highway alignment, Stan Side’s cave log of Berome Moore exploration, and Tex Yokum’s reports on Crevice, Lost and Harrington Caves. Much more stuff to transcribe before it goes into database, for now the archives. **Mick Sutton sent:** -37 fauna records, about 2/3 were older, “historical” records but the other third was records over the past 2 months. **Shannon Zaloz sent:** -A very nice detailed report of the “small person passage” of Railroad Cave in Pulaski Co. The 1964 map doesn’t seem to cover this narrow passage with 2 rooms! (see Carmichael above, same trip)—Ken Grush

**Springfield Plateau Grotto (SPG). Mar. 3<sup>rd</sup>**—Jon Beard accompanied MDC biologists Rhonda Rimer and Dillon Freiburger in faunal monitoring of three MDC caves in Hickory Co. that were very different in character despite being so close. First cave was Murphy Cave, a short cave entered from a sink that still had snow in it. The second cave was entered by way of a 20-ft.-deep pit, Ladder Cave. It was about 100 ft. long, consisting of mostly a tall, winding, very narrow canyon. The third cave was Vanderman Cave, over 1,100 ft. long, consisting of a low watercrawl virtually its entire lower level. An awkward climb upward led to a few hundred feet of dry upper level, apparently very popular with the raccoon community. Fauna was compiled and recorded. Several photos were taken of the caves developed in the Burlington Formation. **Mar. 9<sup>th</sup>**—Jon Beard and Doug Baker joined Ben and Katie Miller, Bob Lerch and Aaron Soles in a mop-up survey trip to Doghouse Cave (Stone Co), a 3,500-ft. cave developed in the Compton/Northview/ Pierson and Reeds Spring Formations (primarily Compton and Pierson). Additional ceiling heights, cross sections and lithology were added to the map being drafted by Ben. Jon also compiled and recorded the fauna seen along the way that included 13 pips, two species of salamanders and pickerel frogs. **Mar. 11<sup>th</sup>**—Jon Beard accompanied Mark Jones of the CRF in studying the entrance environs of Low Water Bridge Cave (Greene Co) for a flyover cave gate. The most ideal place was found about 50 ft. inside the dripline where the ceiling was 12 ft. high. A few photos and some measurements were taken. **Mar. 28<sup>th</sup> & 31<sup>st</sup>**—At the invitation of the landowners, Jon Beard began the resurvey of the closely adjacent cave features in Greene Co. that include Stonebridge, Natural Bridge Cave #1, #2 and Natural Bridge Spring Cave. At the end of the second day, surface environs, the bridge and #1 were mapped. The owners have excavated the entrance areas as part of a karst education site in the works. **Apr. 2<sup>nd</sup>**—Jon Beard continued the survey of the cluster of small caves in western Greene Co. Cross sections of Stonebridge and Natural Bridge Cave #1 were sketched before the survey of Natural Bridge Cave #2 was begun, including a 60-ft. wide low room that required a number of splay shots. Remaining to be mapped is a low, narrow passage that was omitted on the original survey in 1973. **Apr. 9<sup>th</sup>**— Matt Beeson finished mapping Lost Lake Cave in Ozark Co. **Apr. 10<sup>th</sup>**— Matt Beeson helped map Crooked Branch Cave in Ozark Co. **Apr. 13<sup>th</sup>**—Trenton Wells and Jon Beard rejoined two stalactites in Paul’s Gallery of Fitzpatrick Cave (Christian Co). Holes were drilled, threaded pins and epoxy adhesive were used to rejoin the pieces to their rightful places, propped by tripods until the adhesive sets. Jon also acted as tour guide to acquaint Trenton with the cave. This was Trenton’s first SPG cave trip. **Apr. 16<sup>th</sup>**—Trenton and Jon returned to Fitzpatrick Cave (Christian Co) to remove the tripods and perform some touch up on one of the repairs. Biota noted in these trips included four pips, four cave salamanders, two bristly cave crayfish, three juvenile western slimy salamanders, one grotto salamander, two webworms, one adult fungus gnat, one spelobia, seven pickerel frogs and lots of camel crickets and mosquitoes. **Apr. 17<sup>th</sup>**—Matt Bumgardner and Jon Beard conducted a CRF assignment to monitor and photograph White Oak Onyx Cave (Barry Co) in Mark Twain National Forest. On the way, they checked LiDAR leads, which turned out to be sinks, but no entrances to caves. Jon recorded biota seen while

Matt concentrated on photographs. The lower-level side passage was free of water. Organic debris high on the walls showed that after major rain events, the cave can pond up to 20 ft. deep. Afterwards, they checked more LiDAR leads, but again, only sinks. **Apr. 24th**--Jon Beard, Matt Bumgardener and Trenton Wells continued the survey of a lengthy narrow, low crawlway side passage in Natural Bridge Cave #2 (Greene Co.). After a profile of the entrance room, Trenton and Jon surveyed the crawlway partway, while Matt did some photography. Fauna was noted. **Apr. 29th**---Jon Beard, Matt Bumgardener and Max White began the process of repairing and making operational, the siphon system to Garrison Cave #2 (Christian Co) in preparation of a future trip. The work will continue in early May. --Materials provided by Jonathan B. Beard and Matt Beeson, Report by Max White.

**Lake Ozarks Grotto (LOG). Apr. 11<sup>th</sup>** – Ken Long, Klaus Leidenfrost, along with MST students, Elizabeth Sutherlin, Samantha and one other worked on top at Goodwin. He estimated 10-12 gallons of water coming over the waterfall from all the rain. They burned brush piles, did some mowing and weedeating. **Apr. 13<sup>th</sup>** – We had our first meeting since Nov. 2019! Although we were short 3 members, Kerry Rowland, Bill Pfantz & Dwight Weaver, it was good to get back on track. Our meetings are the 2<sup>nd</sup> Tuesday of the month at 7 pm in the meeting room at Stark Caverns. Grotto patches were given out that were compliments of long-time caver, Richard Raber, from Effingham, Illinois. We also gave out more 50<sup>th</sup> Anniversary koozies. —Alberta Zumwalt

**Kansas City Area Grotto (KCAG). Jan. 18<sup>th</sup>** - Shawn Williams, a KCAG member, Kirsten Alvey-Mudd and Missouri Bat Census Winter Intern Jill Lewis monitored four caves in Shannon County's Holmes Hollow, on L.A.D. Foundation property, under a Cave Research Foundation (CRF) permit. Ralph Cave (SHN-123) and much of the trail leading to this area had major evidence of wild hog activity, including tracks, scat and mud churned with track ruts, plus fox or coyote scat as well. Also present was extensive human littering. Word of the wild hog activity was forwarded to the proper entities for abatement consideration. George Cave (SHN-114) was small but heavily decorated. Biota included one tricolor bat and the obligatory gnats and mosquitos. No evidence of human visitation was noted. The Cookstove Cave (SHN-018) lock was checked, and was confirmed to be intact. As bats have been seen just inside the gate on previous visits, only one person quietly approached the gate to check the lock, in order to minimize any potential disturbance. Several pieces of old litter were removed from the entrance slope. Holmes Hollow Cave (SHN-039), protected by its magnificent gate, had seen no breaches of the gate and little evidence of visitation on the outside. Biota on this trip included three big brown and one tricolor bat, nine cave salamanders, 14 dark sided salamanders, one pickerel frog, cave crickets, gnats and helemomyzid flies. Some human disturbance was noted, in the form of small remnants of old trash and one shotgun shell just inside the gate. Also of note was the discovery of more passage, after Alvey-Mudd and Lewis pushed the watercrawl off of the "A Find's A Find" Room. The watercrawl itself was between 25-50 ft. long, with borehole reportedly continuing. Kirsten and Jill did not reach the end of the passage. A mapping trip is planned for the summer whenever Ben Miller can come from Tennessee to continue what he thought was a finished map. Videos of the two-to-three-inch airspace in this water passage are posted on the Missouri Bat Census Facebook page along with many photos of this trip. All three folks on the trip had trouble getting the lock secured, but finally did. It was just above freezing when the team exited the cave. They changed out of their wet gear and made the long journey back to the Winona Ranger Station with no heat in the truck. Their consensus was to never, ever do that again! Gary Johnson is the long-running project leader for KCAG's Hickory Co. project, which to date has resulted in increasing the number of known caves in Hickory Co. in the MSS database from 21 to 62. **Feb. 28<sup>th</sup>** - Johnson and Seth Colston visited the Mule Shoe Conservation Area in Hickory Co., and discovered several openings in a large bluff along the Little Niangua River. Johnson subsequently contacted the MO Dept. of Conservation (MDC), the landowner, and operating under a Cave Research Foundation (CRF) permit, got permission to visit these entrances to see if they were really caves, and if so, to survey them. **Mar. 21<sup>st</sup>** - Bill Gee led a restoration trip into Carroll Cave, consisting of Seth Colston, Kristen Godfrey, Nathan Taylor, Rita Worden, and Grace Welch.

Time in was 8:45 a.m., time out was 12:30 p.m. This trip was a prime example of how goals and plans can change even at the last minute. The original plan had been to run a biological survey and rescue cache service trip to far Upper Thunder River. But when they all got in the cave on the day before this trip, they found that the water level in Thunder River was about a foot higher than normal. That would have made a long upstream trip very difficult. As a result, plans changed Saturday night! The resulting trip was completely different. For the revised trip they established three goals. One was to clean up (finally!) the carbide dumps in the Rimstone Room. Second was to rebuild the rock wall that marks the trail around the Giant formation. Third was to perform some testing of the cave intrusion detectors by placing them in various hiding spots and seeing if they would pick up passing cavers. All of these objectives were met. Cave intrusion detectors were (temporarily) placed in several places around the ladder (these were a “next release” version of the detector that failed.) These detectors could detect the rope light on the ladder if pointed directly at it. The rope light is very dim, so putting the detector in a hiding hole caused it to not trigger. They found a place under a rock next to the trail that leads to Carroll Passage. Testing showed that the detector will trigger on passing caver lights and yet is well hidden. A few more hiding holes were tested a bit further down Carroll Passage to the formations near the shortcut over to Thunder Falls. The detector would trigger reliably even when in a hole or behind a rock. Gee reported that it would have been nice to have a longer trip, but the stream level in Thunder River was just too high. **Mar. 29<sup>th</sup>** - Jim Cooley and Julie Cottrell led three biologists from the U.S. Army Corps of Engineers in a visit to a gray bat cave in Ozark Co. An intrusion detector left in the fall was retrieved, which later it was determined had failed, probably due to moisture in the enclosure. The cave showed definite signs of recent human intrusion, however. The intention had been to continue a cartographic survey, but the bats had already returned to the cave, making this impossible. **Mar. 30<sup>th</sup>** - Bill Gee led a trip consisting of Hou Zhong, Seth Colston, Kristen Godfrey, and Nathan Taylor to service a bat roost data logger on the Mountain Room in Carroll Cave. The main goal of this trip was to retrieve the memory card for analysis, and install new batteries. The bat roost logger is made by Titley Scientific. The product web site is <https://www.titley-scientific.com/us/the-anabatr-roost-logger.html>. Vona Kuczynska of the U.S. Fish and Wildlife Service was kind enough to loan this unit to the Carroll Cave Conservancy. For this trip, they used the Turnpike both ways. The team also added some stuff to the Mountain Room rescue cache and searched for evidence of bats in an upper-level passage opening into the Mountain Room. The passage checked above the Mountain Room does not host any significant population of bats. **Mar. 27<sup>th</sup> thru 29<sup>th</sup>** - Jim Cooley and Julie Cottrell led a trip consisting of Seth Colston, Ginny Friedrich, and Matthew Miguel Hernandez (Phase 1) to ridgeward and to survey caves on a large private ranch and on the MDC Sunlands Conservation Area in Shannon Co. Two new caves were discovered, and significant survey was done well back in one large (long) cave and in an MDC cave, and another MDC cave map was checked in the field prior to submission. Friedrich and Hernandez returned home on the 29<sup>th</sup>, but Phase 2 began with the addition of Bill Gee and Becky Nelson to the team. **Mar. 29<sup>th</sup>**



***The Long Lost, Much Sought-After “Pit” Cave Entrance***

**thru Apr. 1<sup>st</sup>** - Two more caves were discovered, including an obscure pit cave that the ranch owners knew about but could not find, that we had searched for twice previously. In addition, the long cave previously mentioned was surveyed again, and a survey was started in another long cave that houses a gray bat colony. More survey work was also done in the previously mentioned MDC cave. The trip had to be cut short a day early when one of the participants contracted cellulitis, which resulted in a three-day hospitalization on return to Kansas City. **Apr. 11<sup>th</sup>** - Gary Johnson led a team consisting of Bill Gee, Seth Colston, and Kristin Godfrey back

to the Mule Shoe Conservation Area with vertical gear, as several of the openings discovered Feb. 28<sup>th</sup> (i.e., potential caves) required rope for access. Thirteen cavities were investigated, four of which were long enough to qualify as new caves and be entered into the MSS cave database. We are proud to welcome Mule Shoe Bend Cave (HKY-059), Mule Shoe Tunnel Cave (HKY-060), Mule Shoe Spring Cave (HKY-061), and Mule Shoe Rimstone Cave (HKY-062) to the happy and ever-growing family of Missouri caves recognized by the MSS. The largest two of these caves were about 70 ft. long. Two of the new caves were surveyed; a return trip will get the other two. As the trip was ending and the vertical work wrapped up, one member of the vertical team dislocated a patella (knee cap) while coming over the lip at the top of a 100-ft.-tall bluff face. The climber was fortunately able to be extracted from the bluff face in much pain but with no great difficulty. Amazingly



*Measuring a Cave for a Gate*

enough, Johnson had cell service, and was able to access a website on his cell phone that gave step-by-step instructions on how to reduce a patellar dislocation. These directions were applied in the field straight off the website, right there at the top of the bluff, again with much pain to the injured party. But the dislocation was successfully reduced. The injured party was subsequently able to rather painfully self-rescue (walk out) with assistance, avoiding what would have been a litter extraction through about one mile of woods. (FYI, a dislocated patella effectively renders you non-ambulatory.) **Apr. 25<sup>th</sup>** - Jim Cooley and Julie Cottrell went to Onyx Cave in Barry Co., to measure two of the three entrances for a cave gate. While in the

neighborhood, we also checked the three gates & enclosures at Radium Cave, which were intact. The following day, we visited another Barry Co. cave, where we found lots of evidence of human intrusion, trash, and archeological looting. This cave, too, was assessed and measured for a gate, the purpose of which will be to prevent further pilfering of archeological artifacts.--Jim Cooley

**June 4<sup>th</sup> – 6<sup>th</sup>** – MSS weekend at Lake Ozark State park. The Spring meeting will be on Sunday, the 6<sup>th</sup>, 10 am.

**MSS Affiliate fees were due in January.** Organizations still owing the fee: MSM, MVG & Roubideau. Please send check or money order for \$25.00 to: MSS Treasurer, Don Dunham, 147 Ron de Lee, Arnold, MO 63010.