

Virginia Cave Owners'



NEWSLETTER

April 2020

New Accessible Entrance at Luray Caverns

By John Graves
Virginia Cave Board and Luray Caverns

What a pleasure it was last year to formally open a 70-year-old idea for all to have ease of access into and out of the Luray Caverns! My brother Rod Graves, our families, and I are deeply honored to be able to make Luray Caverns accessible to all, even those who use wheelchairs.

Seventy years ago, our Dad Ted Graves had the idea to eliminate the 70 steps at the caverns entrance—in fact, all the stairs throughout the caverns—to help with ease of walking and flow. The caverns tour was loaded with stairs throughout, including a turn-around near the Wishing Well for a return out the same path.

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A Message From the Chair

The past year was an active one for the Virginia Cave Board (VCB). We had brochures for the **Virginia Cave and Karst Trail** printed and distributed to many local tourist offices and chambers of commerce around the state, with many more held in reserve. The 2019 National Cave and Karst Management Symposium was held in Bristol, and was organized by staff from the Department of Conservation and Recreation Karst Program with participation from several VCB members. We worked with the Virginia Housing Commission in an attempt to gain support for a bill that would empower local governments to enact ordinances in karst areas when rezoned from agricultural to development (the effort was ultimately stalled, but will be revisited again this year). We conducted onsite visits of construction activities within karst areas along the Mountain Valley Pipeline to ensure compliance with best practices for sediment and erosion control and karst protection, and advised representatives of the pipeline company. Finally, we supported efforts toward obtaining the first Virginia state budget funding increase to the DCR Karst Program in more than two decades; however, the measure failed to come to fruition in the current legislative session. We encourage cave owners who are concerned about the management of cave and karst resources in Virginia to let the administration and their legislative representatives know that with only one full-time general-funded position to cover the karst of 27 counties, the DCR Karst Program is not sustainable at the current funding levels.

Dr. Daniel H. Doctor, Virginia Cave Board

The Importance of a Karst Club in High School

By Hailey Raye Richardson

The Karst Club has been at Holston High School for five years, giving students access to experience and knowledge of caving that is not available in most schools. Holston High School is located in a small Appalachian town, and like much of Appalachia, suffers from a lack of opportunity and economic prosperity. Talented youth tend to leave the area due to the perception that there is very little for them here. Appalachia's riches lie in the landscape and literally in the land. Unfortunately, many students take the region's natural gifts for granted and miss out on an important reason to keep their own natural gifts in the area. The Karst Club is an organization whose goal it is to connect students with the wonders of the land around and below them in an effort to fully develop the next generation.

At last October's National Cave and Karst Management Symposium in Bristol, Virginia, past and present students discussed karst experiences, the effect of the club on their own lives, the philosophy of the leadership development aspect of the club, and the issues involved in running such a club in a high school setting. ■

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A Publication of the Virginia Cave Board

Due to generous grants from *The Robertson Association* 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.

For more information, please contact the Virginia Department of Conservation and Recreation, Virginia Natural Heritage Program, 600 E. Main St., 24th Floor, 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. Mark Hodge, Mr. Richard Lambert, Mr. Steve Lindeman, Ms. Marian McConnell, and Ms. Meredith Weberg.

New Accessible Entrance at Luray Caverns

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In the late 1940s, Dad embarked on a mission to solve this issue. The “figure 8” we now know as the tour was the first step, allowing the flow forward movement with no backtracking. Next was to eliminate the stairs with ramps. This took many years to complete. The entry stairs were the last of this venture, but building a larger campus became “the priority.”

Nearly 16 years later, our brother Harry Graves un-shelved the venture, recognizing the need for a safer, more up-to-date entryway. Engineering began finding the best approach. Funding and other obstacles stopped the venture, shelving the project once again. A few years later, in 1989, we lost Harry to cancer.

In 2008, meeting with Dad in his office, we were viewing old plans and drawings for all sorts of projects, some viable, some not. He pulled out a small group of papers, pointed to them and said, “Do this first!” He was pointing at plans he and Harry had worked on concerning a “new entrance for all to see Luray Caverns.”

I began research later that year and in 2010 started looking into engineering work. We worked for about three years learning



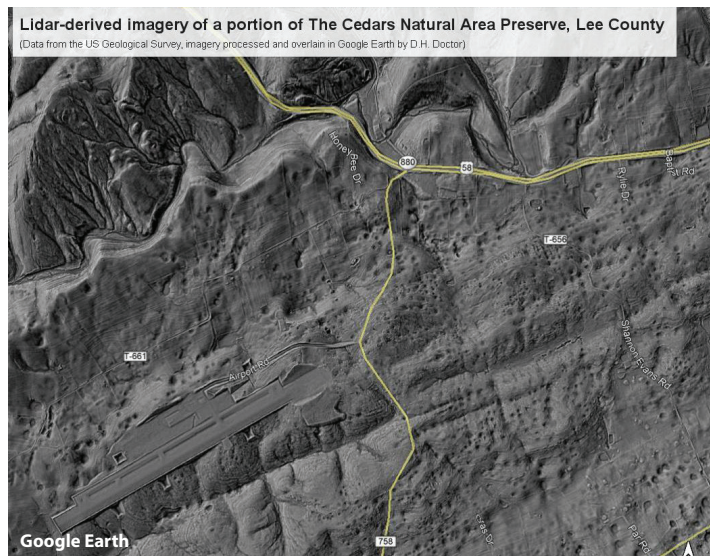
and bringing to light more issues with this than I care to review! After seeking the graces of the Luray Caverns Board in 2014, research work increased. A business plan and seeking financial loan opportunities was pursued in the interim. On June 6, 2017, excavation work began and now we have a fantastic product that we are all so very proud of. ■

Lidar, a New Tool for Karst Landscapes

By Dr. Daniel H. Doctor, Virginia Cave Board and U.S. Geological Survey

One of the most exciting developments over the last few years for those interested in the caves and karst lands of Virginia is the availability of high-resolution elevation imagery obtained through lidar data acquisition. Lidar is a concatenation of “light radar,” or sometimes referred to as an acronym for “light detection and ranging.” It is a technology similar to that used in a handheld laser range-finder, except mounted on an airplane and used to scan hundreds to thousands of acres per flight. The resulting data are a cloud of points in space, each representing the return of laser light reflected off of the land surface, or anything solid above the land surface such as tree leaves, wires, and roofs of buildings. Some of those points will have been returned off of the ground itself, and those points are used to create models of the topography. The vertical accuracy of the resulting elevation models is typically better than 10 cm for each square meter of ground surface! As one might imagine, this type of remote sensing technology permits a representative view of the landscape like never before.

Since a detailed understanding of karst resources begins with an inventory of the landforms and hydrologic features that comprise a karst system, this sort of lidar-derived imagery is revolutionary for the mapping and management of Virginia’s karst regions. Many additional sinkholes (typically tens of percent or more) can be identified using lidar imagery than using closed contours on traditional 1:24,000 scale U.S. Geological Survey (USGS) topographic maps. When combined with digital geologic map data, lidar elevation imagery can be used to identify previously unrecognized areas of karst development. Finally, the enhanced visualization of lidar-derived bare-earth topography provides an excellent means for public awareness of and education about karst regions.



In 2014, the USGS established the 3D Elevation Program (3DEP) for acquiring airborne lidar elevation across the entire U.S. Since then, nearly all of Virginia has been flown, and as of November 2019, the entirety of the karst lands west of the Blue Ridge are covered with elevation models derived from lidar data. For folks who are savvy using geographic information system (GIS) software, the data are available for download from the USGS National Map website here: <https://viewer.nationalmap.gov/basic/>.

For those who simply wish to view the imagery in a web browser, you can find it displayed in this web app developed by Brian Ham of the Tennessee Department of Environment and Conservation: <https://www.arcgis.com/apps/View/index.html?appid=f5d44e0447448fd90ccb464d5f064df> ■

Who to Contact for a Cave Rescue

By Tony Smith, Eastern Coordinator, National Cave Rescue Commission and Wil Orndorff, Virginia Natural Heritage Program

Recently cave rescues have been in the news, ranging from the dramatic rescue of the Thai soccer team by British cave divers in 2018 to that of five stranded spelunkers in a Russell County, Virginia, cave in 2019. As a cave owner, you need to know what to do in case of a cave rescue. Although cave rescues are relatively rare with no more than a few in Virginia during a typical year, when they do occur, they are a big deal, demanding lots of specialized resources and lasting hours to days to complete.

When to call a cave rescue? Cavers from the National Speleological Society (NSS) are generally very strict about having a surface sign-out contact, whose job it is to initiate rescue activities if the group has not reported back by the assigned time. However, these rules are not always followed, particularly when informal cave explorers—spelunkers—are involved. As an owner, it's reasonable to ask a group for the time they plan to exit the cave and the name and contact information for their sign-out contact. Many unnecessary rescues have been initiated over the years due to the failure to exchange this information.

Who to call? Call 911—Virginia has a combination of cave rescue teams and individuals trained by the National Cave Rescue Commission (NCRC). Both are resources that may be involved in a cave rescue, depending on where it is and how involved the situation is—distance, nature of injuries, difficulty of cave, et cetera.

What will happen? After contacting 911, First Responders from the local Fire Department or Rescue Squad will arrive. An Incident Commander (IC) will work with you to understand the nature of the emergency, the conditions inside the cave, and accessibility. The IC will then coordinate the rescue actions and call for additional resources as necessary. In most cases, the Virginia Department of Emergency Management will be involved and

work to mobilize cave rescue resources to the scene. Furthermore, the Eastern Region of the NCRC works to make sure the local rescue authorities in areas with caves know how to contact them to request special resources.

Who are the cave rescuers? The vast majority of cave rescues require a large number of strong cavers in order to be successful. However, specialized rescue skills are equally important. The NCRC is a subdivision of the NSS and has been tasked with developing and holding training, along with coordinating human and equipment resources to assist local agencies and authorities in cave rescue. The NCRC has divided the US into 12 regions and holds weeklong seminars with individuals including cavers, fire fighters, and rescue personnel. Virginia falls within the Eastern Region. NCRC training is desirable because the environment is different in a cave from confined space or other rescue scenarios. The most valuable rescuers are strong cavers who are familiar with the cave and trained in rescue. NCRC training covers topics including first response, patient packaging, patient movement, high angle rope work, and trapped patient extrication.

How to contact the NCRC? The Eastern Region NCRC covers the Eastern States from Pennsylvania into North Carolina. To learn more about training or available resources of the ERNCRC, you can visit our website at <http://caves.org/commission/ncrc/ncrc-er/index.html> or contact the coordinator at eastern@ncrc.info (this email is monitored constantly in case of an emergency.)

We have developed a caver information sheet (http://caves.org/commission/ncrc/ncrc-er/Caver_Information%20_Sheet.pdf) that we encourage cavers to complete and leave with their emergency sign-out contact, and that a cave owner may choose to use as well. ■

2019 National Cave and Karst Management Symposium

By Wil Orndorff, Tom Malabad, and Katarina Kosič Ficco, Virginia Department of Conservation and Recreation, Division of Natural Heritage, Karst Program

From October 5 through 11, 2019, one hundred attendees from across the United States gathered in Bristol, Virginia, to share accomplishments and ideas about the responsible management of cave and karst resources. Attendees included conservationists and scientists from the private sector, federal and state governments, numerous regional cave conservancies, and dedicated individuals from the caving community. The symposium was dedicated to the memory of founding Virginia Cave Board member and Old Dominion University professor Dr. John “Captain Karst” Holsinger, who passed away in October 2018, leaving behind as his legacy a roadmap to the protection of karst resources in the Appalachians and beyond.

The Virginia Department of Conservation and Recreation (DCR) was the host sponsor for the symposium. DCR Karst Program's Wil Orndorff led conference organization with assistance from staff of The Nature Conservancy, the Cave Research Foundation, the Virginia Speleological Survey, and the Cave Conservancy of the Virginias. Conference field trips included stops at Natural

Tunnel State Park, Wilderness Road State Park, Cumberland Gap National Historical Park, the Gray Fossil Site, visits to six wild caves under conservation ownership, and a tour led by Dr. Jerry Lewis discussing major developments in our understanding of the freshwater crustacean isopod genus *Lirceus*. This genus includes the federally endangered Lee County cave isopod, protected by the Cedars Natural Area Preserve where DCR Natural Heritage's Claiborne Woodall described the relationship between surface land management and the subterranean ecosystem. Virginia's work in cave and karst conservation and management were highlighted throughout the week, with talks by DCR Karst Program staff, the Virginia Cave Board, the U.S. Geological Survey, the Virginia Speleological Survey, the Mid-Atlantic Karst Conservancy, students from Virginia Tech, Dr. Jerry Lewis, the West Virginia Cave Conservancy, and the Appalachian Karst Conservancy.

The list of sponsors that made all these things possible can be viewed at <https://www.sinkingcreekpottery.com/sponsors/>. ■



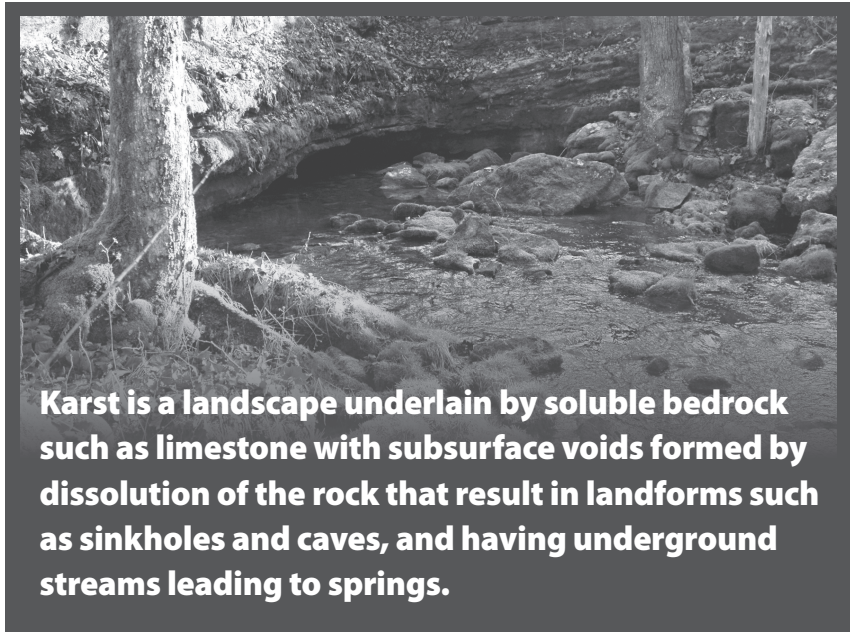
Virginia Cave Week 2020

The Karst Landscape

May 31-June 6

This year Cave Week runs from Sunday, May 31 through Saturday, June 6. Events will occur throughout the state and include: talks at the Blandy Farm/Virginia State Arboretum in Clarke County, the Watersinks area of Highland County, and Natural Chimneys near Harrisonburg, as well as a presentation in Roanoke and a cave trip at Ogdens Cave Natural Area Preserve in Frederick County near Middletown.

See www.vacaveweek.com for details near you!



Karst is a landscape underlain by soluble bedrock such as limestone with subsurface voids formed by dissolution of the rock that result in landforms such as sinkholes and caves, and having underground streams leading to springs.

Online VCON

If you would like to receive the VCON via email, please let us know at vcb@dcr.virginia.gov. The Virginia Cave Board publishes this newsletter with funds from grants and donations only. Printing and postage costs have gone up. If we can save a little on printing, that would be great!