USA

July 8-10, 2022—Karst-O-Rama at Great Saltpetre Cave Preserve, Mt. Vernon, Kentucky. Great cave trips and camping, vendors, and a live band with a costume party pair well with our sauna, hot tub, creek splashing, and, of course, feeding your thirst at the Guano Grill for three days of downright speleo-fun! This year’s theme is “Down the Rabbit Hole”. KOR is hosted by the Greater Cincinnati Grotto with pre-registration discounts and info available soon! For more information, see our website at: karstorama.com


September 1-5, 2022—CaveFest. Sewanee Mountain Grotto is hosting their annual auction and party in the heart of TAG over Labor Day weekend. There will be the auction, led cave trips, bat flight float trips, music, dancing, homebrew (available ALL weekend with the purchase of a $10 mug) and a potluck dinner. Please bring a side dish for the potluck if you wish to participate. SMG will provide the meat. Caver’s Paradise Campground amenities include: Bath house with hot showers, volleyball court, dish washing station, RV hook ups, hot tub and a sauna... And not to mention thousands of caves within an hour drive or less. Please refer to the Caver’s Paradise website (http://www.caversparadise.com/) for directions. There is no registration fee but the campground does charge a $10.00 camping fee for the entire weekend and RV hookups are available for an additional $25.00. All of the proceeds from our event go back into the caving community!


INTERNATIONAL


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

Right: Pristine flowstones in Scorpion Cave, northern California, protected by remoteness and an in-cave drop. Photo by Dave Bunnell.
Recent Cave Explorations in the Klamath Mountains, California 1

Joel Despain, Heather Veerkamp and Niles Lathrop

Memorial: Rane L. Curl, former NSS President, and his quest to understand caves .................................................. 22

by his family, friends, and collaborators

You may have noticed a lot of content coming from me in the last issue and this one, out of necessity as NSS News submissions are at an all time low. If you’ve been considering writing up your projects, now is a good time to get your material into the News quickly. As it stands right now there is only one shorter feature on hand for the August issue.

I’d also like to announce that sometime this Fall I hope to retire from the editorship of the NSS News. My first issue was August 1996 so I have been at it for 26 years. When I took over there was virtually no content for me to work with, so I wrote the main feature for that issue, concerning my diving 3 lakes in Lechuguilla Cave. It was something I’d been intending to submit anyway, and then I did what any successful editor must do, solicit articles, in my case two of them, including a companion piece on note submitted features and photos? Please see the style and submission guidelines on the NSS website:

https://caves.org/pub/nssnews/style.shtml

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Recent Cave Explorations in the Klamath Mountains, California
Joel Despain, Heather Veerkamp, and Niles Lathrop

Introduction

The Klamath Mountains of northwest California and southwest Oregon are 10,000 square miles of largely marine rocks. While shale, sandstone, quartzite, schist and the like predominate, hundreds of outcrops of limestone and marble occur here. The best known caves are Oregon Caves National Monument, Lake Shasta Caverns show cave, and one of the great caving regions of the western US, the Marble Mountains. The Marbles is home to dozens of caves including 16 mile long Bigfoot. Cavers have long explored and mapped the caves of the region including decades of work by the Klamath Mountains Conservation Task Force (KMCTF) in the Marbles and around the Klamaths. Also here is the Shasta Area Grotto (SAG) that has mapped hundreds of caves across the region including vast numbers of lava tubes.

Essentially all caves of the region that are not accessed by deep pits, digs or other significant obstacles were first visited by Native Americans. Indications of their presence are common in the caves, and they were clearly the first cave explorers here. We work hard to both document what we find and to leave it entirely undisturbed. Today Native American nations continue to hold many caves in the region to be of great importance for cultural, historical and religious reasons.

The Klamaths are composed of numerous ranges including the Siskiyou, Trinity Alps, Scott Bar, Marble and other mountains. Mountains reach a height of approximately 9000 feet in several of these ranges. Many caves are known, including 16 mile long Bigfoot. Cavers have long explored and mapped the caves of the region including decades of work by the Klamath Mountains Conservation Task Force (KMCTF) in the Marbles and around the Klamaths. Also here is the Shasta Area Grotto (SAG) that has mapped hundreds of caves across the region including vast numbers of lava tubes.

Our project in the Klamath Mountains began slowly and somewhat accidentally when Joel Despain and Heather Veerkamp moved to the area ten years ago and accelerated when Niles Lathrop began doing more caving in the region four years ago. Many, many other people have jumped in to help, too. Anna Chinchilli, Spencer Haggard, Lynn Van Erden, Kip Bauman, Liam Tobin, Brad Ellis, Mark Fritzke, Forest Despain and Dick LaForge have been some of the regulars. Our focus has been on the McCloud and Hesselskauz limestones of Shasta County and also on the many caving areas scattered across the greater Klamath Mountains. Our project includes lots of time ridgewalking, cave mapping, photo documentation, geologic assessments and investigation, inventory in a few caves and photographing cave invertebrates for examination and classification by the cave bug experts.

As of this year we have become better organized and are now working as a project of the Cave Research Foundation. To date we have extended the surveyed length of several caves and discovered more than two dozen new caves, although most of these are small. Our first report on our efforts will be out this summer with maps of 25 caves, nearly 100 photos, trip reports, historical accounts and articles on the geology and hydrology of a few of the longer caves.

Shasta County Limestones

The McCloud is early Permian fossiliferous limestone that makes prominent gray cliffs above Shasta Reservoir. It is faulted into blocks in a narrow band that runs roughly north to south from near the base of the Cascadian volcano, Mt Shasta, to outside of Redding, California.

There is a lot of history to the caves of the McCloud including Native American use, important paleontological discoveries, and a lot of work by cavers. By taking on some steep and long hikes and being thorough, we have been able to add to this legacy. In the last three years we have found approximately 30 caves in the McCloud Limestone. Some of the more interesting caves are described below.

The October Complex is the longest found so far with two tiny entrances, a blowhole too tight to enter, 1700 feet of survey and very good leads. It started out as two caves found in October 2021 by
Tardis Cave is about 900 feet long. It was found by Anna Chinchilli and Jamison Jordan in late November 2020, but clearly had been visited before by hunters and Native Americans. It is an anastomotic maze and is nearly flat with no vertical development. There are two parallel entrances and a couple of prominent rooms. Primary porosity is on the strike of the steeply dipping beds, joints and along dikes of diorite. The diorite has been hydrothermally altered and is now a dark green color. Tardis has complex displays of boxwork and some nice speleothems. Maiden Hair Fern Cave was found nearby. It is a short cave in a cliff with multiple entrances.

Rileys Cave was found by Claude Smith years ago and was originally mapped by SAG. Through digs, pushing small passages and climbs we have extended the cave to more than 1000 feet in length. Rileys has two entrances, multiple levels, two short pits and a central prominent room. Rileys has a few scenic speleothems including splotites, some very nice fossils and large bedrock pendants. The cave is very irregular in form with passages heading off at all elevations and orientations. Near Rileys is Dawson, a short cave with a single dominant passage and small mazy areas off to the sides.

Some caves are lost and later re-found. But one cave in the McCloud appears to have been lost and found several times according to caver and Forest Service records. Pipevine Cave was found by us after a tip from a local resident. He and his friends left a lot of trash in the cave. Pipevine has an upper and lower level connected by a pit 144 feet deep. The cave is entirely phreatic, and has many oddy colored speleothems and small crystals. The pit is very irregular and varies in diameter from 2 feet to 30 feet. Bones are found at the bottom and cave-adapted invertebrates and bats have been seen in the cave. Cliffs and leads point to more potential for Pipevine. Not far from Pipevine is Arch Cave with a nice arch outside and two entrances but not much passage. The entrance to Kings Pit was discovered in November 2020 by Heather Veerkamp and Anna Chinchilli. The entrance was originally the size of a softball but was easily enlarged by moving a few rocks. It was explored and mapped on MLK Day, 2021. The cave is a pit between rooms on two levels with numerous bones and airflow emerging from a breakdown dig at the bottom.

Lost Pot Cave is a pit and a bit of horizontal passage at the top and bottom. It
Images on this page are all from October Cave
has narrow, sharp passages known for drawing blood and good airflow. It ends in a solid sediment choke. It has extensive popcorn formations and a few other stalactites and stalagmites.

Near Lake Shasta Caverns we mapped **Battery, Birthday and Aquifer caves.** Battery and Birthday are both short caves with large passages. Battery is an archaeological site, has some nice formations and was first shown to us by Cave Dave Mundt, manager of the tour operation at the Caverns. Birthday is very straight and open with sunlight penetrating more than 100 feet to the back of the cave. Aquifer Cave is a short resurgence stream cave that ends in breakdown. There are lots of salamanders from several species in this cave.

**February Pit** was found by Joel Despain and Heather Veerkamp, and at first it seemed exciting: a pit with good air
This page shows images from Tardis Cave. Below and right, a highly altered diorite dike in the limestone at the Bear entrance. Middle left, Joel among speleogens in the Boxwork Room. Lower left, Joel by a wall of draperies. Photos on this page by Dave Bunnell.

Translucent boxwork on the ceiling in Tardis and below, the dynamic nature of the local karst shown by a fallen chunk stopped by a tree.
where the rocks kept on rolling. But the cave turned out to be a large set of cracks in the limestone where it lies along the margins of a steep canyon. Our cave is part of the process of large blocks spalling off the canyon walls as gravity takes a victory over geology. While an interesting feature and a great example of geomorphology in action, it was a bit of a disappointment as a cave. It was tight, sharp, short and not entirely stable.

We have spent a few days in creek valleys reached by kayaking across Shasta Reservoir and have so far found two great leads but no other caves in this vast block of limestone. One lead is a choked spring with good air and the other is an insurmountable mile away with good air. Mark Fritze has been a big help with these leads.

While parts of the McCloud Limestone are accessible by road, many other areas are not. Some are across Shasta Reservoir with no roads on the other side. Other outcrops are on mountain tops and the Pacific Crest Trail actually crosses one bit of McCloud that needs much more ridgewalking. Another obstacle is private lands. Some of the McCloud is in “checkerboard lands” where every other section is owned either privately or by the Forest Service. So gaining access even to public lands with the limestone can be tricky. This has led to some long hikes to get to where we wanted to go. But it paid off.

We had had a long hike up and over a pass and down more than a thousand vertical feet to the creek in the limestone. But up wasn’t the hard part. A few years back a forest fire had burned through the ponderosa pines and Douglas firs over head opening the forest floor to much more sunlight. So, our downhill march was through a sea of thick successional brush. We had to push our way downhill, and at times, had a hard time seeing where we were going.

Once at the creek, with the energy we had left, we set up camp and prepared to head for the nearest big block of limestone towering above us to the east. This time ridgewalking was really going to be on a ridge. Team A found no caves, but reported that a large, deep canyon with a significant stream was entirely within the limestone, contrary to what the geologic map showed. Team B found three caves, two horizontal and a pit with bats. We will need to return to the Snack Attack caves and Chocolate Bat Pit for survey and a complete exploration when no one is home.

The next morning before we headed for our homes, the ridgewalking continued to the west not far from our hike back up through the brush. Most of us had no luck, but Lynn Van Erden (and later Anna Chinchilli) explored a small canyon and found at least five cave entrances. One entrance ended quickly, another led into a small cave that still continues and the other three were in a bluff adjacent to each other. The lower two did not do much. But the upper entrance, at least ten feet in diameter, led into a large walking passage. Wowza! Before We Go Cave it was.

We returned a few days later to map and explore. The cave has two levels, three entrances, a scenic formation room, cave adapted species, nice cut bedrock canyons and lots of cool features. It was a delight. And we found obsidian. We may have made a map and came up with a name, but we were not the first.

Other small caves found in the McCloud include Coral Surprise, Sunray, Canyon Delphinium, Maw Mouth, Sleeping Bear, Long Curtain Pit, Rolling Moles, Siphon, Stash, etc.

We have also been mapping and re-mapping a number of the known caves in the McCloud. Lake Shasta Caverns is a very scenic show cave with large speleothems and large rooms. It is actually two caves (one with no natural entrance) connected by a tunnel. Much of the cave is on or near the tour route, but the Spider Complex and the natural entrance are extensive areas away from the trail and lights that were fun to survey. The caverns is rich in speleothems.
with outstanding helictites, shields, many different calcite crystal habits, spathites, great pool spar, etc. We worked closely with the staff at the Caverns, and in particular Dave Mundt, to map the caverns. We greatly appreciate their assistance, support and friendliness.

Another ongoing remapping is in Ancient Palace Cave. The goal was to make a larger-size, smaller scale and very complete and detailed map of this great cave. We had a lot of sketchers come and help, and we needed them. Field work has been done for more than a year and the final map will be completed by the end of 2022.

We are also working on detailed and complete maps for caves found by Jim Dancy. Jim was a great cave hunter in several areas of California. In the McCloud he named his discoveries for his kids – Deanna Lynn and Jacob David. Deanna Lynn is a scenic cave with a large room, crazy chert beds that hang way out from the walls, boxwork, a lot of stal and mazy passages. It is also a cave (like Rileys) that the more you look, the more little cave passages you find. Jacob David has great potential with a lot of airflow coming from a complex and extensive set of breakdown rooms and passages. Surveys are ongoing in both caves.

A big effort is going into digs. At last count we have five digs with good air. One is a lot of dirt and rock and still close to the surface. But, there are other blowholes and a spring nearby. Another was opened at the surface leading to 200 feet of former stream passage that has broken down into big blocks. The air is coming from a few locations and all will require additional digging. Another is a stream insurgence with good air. We can see into hands and knees sized passage.

We did multiple trips to the Triassic Hoselkaus limestone found on private land south of the Pit River Arm of Shasta Reservoir and in a huge block north of the Pit on the Shasta-Trinity National Forest. Working with local landowners we mapped the three small Bluff Caves and nearby Black Stripe Cave and Cave of the Otters. The Otter Cave is used occasionally by otters from the nearby stream. Two dry entrances allow light into this small, mazy cave. In between is an underwater spring entrance from the creek outside directly
Recent Cave Surveys in the Klamath Mountains

<table>
<thead>
<tr>
<th>Cave</th>
<th>Length</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>1,700 ft or 396 m</td>
<td>107.1 ft or 32.6 m</td>
</tr>
<tr>
<td>Tardis</td>
<td>905.6 ft or 256 m</td>
<td>33.9 ft or 10.3 m</td>
</tr>
<tr>
<td>Maiden Hair Fern</td>
<td>84.7 ft or 25.8 m</td>
<td>11.5 ft or 3.5 m</td>
</tr>
<tr>
<td>Rileys</td>
<td>1035 ft or 315.5 m</td>
<td>64 ft or 19.5 m</td>
</tr>
<tr>
<td>Dawson</td>
<td>119.6 ft or 36.5 m</td>
<td>18.7 ft or 5.7 m</td>
</tr>
<tr>
<td>Pipevine</td>
<td>322.1 ft or 98.2 m</td>
<td>183.7 ft or 56 m</td>
</tr>
<tr>
<td>Arch</td>
<td>52.7 ft or 16.1 m</td>
<td>11.7 ft or 3.6 m</td>
</tr>
<tr>
<td>Lost Pot</td>
<td>166.9 ft or 50.9 m</td>
<td>44.8 ft or 13.7 m</td>
</tr>
<tr>
<td>Birthday</td>
<td>136.8 ft or 41.7 m</td>
<td>36.5 ft or 11.1 m</td>
</tr>
<tr>
<td>Battery</td>
<td>132.8 ft or 40.5 m</td>
<td>40.6 ft or 12.4 m</td>
</tr>
<tr>
<td>Aquifer</td>
<td>124.4 ft or 37.9 m</td>
<td>38.5 ft or 11.7 m</td>
</tr>
<tr>
<td>February Pit</td>
<td>162 ft or 34.4 m</td>
<td>61 ft or 18.6 m</td>
</tr>
<tr>
<td>Before We Go</td>
<td>467.4 ft or 142.5 m</td>
<td>59.3 ft or 18.1 m</td>
</tr>
<tr>
<td>Lake Shasta Caverns</td>
<td>4,593 ft or 1400 m</td>
<td>229 ft or 70 m</td>
</tr>
<tr>
<td>Bluff Caves</td>
<td>127.2 ft or 38.8 m</td>
<td>negligible</td>
</tr>
<tr>
<td>Black Stripe</td>
<td>142.1 ft or 43.3 m</td>
<td>16 ft or 4.9 m</td>
</tr>
<tr>
<td>Cave of the Otters</td>
<td>224.1 ft or 68.3 m</td>
<td>21ft or 6.4 m</td>
</tr>
<tr>
<td>Pink Mammoth</td>
<td>317.7 ft or 96.8 m</td>
<td>34 ft or 10.4</td>
</tr>
<tr>
<td>Paul Gibson</td>
<td>7,105.3 ft or 2,166 m</td>
<td>142 ft or 43.3 m</td>
</tr>
<tr>
<td>Popcorn</td>
<td>25.9 ft or 7.9 m</td>
<td>5.3 ft or 1.6 m</td>
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<tr>
<td>Hidden Hole</td>
<td>195.9 ft or 59.7 m</td>
<td>14.9 ft or 4.5 m</td>
</tr>
<tr>
<td>Resurgence</td>
<td>935 ft or 28.5 m</td>
<td>7.8 ft or 2.4 m</td>
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<tr>
<td>Bobcat</td>
<td>466.1 ft or 142.1 m</td>
<td>42.7 ft or 13 m</td>
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<td>Driftwood</td>
<td>1,498 ft or 456.6 m</td>
<td>92.9 ft or 28.3 m</td>
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<tr>
<td>Millipede</td>
<td>820 ft or 250 m</td>
<td>14 ft or 4.27 m</td>
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<tr>
<td>MRC</td>
<td>2,019 ft or 615.4 m</td>
<td>84.3 ft or 25.7 m</td>
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<tr>
<td>Scorpion</td>
<td>1,290.8 ft or 393.4 m</td>
<td>108.9 ft or 33.2 m</td>
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<tr>
<td>FHC</td>
<td>1,489.2 ft or 453.9 m</td>
<td>107.2 ft or 32.7 m</td>
</tr>
<tr>
<td>Storm Cave</td>
<td>175 ft or 53.3 m</td>
<td>44 ft or 13.4 m</td>
</tr>
</tbody>
</table>

into the cave that is used by the otters. They appear to rest in the cave and most certainly defecate in it. Lots of poop with fish bones and crayfish exoskeletons.

Out at the big Hosselkaus block on the national forest, Nile Lathrop did a semi-lead climb side-ways sort of rappel to access a large entrance in a cliff. This led to Pink Mammoth Cave with richly textured white bedrock walls, a spacious room and a well decorated upper level at the back.

Greater Klamath

The Shasta County limestones are low in elevation and so are very warm in summer. When the hot months come around, we head for the mountains and the lower temperatures at higher elevations.

Since 2014 we have worked to complete the mapping of Paul Gibson Cave. The hike in is at fairly high elevation (about 5000 feet) and so access is limited to summer and fall due to winter snows. Paul Gibson requires backpacking since the cave is more than six miles from the trailhead, and parts of the hike are off-trail and difficult. The cave, however, is a delight with two entrances, large rooms, complex mazes, pretty white bedrock, great stal, multiple creeks and deep phreatic lakes. It is also a fun ‘cavers’ cave’ with entertaining movement and obstacles. While there are certainly some leads left, Joel Despain has completed the map for now. The original KMCTF survey from the 70s documented 3,200 feet. We lengthened the cave to 7,100 and mapped three much smaller adjacent caves, Popcorn, Hidden Hole and Resurgence. Dick LaForge was the only person to be on both the original 70s survey and also the new mapping effort.

Two drainages in remote southwestern Trinity County host a lot of limestone, a lot of caves and karst and two very scenic gorges. Steve Knutson from the KMCTF originally told us about this area. Some caves have been known here for decades

Beaver skeleton in the newly discovered Beaver Palace in October Cave, May 2022

Shasta Salamander, an endangered species endemic to the McCloud Limestone, in Jacob David Cave.
but many difficult-to-access entrances can be seen in the cliffs. These caves originally had names with geographic references. We have given the caves alternate names for publishing. **Bobcat Cave** has a big double barrel entrance, but it quickly constricts down due to deep sediments, and it turns out that the best way to get into the cave is from a third entrance around the corner. **Driftwood Cave** back floods from the adjacent creek leaving behind lots of driftwood in the first rooms and passages. This is a scenic cave with big rooms, speleothems and a stream. There is a lot of potential for more cave discoveries here. In the next canyon over is **Millipede Cave** with a hidden lower level, nice speleothems and lots of cave invertebrates. We hope to map all of these caves to more than a thousand feet of length.

A long-term project is **MRC**, another cave with a geographic reference in the name, this time abbreviated. This cave is located in a wilderness area in a remote and un-remarkable canyon and was originally explored by the Everest Brothers from Weaverville many decades ago. This cave is largely crawly, but it does have one spacious room and a waterfall in the spring months when stream flows are up. Some areas are well decorated with speleothems and others are mazy with many passage junctions. MRC has three entrances and multiple levels. Forest fires have long plagued access to this cave with several burning through the area in recent years. As such we have only made one recent survey outing to the cave in 2019. We are close to being done with the survey and hope to be back in 2022 to finish up. With luck we can likely extend the cave to over a half mile in length.

**Scorpion Cave** lies near the Oregon border in an area of pretty mountains and forests. It has also been known for decades. We have made two backpacking outings to the cave to work on a complete and detailed map for this cave. Scorpion is vertical with a few pits and climbs. The cave is nicely decorated with speleothems and also has aesthetic bedrock features. Scorpion is surprisingly dry. It is clearly an ancient stream cave and canyon complex. Today the water is long gone. This is another cave that may exceed a half mile in length when all is said and done.
Maiden Hair Fern Cave
Shasta County, California
Length 25.8 m  Depth 3.5 m
Plan, projected profile, and cross section views
Standard cave symbols plus plants
Survey by: Joel Despain, Anna Chinchilli, Heather Veerkamp 12/12/2020
Cartography by: Heather Veerkamp Copyright 2022

There is some remote karst in the Salmon River country explored on only a few trips scattered over the decades largely coordinated by Mark Fritzke and Rich Sundquist. We finally got to the area in 2021, we were impressed by the vast limestone, the ruggedness of the landscape and the potential for caves. We were led by Mark Fritzke and Chris Inskeep, a local caver who really knows the

Kip Baumann by draperies in Scorpion Cave, and a more translucent one to the right.
Tardis Cave
Shasta County, California

Plan, Extended Profile and Cross Section Views

Legend
Standard cave map symbols except:
- Diorite
- Boxwork

Extended Profile
Pipevine Cave
Shasta County, California
Surveyed March 2021
Cave Length: 98.2 meters or 322.1 feet
Cave Depth: 56.0 meters or 183.7 feet
Surveyed by Joel Despain, Heather Veerkamp, Niles Lathrop, Evan Peairs,
Sabrina Shemat, Sonia Meyer, and Joey Meyer
Cartography by Niles Lathrop
June 2021 Draft

Legend
- Bedrock
- Mud
- Unexplored/unsurveyed
- Slope
- Dome
- Ceiling height change
- Pit
- Drop
- Flowstone
- Column
- Stalactites/stalagmites
- Survey station
- Dripline
- Entrance

Profile View with Vertical Cross Sections
Profile Scale
0 m 10 m
Profile view looking 25° northeast

Plan View with Horizontal Cross Sections
Plan Scale
0 m 10 m

Entrance
Upper Entrance

Climb, may continue
 TT, good air
 TT, hammer dig
TT, continues~2m through breakdown

Brody Blacet in Ancient Palace Cave
Niles Lathrop on a handline climb in Ancient Palace Cave
area and has been to a lot of caves. With many options, we finally chose to return to a known cave to explore and continue the survey. FHC (another abbreviation) is a complex cave with multiple levels and parallel passages that almost make a large loop. Some areas have nice speleothems. The cave appears to be an abandoned former insurgence located adjacent to a dry stream bed. There are two entrances, both in a

concluded on page 27
Pink Mammoth Cave
Shasta County, California

Plan and Profile Views
with Cross Sections

And a little tube in the cliff face

Surveyed June 9, 2021 by Forest Despain, Joel Despain.
Niles Lathrop, Liam Tobin and Heather Veerkamp
Cartography by Joel Despain

Length: 317.7 feet or 96.8 meters
Depth: 38.5 feet or 11.7 meters

Standard Cave Map Symbols
FHC
Siskiyou County, California
2021 Draft

Plan, Simplified Profile and Cross Section Views

Length: 1499.2 feet or 453.9 meters
Depth: 107.2 feet or 32.7 meters

Surveyed July, 2021 by Anna Chinchilli, Caiden Inskeep, Chris Inskeep, Rider Inskeep, Joel Despain, Mark Fritzke, Liam Tobin and Heather Veerkamp

Cartography by Joel Despain, 2021
Riley’s Cave
Shasta County, California
Surveyed 2021-2022 by Niles Lathrop, Joel Despain, and Heather Veerkamp
Cave Length: 298 meters or 978 feet
Cave Depth: 18 meters or 58 feet
Cartography by Niles Lathrop June 2022 Draft

Riley’s Cave in the McCloud Limestone of Shasta Lake, California, is an inactive, bedding and joint controlled phreatic maze cave situated 700 ft above current base level. The cave exhibits many prominent anastomoses, sediment false floors, and active in-cave sediment sinks, indicating a dynamic sediment history. Its complex passages display a range of speleothems and limestone fossils, including pathites, coralloids, and considerably well preserved Permian cephalopods. The cave was discovered by Shasta Area Grotto (SAG) cavers Jim Wolff and Claude Smith in 1984 and named after Claude Smith’s son, Riley Smith. Members of CRF Klamath (listed above) continued with survey and exploration in 2021-2022 and extended the cave to its current length.

Anna Chinchilli in a newly discovered chamber in October Cave. Just found in late May, it was named for a calcified beaver skeleton (page 11).
Larry “Smokey” Caldwell
Born March 13, 1941, in Dalton, GA

On Saturday, March 12th, 2022, one day shy of his 81st birthday, the caving community lost Smokey Caldwell, a true friend to many and a part of the fabric of caving in America.

Smokey explored a few caves in his growing-up years in North Georgia before joining the Navy at 17, serving 6 years as a Gunners Mate. His ship was off the coast of Siberia when Kennedy was shot, and they were ordered to return home. Enroute, he unfortunately experienced frostbite on his toes leading to his discharge. His toes never slowed him down, and he went to work for the Georgia Forestry Commission as a firefighter, leading and teaching rescue all over the country. During this time, while out hunting, he happened upon the historic entrance of Ellison’s and would go in to warm up. By the early 70s he was going further into the cave and began descending and ascending the 125 foot Warm-Up Pit – descending, not rappelling. He was down climbing on knots that he was familiar with from his time in the Navy because he didn’t know how to rappel.

Around 1973, he took up with Don Davidson and Cheryl Jones who taught him to rappel and brought him along on exploration trips further into Ellison’s. He was a part of the wall climb from the Balcony to the Attic and pushed the exploration of the upper passages and down the many pits, some bearing his name, and further explored various routes to the bottom and through the cave. In 1975, he and Marion Smith dug the ledge to reach the big room in the Attic. This ledge is scary enough now, knowing it’s a 586 foot drop over the edge! The passage to the low point of the cave is called the Glubs, after the sound he made going through the water in low air spaces on the first trip through: glub, glub, glub.

He went on to discover and explore, often digging or blasting open, many caves on Pigeon Mountain and all over TAG. In addition to caving in the Southeast, he participated in a hardcore caving trip to northern Spain, spending 30 or 40 hours underground in the cold, rappelling over ice. He visited classic pits in Mexico, including Sotano de las Golondrinas, where he rappelled in with his then wife Tina hanging off his harness below him. Both his background in navel rigging and caving led to his being an integral part of early cave rescue and rescue training, as a member of the Walker County First Responders. He continued caving well into his late 60s.

Early vertical cave exploration was done on twisted hardware store rope and many a caver hurled before reaching the bottom as they bounced and spun round and round. By the time Smokey met Don and Cheryl, Bluewater kernmantle rope was being manufactured. Unfortunately, quality standards became a concern by the mid-1970s, and Smokey and some friends determined they could make their own rope. In January 1977, Smokey, Steve Hudson, Richard Schreiber, and Bill Cuddington met and committed $500 each to start their own rope company, the equivalent of almost $2,500 today, and thus Pigeon Mountain Industries was born. Smokey was the brains and the most committed, running the first machine in his basement day and night, where he mastermind the design and production process to make a durable rope that would stand up to the rigors of caving. The first 600-foot piece even survived unscathed getting blown off the pad at Whiteside Mountain when Buddy Lane took it there to test it out. Sales were quickly expanded to fire and rescue, which was Smokey’s current line of work, but the pricing for cavers was always reduced. His generosity and expertise included helping Andy “Danger” Harasymczuk set up PMI Canada, which later became Highline Rope, and advice and encouragement for Valerie and Terry Christianson developing Esprit Rope’s static line. Danger and Smokey set world records for highlines, including the CN tower in 1987 at 4500 feet and Mount Arrowsmith on Vancouver with a 5600 foot highline. Along the way, Smokey developed a device allowing for self-control/braking on these long highlines. Smokey poured his heart and soul into PMI for over 25 years until he was bought out by Steve Hudson in 1992.

For his next adventures, he worked for Voice of America, the US Government International Radio Network, rigging radio towers and teaching radio tower riggers all over the world, including Morocco. In 1993, he, Danger, and Terry Christianson spent 21 days sailing across the Atlantic from Marble Head, Massachusetts to Faial, Azores, Portugal. And he bought 217 acres just outside of Lafayette, Georgia, naming it Cherokee Farms. This beautiful piece of property has hosted quite an array of events: musical, historic reenactments, earth skills, rugby, and of course several caving events. Smokey loved a good party, didn’t matter who or what, just enjoy!

Smokey’s dad died when he was 5. He grew up poor without knowing he was poor, raising tobacco as their cash crop. His grandfather served as a county sheriff and was known for slapping the governor, Frank Clement, on the courthouse steps while his brothers covered him with loaded guns looking out high windows. He is survived by three brothers and two sisters. When asked what they wanted included in this account of Smokey’s life, both his younger brother and sister emphatically stated he was a good brother, and he took care of them.

I met Smokey in 1989 on a visit to his home and the PMI manufacturing location near Lafayette, Georgia. Through the years of friendship, he encouraged me on my adventures near and far, before I was a mom, and then with my girls. He never once treated me like a dumb girl, it was clear he was a feminist even though that’s not a word he would have used. He was proud to have been trained by a woman, Cheryl, from the beginning. In the early 90s he sent thousands of feet of rope with me down to the Mexican cavers in San Luis Potosi, and they sent me back with the best tequila and mezcal they could find. After he moved to his beautiful piece of property near Lafayette, he repeatedly invited me to bring my daughters’ Girl Scout Troops to camp, once during an Earth Day weekend where the girls danced around a big bonfire with colorful people, including a few guys in nothing but breetchcloths. Not sure how that was explained to their parents, but the girls had a blast. I miss the front porch visits with the smartest man I’ve ever known, where conversation knew no limits, including all those topics we are told to avoid – politics and religion and juicy gossip.

He touched so many of us, and his spirit will live on in the caves he explored and on the land he loved and shared.

Teresa Benamy

NSS News, July 2022 21
 Memorial: Rane L. Curl, former NSS President, and his quest to understand caves
by his family, friends, and collaborators

Introduction by Rane’s wife,
Alice Rolfs-Curl:
Rane Curl, 7th NSS president and one of the great pioneers of cave science, concluded his life’s expedition on May 12, 2019, dying peacefully in his sleep just short of age 90. However, his memory, spirit, humor, and many accomplishments continue to live on. He is survived by his wife Alice (NSS 16673 RL-FE), daughter Vittoria (NSS 23500 RL) and her pup Izzy, and older children, former NSS members Stefan Curl (wife Laura Evanson); Jocelyn Boesch (husband Russ Boesch); and grandchildren Austin Boesch and Clovis Curl. A celebration of Rane’s life was held in Ann Arbor, Michigan, on July 7, 2019, attended by many relatives, colleagues, and friends. Some highlights of his life are recalled here, with an account of his major contributions to our understanding of caves and karst. While serving as MC at Rane’s celebration, Vittoria said that, to her, he will always be her Dad, who shared his love and passions with her and set an example of high standards of honesty and integrity.

An obituary for Rane by John Rosenfeld and Doug Medville appeared in the October 2020 NSS News, describing Rane’s professional career and impact on the NSS. John was a student under Rane’s advisement at the University of Michigan, where they worked together to develop the chemical models to understand limestone cave formation, the topic of John’s master’s thesis. They highlighted many of Rane’s scientific achievements and his impact at the University. Rane retired from the University in 1997 as Professor Emeritus. Here we cover Rane’s early life, how he became interested in caves, and his enduring contributions to cave science. This memorial reaches back through Rane’s life for examples of his contributions to our understanding of caves and karst.

Early history
Following his graduation from Brooklyn Technical High School in 1947, Rane’s college training was packed into a few short years: Bachelor’s, and concurrent Masters and Doctoral degrees in chemical engineering at Massachusetts Institute of Technology (MIT), Cambridge, Mass. (1951 and 1955). During his time at MIT, Rane cultivated interests in various outdoor activities, as well as sailing, amateur radio, Scottish country dancing, and most of all, cave science.

In the summer of 1952, while working as an engineer at DuPont in West Virginia, he met well-known cavers Bob Handley and Bud Rutherford, who introduced him to cave exploration and speleology. He quickly became intrigued by the sport, and especially by cave science, and upon his return to MIT he joined the Boston Grotto of the NSS. After receiving his Sc.D. (doctorate in Science) in 1955, he moved to California as a chemical engineer with Shell Development Company. Together with western speleopioneers George Moore, Bill Halliday, and Howard Shugart, he helped to form the San Francisco Bay Chapter of the NSS (which they preferred to the traditional “Grotto” designation) and took part in the early exploration of several deep and complex western caves. His interest blossomed and continued through the rest of his life.

Alice meets Rane: My introduction to Rane was unusual, to say the least: In 1975 I had been working in a microbiology lab at Michigan State University, when a colleague asked if I’d like to attend a meeting of the Michigan Interlakes Grotto, which was planning a cave trip to the Kentucky Speleofest. Getting to the meeting was a new experience for me. I’d never traveled on a motorcycle before, let alone doing a wheelie over the curb onto the host’s front lawn. I had no idea what else the evening had in store for me! Folks filled the living and dining rooms, sitting anywhere possible, on chairs and on the floor. While we socialized after the meeting, a bearded man crawled across the floor. Sitting on the curb at the entrance. Just then, two others of his team popped out of the cave and hollered: “We couldn’t get it off the wall!” – “It” was a plaster cast of a nicely scalloped wall of marble, which Rane wanted for documenting the solutional features formed by rapidly flowing cave water. Rane was out of reach in California and had delegated the task to some northeastern friends. (The remaining plaster was later removed with a scrub-brush.)

I first met Rane 8 years later at an NSS convention, where he gave a talk on the mixing of two water types, each saturated with limestone but at different carbon dioxide levels. He first held up a large container of clear water partitioned into two parts. Then he mixed them by removing the partition indicating a shift in pH, which allowed more calcite to dissolve. (The graph of calcite solubility vs. pH is curved. Otherwise this trick would not work.) There was a huge standing ovation, even from those who had no idea what they had just witnessed. Rane clearly enjoyed the drama.

Bruce Rogers (NSS 6732 CM-FE): Rane helped to form the San Francisco Bay Chapter of NSS in December 1957. In 1962-63, the group made the first wet-suit dives in California’s challenging Black Chasm Cave. Rane and George Moore took water samples that showed that most dissolution of the marble took place in the upper 1-3 meters of the cave lakes. George spirited the samples out of the cave – no mean feat for 160 feet of vertical passage via cable...
ladders – then across the surrounding pine-forest ridge to a “borrowed” U.S. Geological Survey 3/4-ton geochemistry lab truck precariously parked on a marble outcrop, and titrated them within a few hours of collection – truly a saga! These cave dives were among the earliest in the West, preceded only by Southern Cal Grotto’s dive a year or so before into Devil’s Hole, Nevada (now part of Death Valley National Park).

Black Chasm Cave, California, August 1962: Rane shepherds a set of dive tanks on the way down to the “Beach” – a muddy 3-foot-wide strip of shoreline along a lake about 230 feet below the entrance of Black Chasm Cave, in the Mother Lode. The dive site was at the low summer level of the 70-foot-deep lake. The well-known (but now late) archeologist-caver Alvin McLane watches Rane dance the dive tanks to where they could be lowered to the water level about 140 feet below. (Photo by George Moore.)

Bruce Rogers again (from personal records), and Greg Roemer-Baer (NSS 66273 RE), from 2017 correspondence with Rane: In 1960, Rane and a small group of cavers from the San Francisco Bay NSS Chapter discovered the Lake Room in Lilburn Cave, which contained several going leads. Rane left California soon afterward, but by a campfire at the 1966 NSS Convention, in Sequoia National Park, he asked if anyone had pushed the stream beyond the Lake Room. That night, thus spurred, a group visited the cave and found the Hexadendron Room (named for the 6 most accessible passages leading from it, later expanded to 11). Rane visited it the next day and the connecting passage was soon named “Curl Passage” in his honor.

Greg also inquired about Rane’s most daring, dangerous, or funny experiences. Rane, after pondering a bit, recalled a trip when he was hiking back from Lilburn, and it started raining heavily. He took shelter under a giant sequoia. As the rest of his team caught up, they started laughing – because sometime in the distant past the leafy part of his tree had snapped off high above the ground, and what was left offered no shelter at all from the rain!

Rane in Lilburn Cave in the 1960s, with George Moore in the background (probable photographer Dave McClurg). Both Rane and George became NSS presidents: George 1963-1965; Rane 1970-1974.

Stefan Curl (Rane’s son): One of my first memories, from 1957 or 1958, was sitting on a blanket next to a small lake or pool nestled against a cliff face, probably in California where we lived at the time. I remember Dad putting on scuba tanks and disappearing into the water. Apparently, there was a small cave below. It left a deep impression on me. In roughly 1964-65, he did several of his experiments in a small office at home. I mostly remember his Minimum Stalactite Diameter set-up – pipettes in racks over beakers with a light to project a shadow and a camera to take pictures of the drops. Stefan, and Rane’s elder daughter Jocelyn Boesch, also recall that their Dad made his own fireworks for 4th of July, specifically a powdered zinc and sulfur blend (mixed to correct molar proportions, of course) and poured into a straw, which would burn with a wonderful hot green color and lots of smoke!

Rane’s younger daughter, Vittoria (“V”), remembers titrating water samples with Rane in the mid-1990s in Michigan’s upper peninsula, to learn where the water flowing through Hendrie River Water Cave was traveling. A resurgence had previously been discovered, and Rane wanted to know if water from the cave was reaching the aquifer from which local residents were drawing their drinking water.

Research, teaching, honors, and memorable times
In 1961–1964, Rane served as a tutor at University College, London, and as “research engineer” at the Technical School at Eindhoven, Netherlands. In his spare time, he took a 7500-mile motorcycle tour of western and eastern Europe, and in 1962 he won a bronze medal in the Highland Fling (a vigorous dance!) at the Hertfordshire Highland Games, England!

In 1964, Rane obtained a teaching position in chemical engineering at the University of Michigan, where he spent the rest of his academic career. In the classroom, he refused to spoon-feed his students. Instead, he told them “Consider me to be the plant manager, and I’m paying you to solve my problem!”

During his career he received many prestigious awards, which included Fellow of the American Association for the Advancement of Science, and Who’s Who in the World, and recipient of the Phi Lambda Upsilon Outstanding Teaching Award. He was also a Fellow and Honorary Member of the NSS, and Fellow of the Explorers Club.

In the 1980s Rane helped found and lead the Michigan Karst Conservancy (MKC), a not-for-profit land conservancy established for purchasing and managing significant cave and karst features in the state. During retirement, he was active in local environmental efforts, serving on the Michigan Natural Areas Council, with the Karst Waters Institute, and many others. He also volunteered with the American Red Cross Disaster Action Team, and public-service projects with the Arrow Amateur Radio Club. Rane was chosen to chair the 1981 International Congress of Speleology, in Bowling Green, Kentucky – the first ICS to be held in the western hemisphere. He also co-authored the first NSS Policy for Cave Conservation and edited the first four issues of American Caving Accidents, the first of which was published in 1967.

Vittoria: Rane not only taught his students by questioning; he led (espe-
cially me) by example. This was something I didn’t realize while I was growing up, but have come to appreciate in the time since he has been gone. I’ve become more aware of the ways in which his presence shaped the person I am now. As I move into more leadership positions in my professional life, I feel him with me more, and I miss him more each day.

Dad told me that he had to push hard to initiate the publication American Caving Accidents, as it was unwelcome to many. What the community now regards as an important tool in preventing accidents, and training for them, was groundbreaking at the time. People who had accidents in caves, especially cavers, did not want to publicize those incidents, especially if caused by negligence or lack of preparation.

I always had a sense that Rane was someone important, but that made sense, since he was one of the most important people in my life. I was peripherally aware of his many contributions, but it was not until I became an adult and set my own course that I have been able to realize the scope of his interest, involvement, and influence, especially in the fields of research and conservation of caves and natural areas. To everyone else he was always the Rane Curl. At caving events, upon reading the surname of Curl on my badge, I was often asked if I was any relation to the Rane Curl. As a budding speleo artist, jewelry vendor, and event volunteer, I may have made a bit of reputation for myself as well, and I think he was very proud when someone once asked him if he was related to V Curl!

The “karst constant” and other puzzles

Art: Rane investigated cave patterns from a technical perspective; writing on topics such as the statistics of cave-entrance evolution, use of scallop geometry for interpreting past groundwater velocity, speleothem growth and dating, and the question of aragonite vs. calcite mineral content in speleothems. At the 2013 NSS Convention he was an invited “Luminary” speaker: An Engineer Goes Caving, describing the high points of his cave-related life, now stored on the Web at Caves.org/luminaries. Scroll down in time to 2013, and to Luminary Rane Curl 1, in which Rane tackles the question of aragonite vs. calcite as components in speleothems, as well as speleothem dating, growth rates and other puzzles.

He also showed how certain solution features can indicate rates of cave development, competition among conduits, and fractal dimensions – and he explained why. His main publication on these topics is “Caves as a Measure of Karst” (1966), Journal of Geology, Vol. 74, No. 5, Part 2. See also his “Fractal Dimensions and Geometries of Caves” (Mathematical Geology, 1986, 188), p. 765-783, which shows how survey data can be used to determine the distribution of cave-passage sizes – the “Linked Modular Element (LME) method” – in which the sum of all LME values is the “effective length” of the cave. Rane devised a way to estimate the number of caves in any area, their total length, and thus their average length. Each unknown part of the puzzle boils down to a single unknown factor, which allows answers to be obtained in just a few simple steps.

Probably the most popular of Rane’s revelations was to show how the lengths of solutional scallops can be used to estimate the mean velocity of the water that formed them. Multiplying that velocity by the cross-sectional area of the passage provides an estimate of the high-flow discharge (volume per time), even in caves that are now dry. [In Rane’s initial publication on the topic in the NSS News, 1974, v. 36, no. 2, a production flaw disrupted an otherwise clear explanation.] For a full and well-illustrated explanation, including all related variables, refer to the Rane’s Luminary interview described above (or Palmer’s book, Cave Geology, 2007 or later).

Some of Rane’s karst publications deal with concepts that had rarely (if ever) been imagined before. One goal was to estimate the total number of caves in a region by accounting for “entrance-less” caves, including those that had not yet been discovered! This requires determining the number of known caves in relation to their total passage length and number of entrances. It may seem a strange quest, but significant to those who want to understand the distribution of caves. In his early articles, Rane stated the problem: “There are lots of caves with one entrance, some with two, fewer with three, etc. Can the number of caves with n entrances be extrapolated back to n = 0, to estimate the number of caves with zero entrances?” Rane was confident that the answer must be yes! The variables involved are few enough that those that are unknown can be estimated from those that are known and can be measured, in the same way that a missing piece of a puzzle can be interpreted from the pieces that are already known. Sadly, Rane passed away before he fully completed this project, but what he left was complete enough for others to fill in most of what is missing. This work is still being carried on by one of Rane’s collaborators, Torstein Finnesand of the University of Bergen, Norway.

Rane’s 10 most cited publications in Karst

From his nomination package for fellow of the American Assoc. for Advancement of Science (successful, needless to say!)


1966: Caves as a Measure of Karst: J. Geology, 74 (5) Part 2, 798-830. Data for the proper lengths and number of proper natural entrances of caves, reflecting stochastic processes, permitting estimates of number and lengths of caves with no entrances.


1974: Deducing Flow Velocity in Cave


Ironically, Rane’s most-cited publication is “Physics in a toy boat” (1963), co-authored with I. Finney (American Jour. of Physics 31, p. 289), explaining the propulsion of a popular model of toy boat in water: It involves a shallow chamber covered by a thin diaphragm, and connected by pipes to the water off the stern. Filling the chamber with water and heating its base vibrates the diaphragm and water column, propelling the boat forward. Rane used to laugh at the attention given this somewhat trivial paper.

Rane bequeathed his extensive speleological library to the NSS. “Guess what?” reports Alice as this memorial was being prepared – “I’m still packing it up for shipping. It’s been a daunting task!”

Rane’s work and guidance have benefited speleology in many ways. He lives on in our memories as a fascinating person, a superb scientist, and a wonderful human being who was immensely devoted to his family and friends, and to the NSS.

Below: Helictites reflected in a pool in Nunley Mountain Cave, one of the newly established NSS Cave Preserves. This helictite grotto is at the south end of Straw Hall. Photo by Alea Moore.
Ridgewalking on her property, in Colorado’s Defiance Cave Preserve, Donna Fraizer located a short cave that was completely unknown inside the caving community. Ram’s Leap Cave is approximately 25 feet long and trending directly towards passages in Cave of the Clouds. Donna believes that a dig at the end of Ram’s Leap may create a new entrance to Cave of the Clouds.

Richard Rhinehart accompanied several cavers to Thorn Cave, which is nestled amongst the limestone towers of the Deep Creek Canyon area. The team of cavers explored Thorn and the surrounding karst features, while also mapping and documenting their finds. A small crawl at the back of Thorn was excavated across subsequent trips and generated additional passage and more potential digs. In total Thorn Cave’s two entrances lead to 145 feet of navigable passage with the potential for quite a bit more if additional digging is undertaken.

Carol Vesely and Bob Richards tagged along with Doug Medville to explore the claystone and sandstones in Black Canyon of the Gunnison National Park. Previous park reports stated that no caves or karst features exist in the area, however, the trio were quite successful in proving that wrong. In a single day of ridgewalking slopes and drainages the group mapped over 600 feet of passage across four different caves, leaving several additional leads to check in the future. Ratatouille Cave and Clay Gully Cave were the largest of the caves explored, with Clay Gully having borehole leads that were left due to time restrictions. Both caves have over 200 feet of relatively comfortable walking-size passages and crystalized rat urine, the latter of which is especially prominent in Ratatouille.

The Potomac Caver
Potomac Speleological Club
January-February 2022, Vol. 65, No,1

Mark Minton, Yvonne Droms and Bob Alderson headed into Shoveleater Cave to explore and refamiliarize themselves with the Patrick’s Pit area of the cave. Lured into the area by memories of an aid climb, the trio spent the day updating rigging and poking around the various nooks and crannies of Patrick Pit. Strong airflow was noted in the area indicating more passage remains to be discovered. While the trio was unable to relocate the aid climb they were seeking they did identify several areas that were worth technical dig trips.

The Region Record
Virginia Region of the National Speleological Society
Spring 2022, Vol. 35, Number 1

Massanutten Caverns closed to the public in 1991 and has not been explored since. After the property changed hands a few years ago cavers were able to gain permission to reenter the cave and produce a new map of the system. The heavily decorated cave contains 2,400 feet of passage, about half of which is along a well-defined tour route. The off-trail portions of the cave are filled with mud, formations, and occasional scrambles. Raccoon Crawl Cave, a 332-foot-long cave, was also mapped and found to come within 70 feet of passages in Massanutten Caverns. However, there exists no obvious way to connect the two cave systems.

Southwestern Cavers
Southwestern Region of the NSS
March-April 2022, Vol. 60, Number 2

Several New Mexico cavers assisted Brent and Brittany Hall during a January cave diving expedition in the gypsum caves of southeastern New Mexico’s Burton Flats. The divers were hoping to gather information on the water table and karst features in the area, which are currently under threat from continued oil and gas exploitation. Several attempts were made to dive the gypsum caves, but very poor visibility and constricted passages made for bad diving conditions. Of the four caves dived, Coffee Cave appears to hold the most potential. Return trips are planned to Coffee Cave, Step Stone Cave and several other caves where sumps were located but not dived during this expedition.

Sag Rag
Shasta Area Grotto
Nov-Dec 2021, Vol. 40, Number 6

Joel Despain and Heather Veerkamp undertook the remapping and documentation of Lake Shasta Caverns and the surrounding McCloud Limestone caves beginning in 2018. Recruiting the help of several other cavers and the caverns owner himself, the duo finished surveying the nearly 1-mile-long cave system in 2020. During mapping, the cavers noticed that Shasta Caverns is actually composed of six different caves which were interconnected via mining during the cave’s development. Several other small cave complexes in the area were also mapped during the Shasta project, including the short Aquifer Cave, Battery Cave and Birthday Cave. These latter three caves are all around 100 feet in length with relatively large walking passages. Aquifer Cave, as the name implies, has an active stream flowing through its passages. With the survey and documentation of Lake Shasta Caverns and the surrounding karst features now complete, and a high-quality map now published, cavers have set their sights on restoring the inside of the caverns, as many of the cave’s best features are buried under rubble and trash from initial development.
Some bats have a newly documented skill

Many animals use visual mimicry to elude predators. But auditory mimicry is much rarer. Researcher Danilo Russo of the University of Naples Federico II appears to have shown that some bats are capable of this, and reports it in Current Biology [May 9, vol 32:9.

According to his work, mouse-eared bats are able to emit a buzzing noise that sounds like bees, wasps, and hornets, and likely does this to avoid owls, a predator who is not enamored of these small biting creatures. Computer analysis of recordings of the bats versus various hymenoptera showed clear similarities. In an experiment using captive tawny and barn owls, which both hunt bats, playing either bat’s sounds or the hymenoptera sounds through small holes designed to look like those in which they typically hunt prey led to clear-cut avoidance behavior.

Danilo notes that other birds and small mammals can make buzzing noises when their habitats are disturbed, so it opens the door for more research regarding how common this sort of auditory mimicry really is.

Summarized by Dave Bunnell, based on a summary in The Economist may 14-20th 2022.

Exploration in the Klamath Mountains of California

Continued from page 17

large overhang. The original map from the 1980s shows 320 feet of cave. We mapped nearly 1500 feet and there is more to do and good digs.

Years earlier Mark had explored a nearby cave during a driving rain storm. He and Anna Chinchilli mapped Storm Cave while we were in the area. This is another apparent abandoned insurgenace with tall canyon passages and a short pit. It is on the same side of the creek as FHC and not far downstream. Across the canyon from FHC are several small but interesting caves. One is a dome complex with mega airflow, while another is a big flat-floored room. This cave has to have been a great sleeping spot for humans and other mammals for thousands of years. We will be back to map these.

It has been a great last few years caving in the Klamath Mountains, and we look forward to a lot more.

Caves of Bihor Mountains

Caves of Bihor Mountains is published as part of the celebration of the International Year of Caves and Karst, which is organized by the International Union of Speleology. This book is a splendid and valuable part of that celebration!

The purpose of the International Year is to teach the world about the importance of caves and karst. The theme of the International Year is “Explore, Understand, Protect.” While publicity often goes to scientific research and the creation of laws, which together lead to the understanding and protection of caves and karst, they would not be possible with exploration. Exploration makes this book special.

Caves of Bihor Mountains is a celebration of exploration. It focuses on the results of over 200 years of exploration in the Bihor Mountains of Romania. It provides detailed maps, descriptions, and photos of 70 significant caves in these mountains. Each cave report is accompanied by summary discussions of the cave’s history, geology, hydrology, and other notable facts, all supported by bibliographies that lead to additional, pertinent, information.

Caves of Bihor Mountains lays the foundation on which the understanding and protection of caves and karst become possible. Some of that foundation is presented in introductory chapters on the region’s cave and karst history, geology, geomorphology, hydrology, and climate data resources.

Caves of Bihor Mountains is more than a book about past exploration. It more than a source of data for research or a list of caves that need protection. This book is an inspiration. The greatest gift the International Year of Caves and Karst can give to the future is inspiration for future generations to Explore, Understand, and Protect caves and karst.

Caves of Bihor Mountains assures the goals of the International Year will continue past 2022. Thanks to this book, new generations of explorers will continue to discover more caves. Thanks to this book, research into Romania’s karst will deepen and expand. Thank to this book, more people will learn the importance of caves and karst, and from there more effective protection will develop.

The book is authored by Liviu Valenas.

From the book’s foreword by
Dr. George Veni
President, International Union of Speleology
Executive Director, US National Cave and Karst Research Institute

NSS Director election results

Congratulations to David Brumbaugh, Travis Camp, Stephen Gladieux, and Miki Manning on their election to the BOG. See the Election Results page at https://caves.org/committee/nominating/Results_2022.shtml. These new directors will join the Board at the Convention meeting in June.