ACCA News
Spring 2023

# Conservation Is Good Business

Around 35 years ago, the National Caves Association (NCA), a trade group of show cave operators, had their national convention in Horse Cave, Kentucky. This was a time when the American Cave Conservation Association was in its infancy and Hidden River Cave was still heavily polluted by industrial and domestic sewage.

Show cave operators from all over the U.S. convened on the Thomas House lawn, next to Hidden River Cave, for a lovely wine and cheese reception … made all the more interesting by the occasional waft of rotting creamery waste emanating from the nearby cave entrance. Russ Campbell, the manager of Fantastic Caverns and an ACCA Board member at the time came up with a theme for that meeting — **"Conservation is good business."** The event was hosted by Bill and Judy Austin, owners of Mammoth Onyx Cave as well as Hidden River Cave before ACCA acquired it.

The goal of that event was to enlist the help of the show cave industry in our efforts to conserve caves and educate the public about the threats affecting cave systems across the planet. Prior to that time, show cave interpretation focused mostly on unique cave formations such as stalactites and stalagmites and not so much about issues such as groundwater pollution or problems from urbanization such as sinkhole collapse and flooding.

The fate that befell Hidden River Cave made a huge impression on one of the event attendees, a young Ann Dunlavy, one of the owners of Lincoln Caverns in Huntington, Pennsylvania. Ann has been a national leader for cave education through her work at Lincoln Caverns. Recently, Ann told me how that NCA meeting led her to take a greater interest in cave conservation and education throughout her life.

Other show cave operators, such as Jim Richards at Bluespring Caverns, Dick Bell at Seneca Caverns, and Bruce Herschend at Talking Rocks Caverns also got involved in the ACCA and served on our Board of Directors, as Jim still does. Many show caves regularly donate to the ACCA and have supported our efforts for decades.

As problems continue to beset show caves and caves in general, Hidden River Cave still serves as a harbinger of what can happen when you don't take care of Mother Nature. The town of Horse Cave is doing well today because we learned and invested in the lesson that "conservation is good business."

As a young nonprofit Director, I was frequently told that my efforts to protect the cave would cause the town of Horse Cave to lose all its jobs because industrial businesses could not afford to treat their wastes. Instead, the waste treatment efforts have led to a revival of the town's cave tourism and have enabled the community to thrive. Today there are ten times more factory jobs in Horse Cave than there were in the 1980s … all made possible by good sewage infrastructure that enabled Hidden River Cave and the Industry to co-exist. Conservation is indeed **"good for business!"**

David G. Foster, President/CEO

## Upcoming Events

### Earth Day at Hidden River Cave
**Saturday, April 22, 2023 • 9:00 AM-12:00 PM**

Come and get your hands dirty this Earth Day as we work to remove invasive plants and improve the natural environment within the Hidden River Cave entrance. Bring your own plant-pulling tools, your favorite gloves and your own water bottle. Bug spray will be provided. Registration is encouraged, but not required. Register online: *https://bit.ly/3ykq4fW*

### Bill and Judy Austin Day at Hidden River Cave
**Sunday, June 4, 2023**

Join us as we celebrate Bill and Judy Austin's role in helping to establish the American Cave Museum and Hidden River Cave. ACCA members will receive free admission to Hidden River Cave that day. Everyone is also invited to an informal reception at the Thomas House from 4:00 to 6:00 PM (Central time). **RSVP to:** *debbie@caveconservation.com* if you plan to attend.

# Caves vs. development

## Runoff and pollutants an ongoing concern

BY GARY GIBULA
STAFF REPORTER

Whether public or privately-owned,"wild"or tour-guided, many caves face the real threat of unwanted contaminants washing in simply due to the fact that they are low spots on the earth's landscape.

Hydrologically, it's only natural for caves to act as conduits for water that flows atop strata of sandstone and limestone, cutting through the rock to create small and large passages.

It's an unfortunate reality that the public largely does not fully realize that the actions of developers and industry can sometimes have adverse affects when discharged chemicals and other substances filter through porous karst into caves, creating unwanted odors and contaminating the very drinking water used by those responsible for the problem.

WOODVILLE KARST PLAIN PROJECT

A prime example can be found in Florida where, on January 7, cave divers with the Woodville Karst Plain Project (www.wkpp.org) made a physical connection between the seven-mile-long Chip's Hole Cave System and the Wakulla Cave System. Previously with more than 38 miles of mapped cave passageway, Wakulla is the longest underwater cave system in the U.S.

The addition of the Chip's Hole mileage now makes Wakulla, at 50 miles and going, the eighth-longest cave in the U.S. and fifth-longest underwater cave system in the world.

The Wakulla Cave System also provides water to Wakulla Spring, the world's largest and deepest

*Left: Divers explore Wakulla Cave System, Florida*
*Top Photo: Smallin Civil War Cave, Ozark, Missouri, Explore Missouri Caves*

freshwater spring, which makes it of particular concern to local resident Kathleen Von Hoene.

"The Wakulla County Board of County Commissioners (BOCC) is considering a proposal that would allow a 16-pump gas station at a location 100 feet above the Chip's Hole Cave System," Von Hoene said. "Along with other residents, I'm concerned about the introduction of a potential pollution source (i.e., gas station) above this shallow portion of the cave system, particularly since public records from the Florida Department of Environmental Protection reveal petroleum contaminants discharged from gas stations have migrated through our unique karst terrain to more than 100 feet below land surface. Dye traces and cave divers have established the cave's connection to Wakulla Spring. Any contaminants entering the cave system at that location would end up in the aquifer and Wakulla Spring."

Von Hoene said the BOCC should not ignore the science and should hold public workshops and invite cave and karst experts to explain how vulnerable our karst terrain and underlying aquifer are to pollutants.

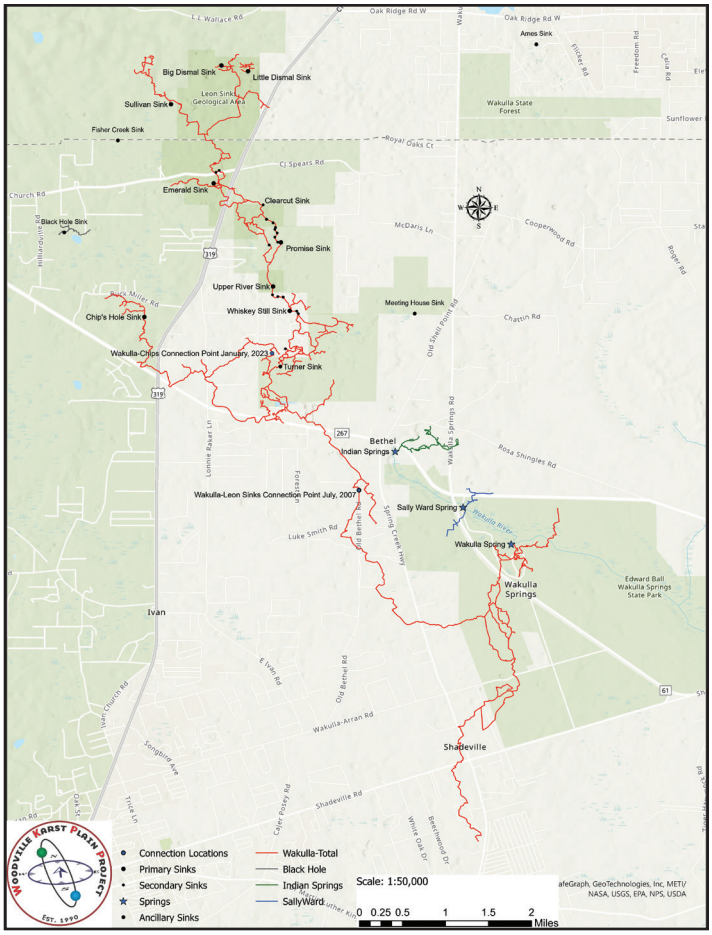
"The Wakulla County BOCC has a draft ordinance right now where they claim they're going to add more protections for springs in Wakulla County, but the draft ordinance contains no limitations on the placement of gas stations near caves," she said. "There's a movie called *Don't Look Up* that's about people who deny the existence of a planet-killing comet. The Commissioners need to look down and recognize the existence and importance of the caves in our karst environment, and acknowledge the science that keeping pollution sources away from the submerged cave system is the way to protect our outstanding Florida springs."

Woodville Karst Plain Project

Another cave having to deal with contaminants is Bluespring Caverns (www.bluespringcaverns.com), near Bedford, Indiana. The show cave contains more than 21 miles of surveyed cave, about 80-percent of which are stream passages.

Bluespring President Jim Richards, a long-time ACCA Board Member, is in discussions with a nearby excavation and paving asphalt operation that allegedly routed an injection pipe into a sinkhole.

"In our case, we had to close for nine days until the diesel smell dissipated from the cave," Richards said. "Until then, tours simply were not possible. Fortunately, there was no die-off of blind cavefish, but once those pollutants get into the watershed, particularly in caves like Bluespring which contain extensive stream systems, they can hang around for a long time."




*Left: Most recent Wakulla Cave System Map, Top Right: Turner Sink, Wakulla Cave System, Florida*

*Fluorescein dye introduced into a losing stream. Photo courtesy of Ozark Underground Laboratory*

Richards said the practice of dumping garbage and anything unwanted into a sinkhole was commonly done for years.

"It's illegal now, but people are still doing it," he said. "What people don't always realize is that there are cave systems that lie just 20 or 30 feet below the ground surface. Those will pick up anything introduced on the surface almost instantly."

For years, Tom Aley, President and Senior Hydrogeologist of the Ozark Underground Laboratory (www.ozarkundergroundlab.com), has researched similar problems.

*Rimstone Dam, Smallin Civil War Cave, Ozark, Missouri*

Smallin Civil War Cave, Ozark, Missouri, Explore Missouri Caves

"Recognition that contaminants can move long distances in karst groundwater systems has led agencies and groups such as The Nature Conservancy to fund groundwater tracing investigations designed to delineate recharge areas for important caves and springs," Aley said. "The recharge area for a cave or spring is the surface area that contributes water to that feature.

"Over the past 40 years the Ozark Underground Laboratory (OUL) has delineated the recharge areas for about 100 springs, many of which provide habitat for aquatic species of conservation concern. Most of this work has been in karst regions of Missouri, Arkansas, Oklahoma and Illinois.

"Not all land in a recharge area poses equal water quality threats to a spring or cave. The relative risks of particular portions of the landscape to the water quality of a spring or cave vary dramatically.

"The OUL routinely develops land vulnerability maps for delineated recharge areas that qualitatively depict relative levels of water quality risks. These maps are of great value in land use planning and in environmental impact assessments. Recharge area delineation and vulnerability mapping are critically important steps in protecting water quality and aquatic habitats in significant caves and springs."

City officials in Ozark, Missouri, apparently are becoming more cognizant of the relationship between development and underground caves.

"My wife and I have spent our entire lives in and around caves," said Kevin Bright, owner of Smallin Civil War Cave (www.smallincave.com). "There are 7,500-feet of passage so far, but we still don't know where everything goes. There are lots of leads, and those are my favorite parts of the cave."

With its healthy population of cave crayfish, Bright said he became concerned one day when an unknown intrusion of silt suddenly was noticed in the stream passage.

"I took some city officials into the cave to show them the silt, and they assumed that they were already doing everything they needed to for caves and karst," he said. "But after seeing what they saw, they retracted that statement."

Samples were collected and linked to a construction site where developers allegedly used inefficient silt socks and breached the dam on a nearby pond.

"It illustrates how porous our karst is," Bright said. "My goal is to turn this into a positive. The city has now started an environmental department with a protection program to pay more attention to caves and karst."

He said the National Speleological Society's Springfield Plateau Grotto (www.spgcavers.org) is helping to explore and map the far reaches of Smallin.

"I need to mention Nathan Burton, the president of SPG," Bright said. "He has made such a difference building a positive relationship between tour caves and the caving community. There used to be a perceived division, but now it's exciting how much ground has been gained between cavers and tour caves."

Burton described the cooperation as "a bridge between perspectives."

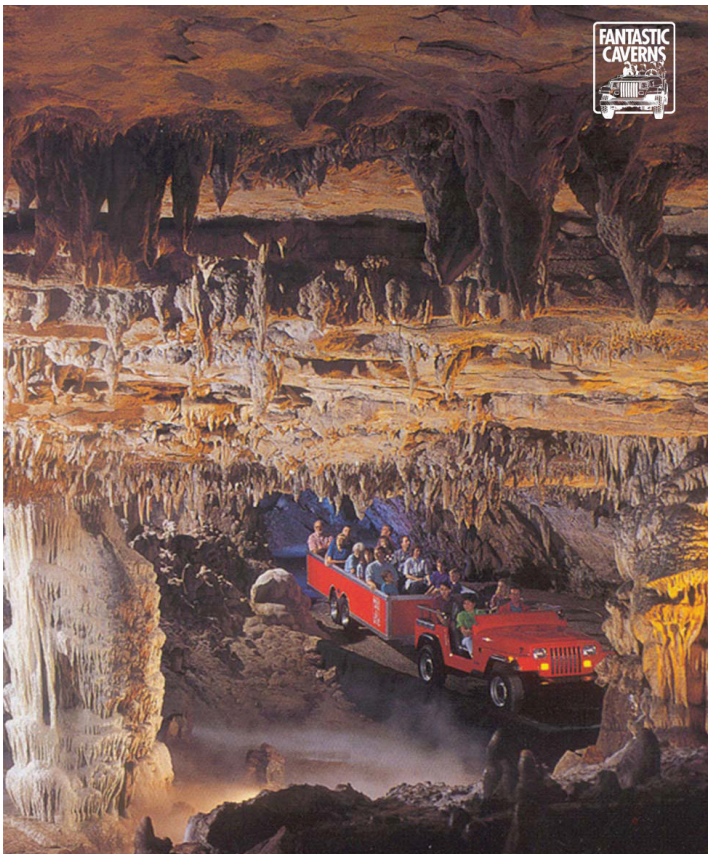
"What's funny is that I'm a developer by trade," he said. "But development has to take into consideration the impact it has on the environment. As a caver, we want to help, but we need to let the cave owners know that we'd like to help wherever the owners need help."

Burton said he and his family have acquired a former tourist attraction known as Old Spanish Cave.

"We bought the cave property about four years ago," he said. "A map is in progress, but we're not sure how much passage is there. No date has yet been set for when it will open to tourists."

Burton said he is in the process of making promotional materials, including the legend of treasure being buried somewhere in the cave.

Another southwest Missouri cave concerned about contaminants is Fantastic Caverns (fantasticcaverns.com). Visitors enjoy the unique tourist attraction on trams driven by propane-powered jeeps.




Fantastic Caverns Springfield, MO

*Visitors experience the magnitude, the stillness, and the splendor of Fantastic Caverns.*

Russ Campbell said his family contracted with the OUL to help find out how Trichloroethylene (TCE) substances had gotten into the cave.

"It turns out there was an industrial dump site," Campbell said. "The OUL worked in a very proactive way to solve the problem and protect the cave and our staff. The business that's currently at the industrial site is doing a very responsible job of cleaning up the area in a very difficult situation."

Campbell added that Fantastic Caverns is in the process of equipping several of their drive-through vehicles with a new generation of catalytic converter scrubber to be more mindful of the cave environment.

"We've found that caring about a cave goes hand in hand with the business," he said. "It's successful because it's dependent on the cave being protected. To say it another way, the cave's been good to us, so we need to be good to the cave."

*Gary Gibula is a journalist who writes for the Chicago Tribune, NSS News and other media. He also is founder and chair of the NSS' Sub-Urban Chicago Grotto, a longtime ACCA partner and benefactor.*

# Clifton Cave Isopod

BY LISA POWERS/FIELD BIOLOGIST

Isopods, most of us are familiar with these small innocuous invertebrates by some of their common names: roly poly, sow bug, armadillo bug, pillbox bug, wood louse or land shrimp. It might surprise you to find out these funny, little armored creatures are actually not bugs but are crustaceans. They are more closely related to lobsters, crabs, shrimp and crayfish than any insects.

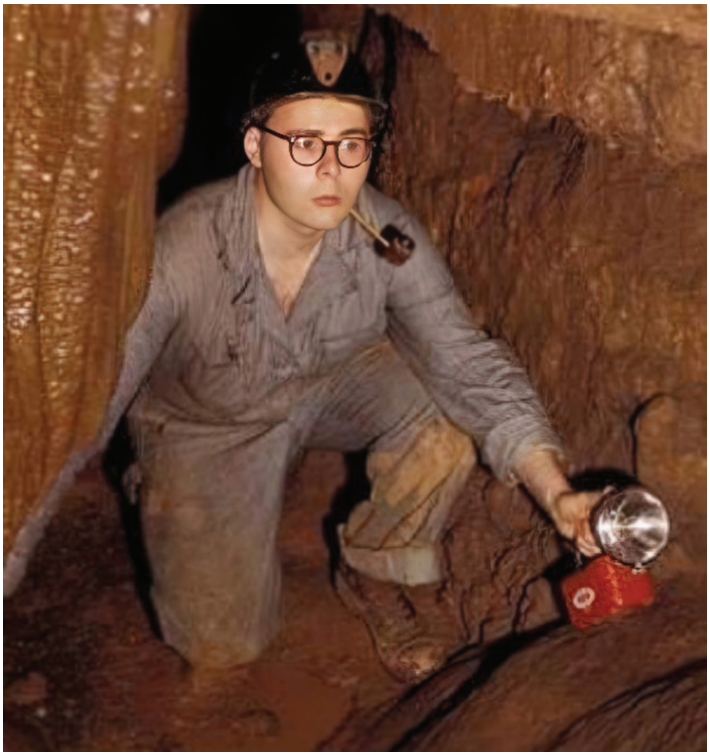
The word isopod breaks down into 'iso' meaning equal; and 'pod' meaning foot. All isopods have 7 pairs of legs, a dorsolaterally flattened body and sessile eyes. Isopods can be found in marine and freshwater habitats as well as on land depending upon the species. They are mostly detritivores feeding primarily upon decaying organic matter.

There are a few species that have adapted to life underground. These species have evolved within specific cave systems in isolation from other species. Because these species depend upon organic material as a food source, the caves where they have developed have an influx of organic matter usually via a stream that flushes leafy and woody debris into the cave from the surface above. There must also be good microhabitat for the species so that it does not get flushed out of the cave system. Because they have such limited and specialized habitat, most of these caverniculous critters have been classified as threatened or endangered species. One such species is the Clifton Cave Isopod.

**Clifton Cave Isopod *(Caecidotea barri)***

The Clifton Cave isopod was discovered in a cave in Woodland County, Kentucky back in the mid-1960's. It was described and named by H. R. Steeves in the *Midland Naturalist* 1965.





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*Caecidotea* is a large and fairly wide-spread North American genus of subterranean isopods. The genus name Caecidotea is derived from the Latin 'caecus' meaning 'blind; secret or dark' and 'ote' referencing the small size.

The second part of the name "barri' refers to fellow scientist and a colleague of H.R. Steeves, Thomas Calhoun Barr, Jr., Professor Emeritus at the University of Kentucky-Lexington.

Dr. Barr (b. September 06, 1931-d. April 29, 2011) was a prominent zoologist who specialized in cave ecology with a particular interest and expertise in cave beetles. He was also the author of the formidable reference book, *The Caves of Tennessee,* President of the National Speleological Society 1965-67 and a founding member of both the Nashville and Boston Grotto cave clubs among his many accomplishments.

The Clifton Cave Isopod is a stygobitic species and has special adaptations for living life in the dark including its small size, an elongated body with a loss of pigment, enhanced sensory and reduced eyes. Its habitat is small subterranean streams and pools of the Clifton Cave system. Like many similar species, it is a detritivore

*Left: The Mammoth Cave isopod (Caecidotea stygia) is a similar species to the Clifton Cave Isopod. There are no known photographs of Caecidotea barri. Top: A well known photo of Dr. Thomas C. Barr, Jr. from his early years caving.*

feeding upon and helping to break down decaying organic matter.

Clifton Cave is also home to the Clifton Cave beetle *(Pseudoanopthalmus caecus).* Both species are currently ranked by NatreServe as G1 species. This ranking means the species are critically imperiled on a global basis and are at great risk of extinction.

Unfortunately, the only entrance to the cave was destroyed and sealed during roadway construction in 1970. Recently an attempt was made using electrical resistivity surveys to locate and map out the cave system and its features to be better able to monitor and manage the critically endangered species within.

## Vocabulary:

**Caverniculous** – living in caves or caverns.

**Detritivore** – an animal that feeds upon dead organic material, especially plant detritus.

**Dorsolateral** – relating to or involving the dorsum (back) and lateral surfaces (sides).

**Sessile** – fixed in one place; immobile. Not stalked.

**Stygobitic** – fauna living in groundwater such as aquifers or caves, fissures and vugs.

**Vug** – a rock cavity lined with mineral crystals.

*Lisa Powers is a biologist/herpetologist, nature photographer, writer and t-shirt designer. Her work can be found on Face-Book by searching Froghaven Farm and Froghaven Farm Grafix; and on Amazon by searching for Froghaven Farm.*

### Board of Directors' Meeting Summary March 9, 2023

**Minutes:** The June 25, 2022 Minutes were approved. **Board of Directors Elections:** The Board approved the slate of directors for terms beginning on February 1, 2023 and ending on January 31, 2026. Directors include: Judy Austin, Dr. James W. Middleton, Phil O'dell and Tony Moore. **Approval of 2023 Budget:** David Foster presented the 2023 Budget to the Board. After a brief discussion, the budget was approved as submitted. **Zip Line:** David Foster posed the question to the Board of whether to continue operating the zip line this year. The Board approved a motion to do away with the zipline but to pay the annual registration for 2023. **Capital Campaign:** The capital campaign plan was endorsed by the Board and they requested moving forward with fundraising proposals.

# Membership

It's Finally Spring!

On March 9th, the ACCA Board of Directors met in Horse Cave. While putting together our reports, we were pleased to see that our membership and donations have been steadily increasing since 2021. Once again, we want to thank you for keeping your membership current, for your donations and for helping us continue to move forward!

Please do keep in mind that you can join, renew or give gift memberships and tributes online at our website: https://caveconservation.com.

As we move into this new year, we want to focus upon growing our membership and introducing ACCA to others that may not be familiar with us.

There are a number of opportunities this year in Kentucky and cave-related conferences:

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|---|---|
| **May 9th** | **11th Annual Kentucky Gives Day** https://bit.ly/3z5yXKK |
| **May 26-29** | **Speleofest, Bonnieville, KY** http://speleofest.com/ |
| **June 26-30** | **NSS Convention, Elkins, WV** https://bit.ly/3JK5Hhn |
| **Nov. 6-10** | **National Cave & Karst Management Symposium, Chattanooga, TN** https://nckms.org/ |

*Please keep ACCA in mind if you will be attending any of these events or if there are other instances where you would like to familiarize folks with who we are. We have physical membership materials and digital assets available if you would like to share info. about ACCA on social media. Email Debbie for info.

Debra L. Silverman, Director of Member Services
Email: debbie@caveconservation.com

American Cave Conservation Association
P.O. Box 409
Horse Cave, KY 42749

## Coach Cave Cleanup April 28 and 29, 2023

The Kentucky Bat Working Group is planning a clean-out of Coach Cave near Park City, KY for April 28 and 29, 2023. The objective is to remove several large debris piles from the cave's entrance room that consist of rotting steps and bridges from the 1960s commercialization of the cave.

The piles have been created over the past two years through the efforts of the NSS Mammoth Cave Restoration Group. KY and US Fish & Wildlife are supporting the work and will be assisting as well as several grottos and cave-related groups. Approximately 25 people will be required to pass boards and bags of wood up the entrance steps, load pickups, and transport the debris to a large dumpster. A helmet, light, leather gloves and work/caving clothes are required.

Expenses for the dumpster will be covered by the Imperiled Bat Conservation Fund. Lunches will be provided as well as motel lodging for one night, if needed.

Please contact Charlie Bishop if you are available for either or both days and if you need lodging. Email: horsecave49@gmail.com or 859-421-6217.

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**MEMBERS:** Please send change of address and correspondence to: P.O. Box 409, Horse Cave, KY 42749; (270)786-1466
Email: debbie@caveconservation.com



The American Cave Conservation Association was incorporated in 1981 in the Commonwealth of Virginia for scientific and educational purposes. The Association is a nonprofit, tax-exempt corporation under Section 501(c)(3) of the Internal Revenue Code and is a publicly supported organization as defined in Sections 170(b)(1)(IV) and 509(a) Contributions are tax deductible. Membership Levels: Regular $25; Supporter: $50; Sustainer: $100; Guarantor: $250; Benefactor: $500; Patron: $1,000.

Visit our web site: **www.caveconservation.com**