

Virginia Cave Owners'



NEWSLETTER

Issue #34, April 2022

A Message from the Chair

The Cave Board has experienced change in the past year, some great, and some tragic. One of our valued members, Mark Hodge, passed away unexpectedly on December 4, 2021. He was about to exit Butler Cave after helping to lead a tour of Boy Scouts through the cave. His absence is deeply felt by all who knew him. An obituary for Mark may be found here: <https://www.obaughfuneralhome.com/obituary/Mark-Hodge>.

Another valued member, Marian McConnell, stepped off the board. As the owner of Catawba Murder Hole, Marian has been a strong advocate for cave owners and for advancing outreach and education about caves in Virginia, and we are grateful for her years of service on the board. At the same time we extend a warm welcome to a new board member, Russell Kohrs, who is a professional educator in environmental sciences at the Massanutten Regional Governor's School, and a bagpiper for hire!

I am pleased that this issue of the VCON brings other good news, such as the establishment of a new program in cave and karst studies at James Madison University, and of the remarkable discovery of a complete fossilized cat skeleton in a Virginia cave.

Currently there are vacancies on the Cave Board, so we encourage cave owners to self-nominate at this website: <https://www.commonwealth.virginia.gov/va-government/boards-and-commissions/>

Dr. Daniel H. Doctor, Virginia Cave Board

Table of Contents

1 A Message From the Chair

1 Paleontological Excavation of an Ice Age Cat Skeleton in Burja Cave, Lee County, Virginia

2 JMU Rocks!

3 Donation of Perkins Cave to the NSS

3 COVID and Caving Two Years on

A Publication of the Virginia Cave Board

Due to generous grants from the National Speleological Society and the Cave Conservancy of the Virginias, the Virginia Cave Board is pleased to continue offering a printed version of the *Virginia Cave Owners' Newsletter*. We hope you enjoy reading it. We'd love to hear from you regarding this issue and ideas for future issues.



Paleontological Excavation of an Ice Age Cat Skeleton in Burja Cave, Lee County, Virginia

By Dr. Katarina Kosič Ficco, Virginia Department of Conservation and Recreation, Division of Natural Heritage, Karst Program

In 2016, a large cat skeleton approximately 6 feet long was found by a group of cavers in a remote cave beneath the Jefferson National Forest in Lee County, Virginia. It was immediately apparent that this is an excellent discovery of an ancient species that could help us understand the history of carnivores of the Appalachian Mountains. Katarina Kosič Ficco, of the Virginia Department of Conservation and Recreation (DCR) Division of Natural Heritage and Mike Ficco, of the Cave Conservancy of the Virginias (CCV), both discovered the cave. They were also part of the team that discovered the skeleton. Wil Orndorff, also of DCR, connected the cavers with paleontologist Dr. Alex Hastings who now works at the Minnesota Science Museum. Before cooperating with DCR, Hastings was not a caver. Kosič Ficco and Ficco trained Hastings in necessary caving skills, including the vertical caving techniques needed to access the skeleton, which lay in a highly technical and challenging vertical cave.

Five years in the making, the project finally concluded on the weekend of Oct. 1, 2021. A team of 11 cavers, including the entire staff of DCR's Natural Heritage Karst Program and several volunteers, entered the cave, excavated and packaged the fragile bones, and carried them with extreme care out of the cave and up a very steep mountainside. The bones were then transported to the Virginia Museum of Natural History (VMNH), which will process the bones and eventually exhibit the skeleton, lovingly named Petra by the primary discoverers. Hastings thinks Petra is most likely an American cheetah that lived during the Pleistocene epoch (2,580,000-11,700 years ago). This is the geological epoch

continued on page 4

For more information, please contact the Virginia Department of Conservation and Recreation, Virginia Natural Heritage Program, 600 E. Main St., 24th Fl., Richmond, VA 23219, or one of the members of the Virginia Cave Board: Mr. Anthony Bessette, Mr. Robert Denton, Dr. Daniel H. Doctor, Mr. David Ek, Mr. John Graves, Dr. John Haynes, Mr. Russell Kohrs, Mr. Richard Lambert, Mr. Steve Lindeman and Ms. Meredith Weberg.

JMU Rocks!

By Dr. R Shane McGary, Assistant Professor of Geophysics, Department of Geology and Environmental Science, James Madison University

Starting in May of 2022 and running through the end of July, James Madison University will host a group of students participating in a cave- and karst-centered Research Experience for Undergraduates (REU) as part of the inaugural class for Undergraduate Research Opportunities in Cave and Karst Science (U-ROCKS). The REU, initially funded for three years through the National Science Foundation (NSF), will host 10 students each year to engage in an intensive 10-week program designed to provide an on-ramp to students interested in pursuing careers in karst science or other science, technology, engineering and mathematics (STEM) disciplines. The students will receive travel support to and from the REU, be provided with housing on JMU's campus and be given a stipend of \$600/week and food allowance of \$100/week. This is the only NSF-supported REU with a focus on cave and karst science in the nation, and as such can serve as a primary pipeline for students interested in pursuing careers related to cave and karst environments.

Student activities for U-ROCKS can be divided into four categories: 1) mentored independent research projects; 2) scientific workshops in cave and karst science; 3) personal and professional development; and 4) building a learning community through peer mentoring and social activities. All of these will be driven by experienced faculty mentoring.

Each U-ROCKS student will conduct an independent, original research project with a primary mentor. With the assistance of their mentors, students will be expected to develop research questions, design experiments, conduct fieldwork, analyze and interpret data and disseminate results. The projects will be designed, mentored and conducted in such a way as to foster independence, strengthen self-efficacy and develop a sense of scientific identity, in addition to acquiring general research skills and those specific to individual projects. Fieldwork will be conducted as a team to promote community, emphasize the multi-disciplinary nature of karst science, develop an understanding of the framework that connects individual projects and share the importance of the conservation ethic as it relates to work in caves and karst environments. Students will be expected to familiarize themselves with literature appropriate to their own projects during and after receiving training on how to approach literature, and at the direction of their primary mentors. They will engage in data analysis and interpretation with increasing independence and confidence. Each U-ROCKS student will present a research proposal in poster form in week 4, and an oral presentation, accompanied by a written report, will be delivered in week 10. We expect that the work conducted during this REU will be presented publicly at conferences such as Geological Society of America, and, where appropriate, lead to student authorship of publications. Students and mentors will be strongly encouraged to maintain working relationships after the conclusion of U-ROCKS to facilitate these kinds of continuing activities.



The science-based student workshops will be partly classroom-based and partly field-based. The classroom-based portion will consist of presentations by mentors or other specialists; to broaden the diversity of speakers, we will draw on experts from U.S. Geological Survey, Virginia Cave Board, Virginia Speleological Survey and Virginia Department of Transportation. Seven presentations will cover the following topic areas (specific topics will depend on the participating speakers): 1) Overview of karst terrain (speleology, time, surface, scale, rocks, sediments, structure, classification of karst systems); 2) Karst water (distribution, movement, tracer studies, contamination, water chemistry, ecosystems); 3) Caves through time (speleogenesis, geological and hydrological controls on evolution, paleoclimate); and 4) Land management (geotechnical studies, sinkholes, subsidence and siltation).

The professional and personal development workshops are designed to provide support to the students in ways that aren't directly connected to the science, but still critical for navigating the path to and through careers in science. For example, topics in the professional development category include selecting a mentor, networking, handling data and presenting research. The personal development topics focus on diversity and inclusion, ethical scientific behavior, scientific identity, belongingness, independence and self-efficacy.

The portion of the program related to building a learning community has been crafted to engender team-building, starting with the orientation activities during which students (guided by the mentors) develop the set of standards for respectful behavior and interactions that they will abide by throughout the workshop. The program is intentionally seeded throughout with opportunities for the students to work independently together, including overnight excursions for data collection and living in the same apartment community. Weekend events are designed to support community building, with some activities intended explicitly to promote teamwork (e.g., JMU teamwork ropes course and a canoeing trip), and others to provide a relaxed environment (e.g., painting lessons at a local brewery and a trip to the White Oak Lavender Farm).

With an emphasis on first-rate science, well-designed personal and professional development, cross-cultural community and team building, and thoughtful mentoring, we strive to provide a catalytic research experience that welcomes this cohort of 10 students each year into the scientific community and helps shape their identity within that community. ■



More information can be found at <https://www.jmu.edu/geology/UROCKS/index.shtml>.



Donation of Perkins Cave to the NSS

By John M. Wilson, NSS 13112RL, OS, FE

Editor's Note: This article originally appeared in the *NSS News*, September 2021, page 4 and was shortened for inclusion in the *Virginia Cave Owners' Newsletter*.

This article is about the Perkins Cave and property donation from John and Mary Wilson, the newest, largest and longest cave owned by the NSS [National Speleological Society]. The Perkins Cave Preserve (PCP) is significant in terms of the length of the cave.

Shortly after the Civil War, the Perkins family came to Hayters Gap and established their farm on the side of Brumley Mountain in Washington County, Virginia. The cave property remained in the Perkins family for more than the next 100 years.

The gated main entrance is in a small sinkhole. Beyond that is a complex maze of more than 10 miles of passage. Low crawls typify the cave, some notable ones being the 800-foot crawl, the 200-foot crawl and the Tornpeter tube. The lateral extent of the mapped passage is about 2,200 feet. The cave has several levels, with the vertical dimension being almost 300 feet. The signature features of Perkins Cave include the Reflecting Pool, the Coffin and the exceptionally numerous small calcite formations that cover the walls, ceiling and floor in many passages.

In his *Descriptions of Virginia Caves*, John Holsinger wrote: "Development is strongly joint-controlled, with the passages trending along sets of major strike-oriented joints that trend NNE and SSW with considerable modification by sets of subordinate cross joints. The cave is developed in Tonoloway Formation, which dips at a low angle to the SE."

Perkins Cave has been known for a long time to locals and was sometimes referred to as "Killer Cave" by organized cavers who discovered and mapped it from 1968 to 1972. The known cave grew from approximately 1,000 feet to about 10 miles by 1972.

Considering its late discovery, the long crawls and complicated mazes, it was obvious that this very beautiful and sensitive cave needed protection from local vandals and speleothem miners. The Historic section, which includes several thousand feet of passage around the main entrance, had received moderate vandalism before installation of the main entrance gate.

Footprints near a small area known as the Poplar Tree Entrance indicated it may have been passable at one time, but no person had been documented using it until 1987. A bat colony appeared to have used the entrance many years earlier, evidenced by old guano piles. In 1987, the Appalachian Cave Conservancy opened this second Poplar Tree Entrance to the cave, which today also is gated like the main entrance.

Around 1973, three caver brothers (the Chamberlains), hoping to preserve the cave, bought the property with plans to control access. Unfortunately, these plans never worked out and financial problems led to the Farm Credit Association [FCA] foreclosing in 1977.

During this time, I had put an ad in the *NSS News* stating that I wanted to buy a significant cave for conservation, education and scientific purposes. Don Davidson knew about the foreclo-

sure and contacted me about an upcoming auction taking place in Abingdon, Virginia. The FCA had tried to auction the property previously but did not receive a bid to cover the loan.

Unfortunately, I did not have enough money to cover my bid, so the FCA arranged for a small loan to cover the difference. I purchased the property from the trustees in 1977, established permanent management and formed the Perkins Cave Conservation and Management Society, now called the Appalachian Cave Conservancy (ACC), shortly after that.

I later added an adjacent approximately 12-acre tract, and a subsequent survey redrew the property into two lots separated by Route 80.

The ACC has chosen a labor-intensive system of cave management. A gate on the main entrance has reduced the amount of traffic into the cave and the rate of deterioration. The current ACC cave management plan requires trip leaders to know how to avoid protected areas.

This group has done most of the things necessary to manage the cave effectively, such as: obtaining working control of the cave, establishing goals and purposes and developing the methodology for carrying out these goals.

The efforts of the ACC indicate that a group of cavers working with a cave owner who is very much interested in protecting and managing his cave can be very effective in accomplishing desired goals. Unfortunately, there are not enough resources among cavers to do this for every significant cave. ■

COVID and Caving Two Years on

By Wil Orndorff, Virginia Department of Conservation and Recreation, Division of Natural Heritage, Karst Program

It's now been over two years since the COVID-19 pandemic began. Gradually, caving activities have resumed in Virginia. While individual caving trips for exploration, science, conservation, education and recreation are slowly returning to pre-pandemic levels, large gatherings of cavers have yet to resume.

As a cave owner, as always, it's really up to you to decide what you are comfortable with. Factors to consider in terms of interacting with cavers include your individual likelihood of infection and whether you are particularly at risk should you contract one of the coronavirus variants. While cavers are certainly responsible for their own decisions in terms of how many and which people participate in any particular trip, the cave owner ultimately decides whether or not to allow access and to whom they allow access. In the unlikely event of a cave rescue, cave rescue teams and other cavers with rescue training are essentially at pre-pandemic levels in terms of their readiness and willingness to respond.

To sum it up, caving has almost returned to normal, but you as a cave owner should continue to consider coronavirus-related factors as appropriate to your individual circumstances when making decisions about allowing access to the caves on and beneath your property. ■



Paleontological Excavation of an Ice Age Cat Skeleton in Burja Cave, Lee County, Virginia

continued from page 1

during which the most recent Ice Age occurred. However, definitive determination of the species is pending detailed paleontological analysis.

The project required significant cooperation between various stakeholders. The cave is located on land managed by the U.S. Forest Service, which issued a permit for the extraction. The project was funded by CCV and DCR. While CCV funded the supplies and Hastings' travel to Virginia, DCR provided lodging at Natural Tunnel State Park for the team. VMNH will be the curator and exhibitor of the skeleton. However, the skeleton would not have been brought to the surface if it weren't for dedicated and skilled cavers, primarily volunteers. The entire team worked hard to learn excavation methods and used their improvisational skills to package and protect the bones and enabled Petra to see the light of day once more. ■



*Paleontologist Dr. Alex Hastings sees the skeleton for the first time.
Photo by Dr. Katarina Kosič Ficco*