

American Caves

Spring - Summer
1998



A publication of the American Cave Conservation Association

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Please accept our apology if we have not included your name and contact us so that we may correct our error.

Thank you!

We would also like to thank the following members and friends for volunteering during the Hidden River Cave spring cleanup and other projects this Spring: Cleveland Grotto members: Bob and Beverly Danielson, Nate Waybright, Frank Vlcek, Mike and Patti Substeln, John and Debbie Prisel, Christopher Gabelman, Anne Wesley, Marbry Hardin and Cynthia Norris; Hart of Kentucky Grotto members: Bruce Wilson and Mark Quigley; Caverna Coed-Y members: Erica Horton, Amanda Hoffman, Rebecca Priddy, Megan Collins, Amanda Strange, Christy Doyle and Eric Rogers; Elaine Hackerman; Joe Bradford; Joe Joe Bradford; Mike Best; Penny Boeckman; Christopher Leraaen; Jennifer Lohr and Les Carney



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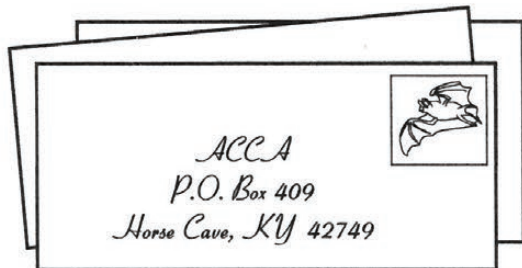
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Our Covers—our front cover photo is a caver in Onyx Cave, Arizona. The back cover is Mark Perkins in Wiggins Pit, Mount St. Helens NVM, Washington. Both photographs are by Jim Nieland.

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On Thanksgiving of last year, I visited your museum. I had a great tour. You have done a great job restoring the cave and promoting education.

Thank you for your time and commitment to caving and cave preservation.

—Scott Davidson
Flagstaff, Arizona

The 4th and 5th grade students, teachers and parents of Southside Elementary would like to thank your staff for a wonderful afternoon at the museum and cave. The students as well as the teachers and parents were fascinated by your storytellers and Native American artifacts.

We do this trip every other year. We would like to come back the year after next and be able to spend a lot more time and do more activities.

Also, thanks for your patience with such a large group. Everything was great and we appreciate your hard work and patience. Thanks again.

—Angie McMichael
Southside Elementary
Cynthiana, Kentucky

Thank you for your story telling, Native American information and your tour of the cave. We really appreciate your parts in making this trip a success for our students at

Southside School in Harrison County. This will be a memory they will have for years to come. We have students who have never been out of our hometown of Cynthiana, Kentucky. Again thanks for all you did for the students.

—Joyce Dryden Six
Southside Elementary
Cynthiana, Kentucky

This letter is to express our deepest appreciation for your work at the Environmental Career Opportunities Day (ECO-Day) held at Robinson Experiment Station, in Quicksand, Kentucky. The event was attended by more than 2,000 students and teachers of Eastern Kentucky.

No event of this magnitude is possible without positive attitudes and exhibitors that are willing to "go the extra mile" with creative ideas and the fortitude to work with large numbers of students. Your contribution to education will be remembered long after the day is done.

—Pam Feagans-Graves, Director
Natural Resources Environmental Education Program
—Lynda Rose, Coordinator
Kentucky River Conservation & Development

We visited the American Cave & Karst Museum last October. My children were doing research for their water conservation essay and poster.

We learned a lot, enjoyed ourselves immensely, and appreciated the excellent tour of the cave!

Thank you for your help with additional literature, too. It was very helpful.

My son decided to write his essay about Horse Cave. Please find a copy enclosed. He won first place for his school (K - 5th grade). But, more importantly, he learned about keeping a precious natural resource pure! Thank you again!

—Sharon Froedge
Tompkinsville, Kentucky

November 1, 1997 and February 8, 1998 Board Of Directors Meeting Summary

The Board approved the January 1 - December 31, 1997 in-house financial reports subject to audit. Also approved were the 1994/1995 and 1996 audits presented by Hilliard & Fisher Certified Public Accountants and the 1998 budget. The ACCA membership ratified the following members to serve on the Board of Directors for terms beginning on January 1, 1998 - December 31, 2000: Thomas Aley; Dave Derrick; Bruce Herschend; Dr. George Huppert; Robert Joyner; Austin Musselman; Dr. James W. Middleton, Jr.; and Chuck Pease. President Roy Powers, Jr.; requested the 1997 officers to continue to serve in their current positions for 1998. The Board ratified an agreement between the ACCA and the City of Horse Cave for management of the American Cave & Karst Center. The Bylaws of the association were amended to update and better reflect the responsibilities of the executive director and the number of business meetings conducted each year was changed to two.

ACCA Chapter News

Northwest Chapter News

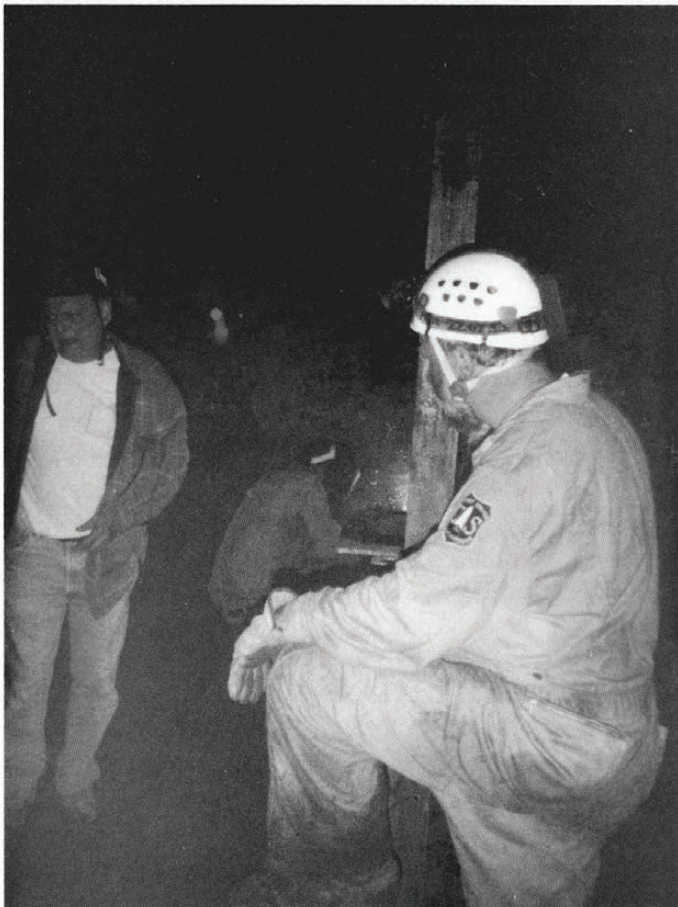
By: Paul Ostby

Work continues on the bat roost disturbance detector project. Each disturbance detector is a palm-sized device which monitors cave usage by detecting even low levels of reflected light from visitors' flashlights. A tiny computer chip then records the date, time, and duration of each visit or disturbance. Their small size makes the devices easy to hide if necessary.

Last November, Paul Ostby and Jim Nieland placed four detectors in selected caves in Mount St. Helens National Monument. Jim and Paul also placed Computech trail counters nearby to help validate the data collected by the prototype disturbance detectors. With the end of winter the four detectors will soon be removed from the caves to check the data they collected, and to make sure they survived the win-

ter without harm. If the prototype detectors prove reliable, then more devices may be produced for sale to cave managers.

On a humorous note, in November, Forest Service law enforcement responded to the discovery of a "pipe bomb" in Ape Cave. In a middle-of-the-night action they turned out in force only to learn that a visitor had somehow discovered one of the Computech trail counters mentioned above. Apparently they mistook the counter for a pipe bomb. Fortunately the "bomb" was recognized for what it was and not detonated, and has since been replaced in its original position, buried in a breakdown pile, to resume its intended task. Interestingly, two of the disturbance detectors were located within 15 feet of the suspected bomb, but were never found by law enforcement, a credit to their disguise. Each detector is placed inside a fake rock cast from concrete, and painted to resemble real cave rocks.



David Foster

Northwest Chapter Chairman, Jim Nieland, was an instructor at the recent ACCA cave gating seminar.

Update on Central Oregon Cave Climbing

by: Larry King

For the past several years, the impact of recreational rock climbing to lava tubes in Central Oregon has been an ongoing concern. During the spring and summer of 1997, Northwest Chapter ACCA members participated in a user survey at the affected caves. Utilizing electronic monitors and direct observation, a statistical representation of the visitor usage at Arnold Ice Cave, Charcoal Cave Number One and Hidden Forest Cave has been established and will be incorporated into the U.S. Forest Service (USFS) management plan for the Arnold Lava Tube System.

In terms of individual visitors, climbing and climbing related visitors currently make up approximately 45% of the visitors to Hidden Forest Cave. Since climbers spend considerably more time in the cave (an average of 118 minutes versus 35 minutes for non-climbing visitors), the development of bolted climbing routes in the cave has resulted in a dramatic increase in the cave's total visitor-hours. Under a volunteer agreement with the USFS, documentation of cultural resources at Charcoal Cave Number One was undertaken in April, 1997. The cave has been closed to all public entry pending the development of a management plan.

Bolted climbing routes have recently been developed in two Idaho caves. Teakettle Cave, in the Shoshone District BLM, will have its bolts removed under provisions of the Federal Cave Resources Protection Act. Another cave on State of Idaho land was recently found to have approximately 50 bolted climbing anchors.



Indiana's Blue River Basin Protected by The Nature Conservancy

As part of the effort to protect southern Indiana's 100-mile-long Blue River and its drainage basin, The Nature Conservancy (TNC) has contributed \$60,000 toward the cost of a new sewage treatment plant near the town of Salem. The plant will greatly reduce what has long been one of the river's main sources of pollution. TNC has also arranged to monitor a series of sinkholes which supply water to Harrison Spring, one of the river's largest feeder springs. In addition, TNC has also sponsored a bio-inventory of the caves and springs along the river. The inventory, a three-year project ending this year, will provide a baseline to compare future conditions in the cave against. It has already paid other rich dividends, including — among many other discoveries — the first Indiana sighting of a Packard's cave pseudoscorpion since the 1870s; the world's third known population of the Donaldson Cave copepod; and an Iceland cave sheetweb spider — only the fourth specimen ever collected. (Sources: *IKC Update*, September 1997 and *The Electric Caver*, December 1997)

Nine Utah Cave Looters Convicted

A record nine felony convictions were meted out recently to the looters of Utah's Polar Mesa Cave, a Manti-La Sal National Forest cave known to hold evidence of human activity going back 8,000 years. The group had removed over 54 cubic yards (about 20 pickup truck loads) of fill from the cave on trips taken periodically from 1989 to 1991. Following a reward offer by the U.S. Forest Service, Forest Service personnel received report of a collection of over 500 artifacts — including human remains — in a Moab, Utah pawnshop. The collection was linked to the cave when mud on some of the artifacts was found to match the soil in the cave, and DNA samples from cigarette butts and dust masks left in the cave provided a match with several of the suspects. The case then went to trial — and resulted in the largest number

of defendants and felony convictions since the 1979 enactment of the Archaeological Resources Protection Act. (Source: *Common Ground: Archeology and Ethnography in the Public Interest*; Volume 2, Number 3-4, Summer-Fall 1997)

U.S. Forest Service Cave Fee Test Program Shelved

The U.S. Forest Service's (USFS) Region 3, which serves Arizona and New Mexico, recently backed off from its plans to implement its proposed Southwestern Cave Demonstration project, a three-year experimental fee system for public use of caves on Coronado and Lincoln National Forests. The project (and others like it) was first envisioned by USFS officials as a way to make up for declining budgets in 1995, when Congress voted to allow federal land management agencies to institute such test programs. Proposed fees ranged from \$10 per person for each cave entered all the way up to \$150 per person for each guided trip into caves requiring rope climbing and descending equipment provided by the USFS. Organized cavers fought the program on a number of points, and offered the alternative that the USFS eventually agreed to work toward: that of working with members of the National Speleological Society (NSS) to increase volunteerism and USFS cave program participation. Toward that end, regional NSS cavers have formed the Southwestern Cave Conservation Task Force with goals of providing Region 3 with a yearly minimum of \$100,000 value in volunteer hours, expertise, and contributions. (Source: *NSS News*, March 1998)

Indiana Bats Halt Missouri Timber Harvest

A planned 700-acre timber harvest in Missouri's Mark Twain National Forest was put on hold in early March by the U.S. Forest Service following pressure from environmentalists and a preliminary injunction from U.S. District Judge Russell Clark. Clark issued the injunction on the grounds that the parcel to be logged is home to endangered Indiana bats. According to a Forest Service District Ranger, the presence of a colony of Indiana bats hibernating in nearby White's Creek Cave was "new information." (Source: *St. Louis Post Dispatch*, Wednesday, March 11, 1998)

Hoosier National Forest Cave Inventory Begins

Indiana's Hoosier National Forest has teamed up with the Indiana Karst Conservancy to inventory all caves on the Forest Service property. The plan involves sending out two

teams: an Advanced Team charged with finding the caves and logging their locations, followed by a Values Team which will then inventory whatever biological, cultural, geological, hydrological, paleontological, recreational, and/or educational significance the caves might have to aid in the creation of appropriate management strategies for the caves. It is reportedly the first such project ever undertaken in the United States. Volunteers will be trained in all needed techniques and skills. Anyone interested in the monthly trips should contact either Ellen Jacquart (812-275-5987) or Kriste Lindberg (812-339-7210, Lindberg@indiana.edu). (Source: *IKC Update* No. 47, December 1997)

Groundwater Problems on Illinois' Sinkhole Plain

Rapidly degrading groundwater quality in southwestern Illinois has spurred local concern and the creation of the Mississippi Karst Resource Planning Committee. The committee's focus is on an area including Monroe, southern St. Clair, and western Randolph counties known as the "Land of 10,000 Sinkholes," featuring one of the highest densities of sinkholes in the United States. Between 1986 and 1995 the percentage of wells producing water deemed unsafe by the local health department more than doubled — from 36% to 75%. Studies by the Illinois Department of Agriculture and the State Geological Survey cite poor agricultural practices and increasing population pressures as the biggest reasons for the continuing decrease in water quality. The agriculture concerns center on practices which allow the introduction of nitrates, insecticides, herbicides, and fungicides into the groundwater. Population concerns include the growing number of improperly drilled water wells and more poorly constructed private sewage disposal systems. Both of the latter are already major players in the groundwater degradation and are likely to worsen as the spread of the St. Louis marches on. The proposal of listing the Illinois Cave Amphipod as a federally endangered species (see pages 8 - 12 in this issue) has brought the situation into the limelight. (Source: *Illinois Audubon*, Fall 1997)

Virginia Karst Project Video

The Virginia Department of Conservation and Recreation's (DCR) Virginia Karst Project is sponsoring the production of a 10-minute video which will focus on the problems characteristic of karst terrains. Aimed primarily at development committees and county and city planners (but available to others), the tape will explain what makes up a karst landform and will focus on describing, illustrating, and explaining potential problems, pollution sources, unfiltered transportation of groundwater, and the methods used to map out underground recharge basins. The tape will use actual

DCR case histories to demonstrate some of the problems prevalent in Virginia's karst areas. (Source: *Region Record*, Winter 1997-98)

Karst Waters Institute Lists Top 10 Endangered Karst Ecosystems

The Karst Waters Institute (KWI), a nonprofit organization dedicated to karst research and increasing public understanding of karst terrains, has issued its first annual list of 10 karst ecosystems most in need of protection. Choosing from the 40 nominations received, the KWI's list of sites includes: Blue River Basin, southern Indiana, USA; Cape Range Peninsula, Australia; Church and Bitumen Caves, Bermuda; Cueva del Viento System, Canary Islands; Fricks Cave, Georgia, USA; Ha Tien-Hon Chong, Vietnam; Jollyville Plateau, Texas, USA; Koloa Lava Tube System, Hawaii, USA; Lez Karst System, France; South Central Kentucky Karst, USA

It is hoped that this and future lists will increase public awareness of the dangers facing karst areas and will foster more effective protection efforts. (Source: *NSS News*, March 1998)

BEYOND AMERICA

Spanish Caves Yield Insight Into Human Evolution

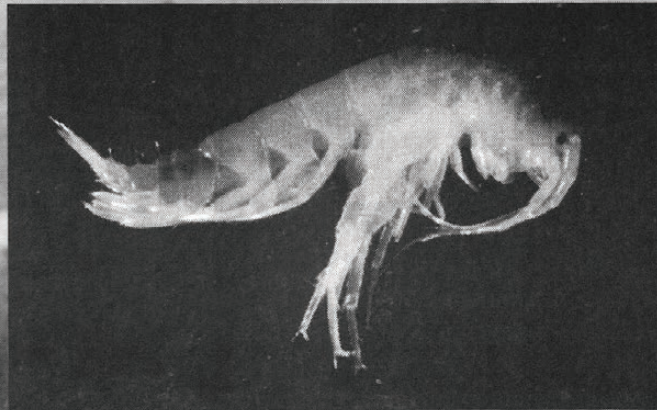
Recent finds in two north-central caves in Spain have scientists rethinking the route of human evolution. Among the discoveries in Sima de los Huesos (Pit of Bones) are 75% of all collected human specimens between 1.5 million and 100,000 years old. Portions of at least 32 individuals have been found in the cave, as has the most complete Neanderthal skull found to date. In nearby Gran Dolina, the bones of an even earlier hominid were found. Dubbed *Homo antecessor* by Spanish scientists, the previously undescribed species is at least 780,000 years old. (Source: *Discover*, December 1997)

Cave Depth Record Passes Mile Mark

Cave divers from France and England recently traveled to the mountainous Haute Savoie region of France to set a new world record for cave depth in Gouffre Mirola. After descending 1,070 meters below the surface to reach the sump, or submerged section of passage, that had stopped all earlier explorers, team members had only to dive a short distance before passing the bottleneck on January 24, 1998. The divers emerged into passage that led to yet another sump, this one 540 meters deeper into the cave, surpassing for the first time the long-sought mile mark in depth. (Source: *Cavers Digest*, February, 1998)

**An Editorial:
The Illinois Cave Amphipod;
a Collection of Classical Problems**

**By: Tom Aley
Ozark Underground Laboratory**



The situation

The Federal Register for July 28, 1997, proposed listing of the Illinois Cave Amphipod (*Gammarus acherondytes*) as endangered under the provisions of the Endangered Species Act of 1973. The U.S. Fish and Wildlife Service, which authored the proposed listing, noted that the amphipod was historically known from six cave streams in Monroe and St. Clair Counties, Illinois, but that recent surveys had found the species at only three of the original sites. The U.S. Fish and Wildlife Service believes that the amphipod is threatened primarily by groundwater pollution which is likely due to the application of pesticides in cave stream recharge areas. They also conclude that a possible secondary threat is contamination of subsurface water by human and animal wastes from sewage and septic systems and livestock feedlots.

The Illinois cave amphipod inhabits caves in an area where row crop agriculture is a significant land use. Panno et al. (1996) found the agricultural herbicides Atrazine and/or Alachlor in 83% of groundwater samples taken from springs in the general habitat area for the amphipod. Herbicide concentrations were greatest during and following spring rainfalls. While herbicides are designed to kill target plants, they can impact reproduction and survival of amphipods and other aquatic animals. In addition, breakdown products of DDT and Aldrin were detected in invertebrate tissue samples from Fogelpole Cave (one of the three caves where the Illinois Cave Amphipod is still known to exist). While DDT and Aldrin are no longer used in this area and have not been detected in recent water samples, these compounds and/or their breakdown products may still exist in cave sediments or may periodically be flushed through the caves as pulses which have not been effectively sampled.

The karst region which provides habitat for the Illinois Cave Amphipod is near St. Louis and much of the area is experiencing rapid urban growth. Much of this growth is in subdivisions with on-site sewage disposal systems. On-site sewage systems add biological contaminants and nutrients to the cave streams. On-site sewage systems can also deplete dissolved oxygen in the groundwater; the U.S. Fish and Wildlife Service notes in the proposed listing that high levels of dissolved oxygen appear to be an environmental necessity for this amphipod.

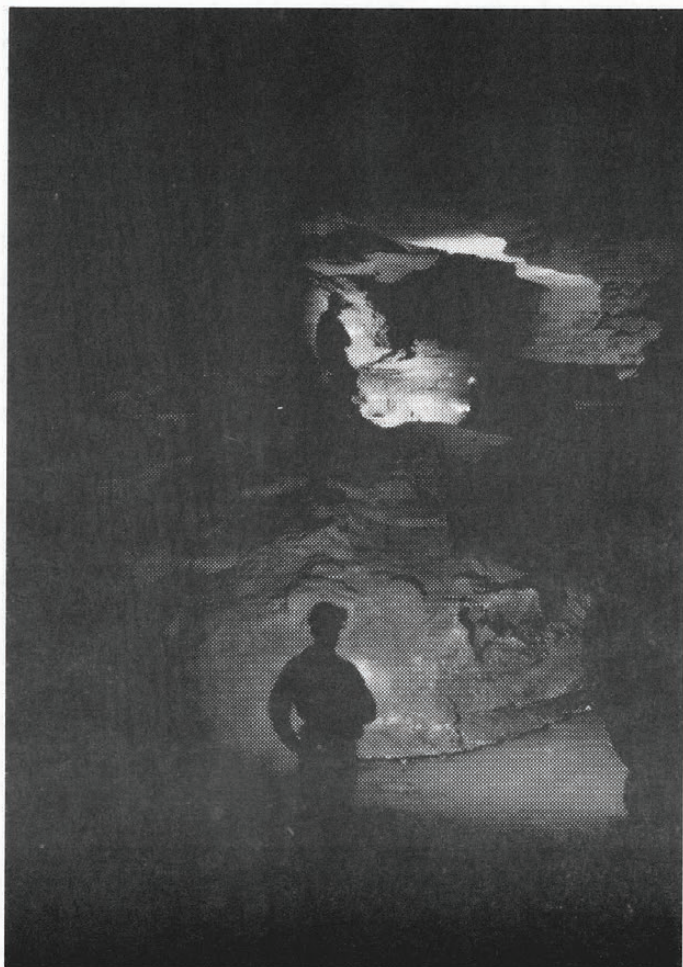
The proposed endangered species listing prompted a letter writing campaign organized by the Illinois Farm Bureau. Newspaper articles derived from the Associated Press have

Left: The Illinois Cave Amphipod, Gammarus acherondytes. Photo courtesy of the Illinois Natural History Survey. Right: Mainstream passage in Illinois Caverns, home to Gammarus acherondytes.

appeared in many newspapers in the area and even in some papers hundreds of miles away from the localized habitat of the amphipod. Some farmers are worried (and a few are undoubtedly angry). Some cavers are concerned that the listing might lead to further access restriction to caves in the area. Nobody seems to be happy. This is clearly a case with many of the classical problems associated with protection of cave species at or near the brink of extinction.

Purpose of this article

The proposed listing of the Illinois Cave Amphipod vividly illustrates four classical problems associated with the listing of threatened or endangered species found in caves. I want to describe and discuss these problems as they relate to this particular species since these problems present threats of their own to this animal. We must insure the long-term survival of this and other cave species; we must also insure the economic survival of landowners whose cooperation and help is essential to the health and well-being of cave species and the environments in which they exist. We cannot insure the protection of threatened endangered species until such time as landowners view the presence of such species on their lands as assets rather than liabilities.



Steve Taylor, Illinois Natural History Survey

Four classical problems

There are four classical problems which are frequently encountered when cave species, and especially aquatic species, are proposed for threatened or endangered species listing. All four of the problems are present in the case of the Illinois Cave Amphipod.

The first problem is the fundamental difficulty of assessing the status of the species. Elliott (1997) provides an excellent detailed discussion of this problem. Is the habitat restricted to the cave or caves in which the species is found, or is the cave more appropriately a "window" into a much larger subsurface habitat? If it is a window, is the population seen through the window representative of the entire system? Because of the low energy levels typical of cave and groundwater systems, populations are sparse and often difficult to find. Furthermore, knowledge of the population dynamics of the species is routinely somewhere between absent and minimal. As a result, natural population variations are unknown. These conditions routinely lead to arguments that we should not list a species until we know more about it. In reality, for a cave or karst groundwater species we can never develop data which are as definitive as the data which can be gathered for a similar surface species. The problems inherent in assessing the threat of extinction of cave and karst groundwater species must not become an excuse for delaying actions which may help species which are likely to be threatened or endangered.

The second problem is that federal listing of a species as threatened or endangered has no economic incentives or benefits for landowners whose actions are critical to the survival of the species. In reality, threatened or endangered listing has perceived (and in some cases real) economic disincentives. This is well illustrated by the proposed listing for the Illinois Cave Amphipod. The proposed listing published in the Federal Register identifies pesticides, including herbicides, as the principal threat to the amphipod. Much of the land which yields water to the cave systems which do (or did) provide habitat for this amphipod are used for row crop agriculture and for crops where pesticides are routinely needed for the economic viability of the farming operation. Preventing species extinctions is a national objective which has strong public support. This support includes many landowners who properly view themselves as stewards of the land and its resources. It is inherently unfair to place (or to potentially place) the economic burden of preventing species extinction on landowners when the costs should be shared by all of us. However, this is the current situation.

I am not making an argument for a right to pollute (which is clearly an underlying interest of some of the supporters of "private property rights"). In my opinion one of the most fun-

damental property rights is the right to clean water flowing onto or beneath your land. Instead, the point is that economic fairness to landowners must become a fundamental component of threatened and endangered species listings. In the absence of such fairness we cannot effectively protect species threatened with extinction; the public cannot (and should not) buy all the land. In the case of this amphipod, survival of this species requires the cooperation and help of those who own or use lands in the recharge areas for the cave streams which provide habitat for this animal.

In the case of the Illinois Cave Amphipod, the extent of necessary landowner help for the amphipod is probably not all that great. Many of the pesticides are absorbed onto soil particles, and these particles are washed into sinkholes and subsequently into cave streams in this part of Illinois. Better vegetative buffers (often called filter strips) around sinkholes will trap most soil particles and their absorbed pesticides. Clean-ups of the trash in numerous sinkhole dumps of the area would also be valuable. Philip Moss recently wrote me about a trash clean-up in one of the caves which provides habitat for the Illinois Cave Amphipod. He found many used 5-gallon steel agricultural chemical cans in a cave passage, and noted that almost all of them had rust holes and were completely filled with fine-grained sediments. He noted that in spite of the many years since steel containers have been used for agricultural chemicals and the fact that they had no apparent integrity to contain their residual contents, there was a distinct (and sometimes strong) odor of chemicals coming from several of these containers. Mr. Moss also commented that during a recent clean-up where approximately 30 cubic yards of trash was removed from a sinkhole that they found gallons of gasoline and used motor oil contained in the trash. The agricultural chemical cans were undoubtedly dumped into this same sinkhole.

Some currently developing strategies in agriculture may be beneficial to cave animals. For example, global positioning systems are now being used in some applications of fertilizers and pesticides. The approach is to apply only as much of the chemicals as are needed for the particular portions of the field; application rates are computer controlled by integrating basic data about the field and the position of the application equipment. Proponents suggest that the saving in agricultural chemicals by avoiding excessive applications will pay for such systems. However, it is unclear whether this level of sophistication will ever be applied to the scale of agriculture found in this Illinois karst area.

The third problem facing aquatic cave species is that we commonly do not know the location of the areas that impact the species, nor the extent to which different areas represent different intensities of water quality threats. In the case of the Illinois Cave Amphipod more information already exists



Steve Taylor, Illinois Natural History Survey

INHS researchers Jean Krejca (left) and Don Webb, looking for the Illinois Cave Amphipod in a large cave stream.

than is typical for most cave habitats. During the last two years several groundwater traces have been conducted in the Fogelpole Cave area (Aley and Aley, 1998), and a comprehensive recharge area delineation and land vulnerability assessment study is expected to begin within a few months. Still, one can appreciate the unease that some owners of karst lands must feel when basic data have not been developed.

The fourth problem is that the proposed endangered species listing contains no clear strategy for insuring the perpetuation of the species while minimizing impacts on landowners from requirements that provide little or no benefit to the species. Recovery plans are developed for species once they are listed, and these plans are intended to develop such strategies. However, making rules before one understands their implications is hardly a recipe for public comfort.

What do we need?

I find the data indicating that the Illinois Cave Amphipod should be listed as an endangered species to be compelling. Water quality degradation from land uses in the recharge areas for the caves are credibly the cause of the population declines or disappearances.

Population recoveries of this amphipod necessitate improvements in groundwater quality. Constraints on agricultural activities which are not economically offset through some mechanism will prevent general landowner cooperation and will tend to change land use from rural uses with some row crop lands to suburban subdivisions which will commonly rely upon on-site sewage systems. General landowner cooperation is essential to the perpetuation of the Illinois Cave Amphipod. The maintenance of rural land uses

(including row crop agriculture) will provide better long-term groundwater quality for the cave fauna than will suburban subdivisions.

Recharge area delineations for the known populations of the amphipod are urgently needed and is expected to be conducted in the near future. This work is essential to focusing attention on locations and situations where water quality enhancement is most critical. Such studies will probably demonstrate that many of the landowners who are worried about the potential listing of the amphipod have lands that do not contribute waters to any of the known populations.

There is an urgent need to reduce the public fear about owning lands which provide habitat for, or are important to, threatened and endangered species. While the public fear is not commensurate with the threat, it exists and has a credible basis. We cannot prevent extinctions without identifying and listing threatened and endangered species and delineating the communities in which they exist. However, we must not penalize those people whose actions are critical to the survival of species.

Bridges of understanding and cooperation are needed between conservation groups such as the American Cave Conservation Association and landowners and landowner groups such as the Illinois Farm Bureau. I hope this article will help in that regard, and that the continued survival of the Illinois Cave Amphipod can be assured.

References:

Aley, Thomas and Catherine Aley. 1998 Groundwater tracing and recharge area delineation study for two karst study areas in Monroe County, Illinois. Ozark Underground Laboratory contract report to the Mississippi Karst Resource Planning Committee with funding from the Illinois EPA through a U.S. EPA Section 319 grant. 500p. approx.

Elliott, William R. 1997. Conservation of the North America cave and karst biota. Preprint from Elsevier Science's Subterranean Biota (Ecosystems of the World series), October, 1997. 22p.

Federal Register. July 28 1997, Vo.62:144,pp. 40319-40325.

Panno, S.V.; I.G. Krapac; C.P. Weibel; and J.D. Bade. 1996. Groundwater contamination in karst terrain of southwestern Illinois. Ill. State Geological Survey Environmental Geol. Ser. Rept. 151. Champaign, IL 43p.

For more information on the Illinois Cave Amphipod:
<http://www.inhs/uiuc.edu/~sjtaylor/cave/biolspeleol.html>
http://www.fws.gov/r3pao/rock_is/activity/endangrd/ilca.html

ACCA Update



Steven M. Walker

American Cave Conservation Association Board of Directors and staff standing (left to right): Chuck Pease; Dr. Horton H. Hobbs III; Robert Currie; Jim Nieland; William R. Elliott, Ph.D.; Dr. Michael J. Harvey; Thomas Aley; David Foster; Dr. James W. Middleton, Jr.; Austin Musselman; Pamela White and Roy D. Powers, Jr. Kneeling: Debra Foster; Bruce Herschend; Jim Richards; Dr. George N. Huppert and Dave Derrick. Not pictured are Terri Brown; Tricia Daugherty and Robert Joyner

New Directors Elected

Austin Musselman, Chuck Pease, and Dr. James M. Middleton, Jr. are the newest members of the ACCA Board of Directors. The new Board members bring a variety of business skills and interest in conservation to the Board. We would like to welcome the new Directors and thank them for commitment of time and leadership expertise.

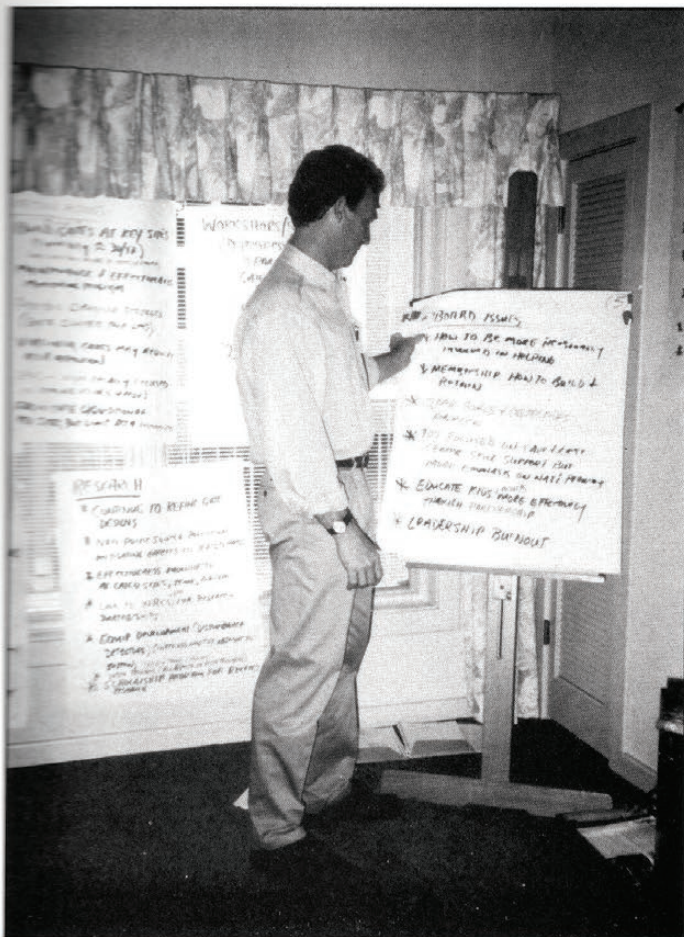
ACCA Board Holds Strategic Planning Sessions

This Spring the ACCA Board began the process of conducting a long term strategic plan for the organization and museum as part of a grant from the James Graham Brown Foundation. The Board held a weekend retreat at Barren River Lake State Park on February 7th and 8th to develop a

rough draft for the plan. The strategic plan will help guide ACCA's development and programs over the next ten years. Copies of the strategic plan will be available to members by the end of this year.



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Debra Foster

Left: Steven M. Walker, Associate Executive Director of Bat Conservation International, served as facilitator for an ACCA strategic planning retreat in February.

Keith Milam Hired as Assistant Museum Director

Keith Milam, a 1997 graduate from Western Kentucky University in Bowling Green, Kentucky was recently promoted to Assistant Museum Director for the American Cave Museum. Keith started working at the museum in May 1997 as a summer guide. In his new position, he will be overseeing the museum's educational programs and staff and designing a new water monitoring exhibit and an underground classroom area inside Hidden River Cave.

ACCA Improves Educational Facilities and School Visitation

Over the winter, ACCA staff renovated an old office building in downtown Horse Cave for classroom use with school groups visiting the American Cave Museum and Hidden River Cave. A grant from the James Graham Brown Foundation provided funding for the classroom enhancements. Under the direction of Assistant Museum Director, Keith Milam, the staff repainted the interior and exterior woodwork, replaced badly worn carpeting with a newer slightly used carpet that was donated, and hung cave and karst posters and displays around the classroom. Keith also painted an elaborate karst mural on the side of one wall as part of a land use activity which is conducted with school groups. Spring school visitation increased from 1,609 in 1997 to 1,706 in 1998. Thanks to a small grant from the Kentucky Waterways Alliance, we were able to provide free admission to local school children. Approximately 500 children from local schools attended the museum program. This represented more than half of the school children living directly over the Hidden River Cave drainage basin.

Cleveland Grotto Helps with Underground Classroom and Cave Cleanup!

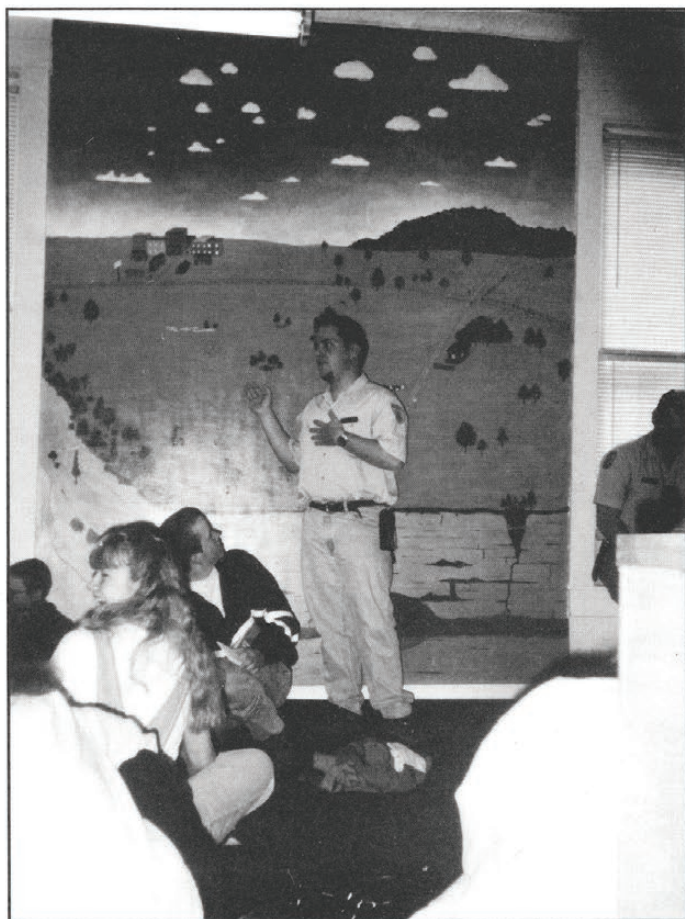
On May 2, members of the Cleveland Grotto of the NSS; ACCA members and staff; and representatives from several other NSS grottos convened at Hidden River Cave for the annual spring cleanup. A big part of the project was to begin construction on an underground classroom in the cave. The classroom will be a platform beside the river where students can conduct water monitoring tests and learn more about Hidden River Cave's hydrology and fragile ecosystem.

The volunteers also helped spruce up the cave entrance by picking up litter, weeding areas along the entrance trail, and scraping paint from the cave's old ticket office to prepare it for repainting.

Many thanks to the Cleveland Grotto members and others who donated their time to help ACCA with these projects.

Left: Cleveland Grotto member, Bob Danielson shows off his landscaping talents during the Hidden River Cave spring cleanup. Right: Assistant Museum Director, Keith Milam works on the underground classroom in Hidden River Cave. Photographs by ACCA staff & friends





Debra Foster

New Land Use and Water Monitoring Exhibits Planned for the Museum and Cave

Contributions from the James Graham Brown Foundation; the Kentucky Division of Water; Hydrolab Corporation; AMJ Equipment and Campbell Scientific, Inc. are helping finance several new exhibit additions to the American Cave and Karst Center. An ambitious groundwater monitoring exhibit is being developed by staff member Keith Milam which will be used to demonstrate the concepts of groundwater science to museum and cave visitors. The interpretive equipment will be part of the Hidden River Cave tours and will monitor pH, temperature, conductivity, dissolved oxygen, turbidity and water depth. Cave guides will be trained to explain what is being measured and why.

A computer land use planning game will be installed in the museum to help demonstrate appropriate ways of building and living in karst environments. The game will allow

*Above: Assistant Museum Director, Keith Milam addresses a school group in front of the land use exhibit he designed in the American Cave and Karst Center's new classroom area.
Right: Gabby Call demonstrates her steel cutting ability at the cave gating seminar in the Great Smoky Mountains.*

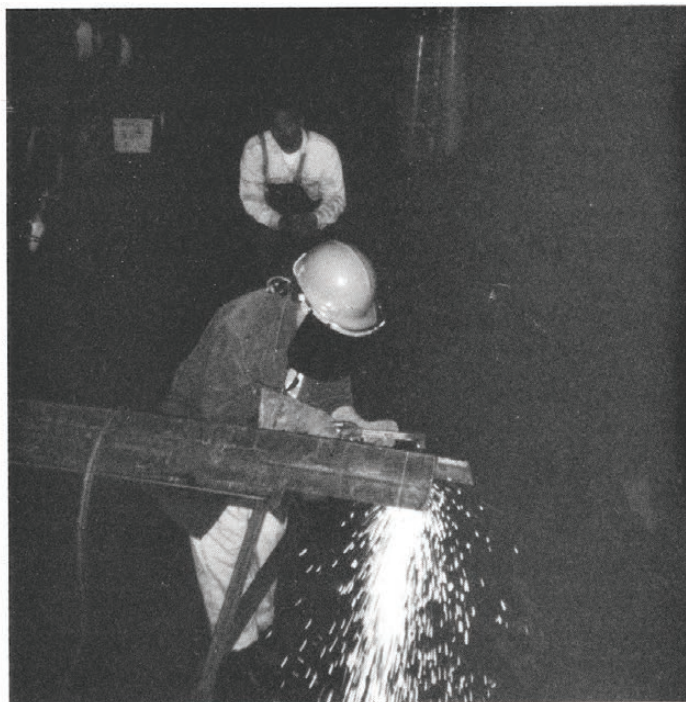
participants to choose various occupations, such as landfill owner or cattle farmer. The game will then pose resource questions for the user to answer. Wrong choices will result in additional costs and environmental fines. In this way, the user can see how making good long-term environmental decisions actually provides a cost savings in the long run.

W.L. Lyons Brown Foundation, Ashland Oil Foundation and the Kentucky Division of Water Support Karst Groundwater Educational Programs

Grants from the W.L. Lyons Brown Foundation, the Ashland Oil Foundation and the Kentucky Division of Water provided general operating support for ACCA's educational programs at the American Cave and Karst Center over the past year. These grants, as well as support from numerous individuals, were instrumental in helping us distribute educational materials to more than 2,000 school teachers over the past year. By providing training and materials to Kentucky teachers, ACCA programs are making information available to more than 60,000 students annually.

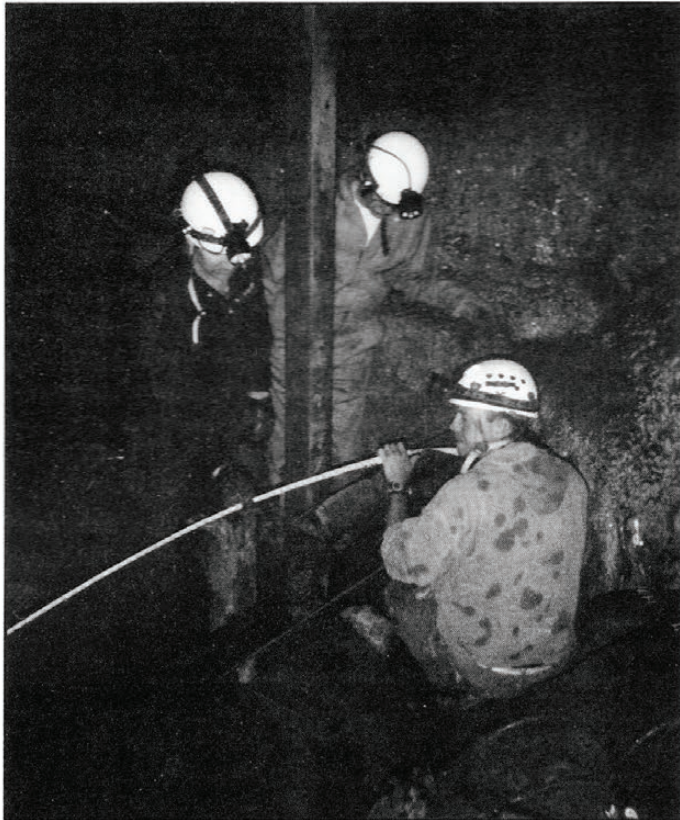
ACCA Completes Teacher Workshops

Thanks to grants from the Environmental Protection Agency and Kentucky Division of Water Nonpoint Source Section, ACCA conducted twenty professional development teacher workshops over the past two years. The workshops



David Foster

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David Foster

Jim Kennedy, Richard Wallace and Steven Reis take a measurement for a steel bar during the ACCA cave gating seminar.

were attended by a total of 267 teachers. By providing these programs to Kentucky teachers, ACCA's educational information is now available to more than 25,000 students throughout Kentucky.

Cave Gating Seminar Held In Great Smoky Mountains National Park

ACCA organized a cave gate training seminar the week of June 8 - 12, 1998 at the Great Smoky Mountains National Park in partnership with the U.S. Fish and Wildlife Service,

Bat Conservation International and the U.S. Forest Service. The seminar helped attendees learn how to build protective gates to preserve cave ecosystems. The eleven students who attended the week long session represented federal land agencies and conservation groups from Colorado, Oklahoma, Kentucky, Tennessee, Virginia and Alabama.

As part of the hands on training, an actual cave gate was placed on Gregory's Cave in Cades Cove. Gregory's Cave is a well-decorated former commercial cave and a habitat for several species of bats. The purpose of the gate was to prevent vandalism to mineral formations and protect the bat habitat. An older existing gate, which restricted air flow and bat movement in and out of the cave, was removed from the cave entrance.

Funding for the project was provided by a grant from the U.S. Fish and Wildlife Service. Special thanks to Bob Currie, Jim Kennedy, Jim Nieland, Roy Powers, and Rosa Stiltner for serving as seminar instructors.

Upcoming Cave Gating Seminar

The ACCA is sponsoring a cave gating seminar in early October 1998. Although exact dates and locations have not been set, it will likely be held at Franklin, West Virginia. Anyone interested in participating in this training should contact the ACCA immediately to get on the mailing list.

The training will consist of a week long hands on combination of classroom lecture and field experience. During the seminar, an actual gate will be constructed on a nearby cave or caves to protect endangered bats and other cave resources.

The cost of attending the seminar is \$200.00 per person which includes meals and lodging for the week. To receive registration information write to ACCA, P.O. Box 409, Horse Cave, KY 42749 or contact David Foster at (502) 786-1466.

Please consider joining or renewing your dues today!

Membership entitles you to complimentary admission to the American Cave Museum & Hidden River Cave, a subscription to *American Caves* magazine, voting privileges for the election of Directors to the association and discounts on ACCA events, publications and gift items.

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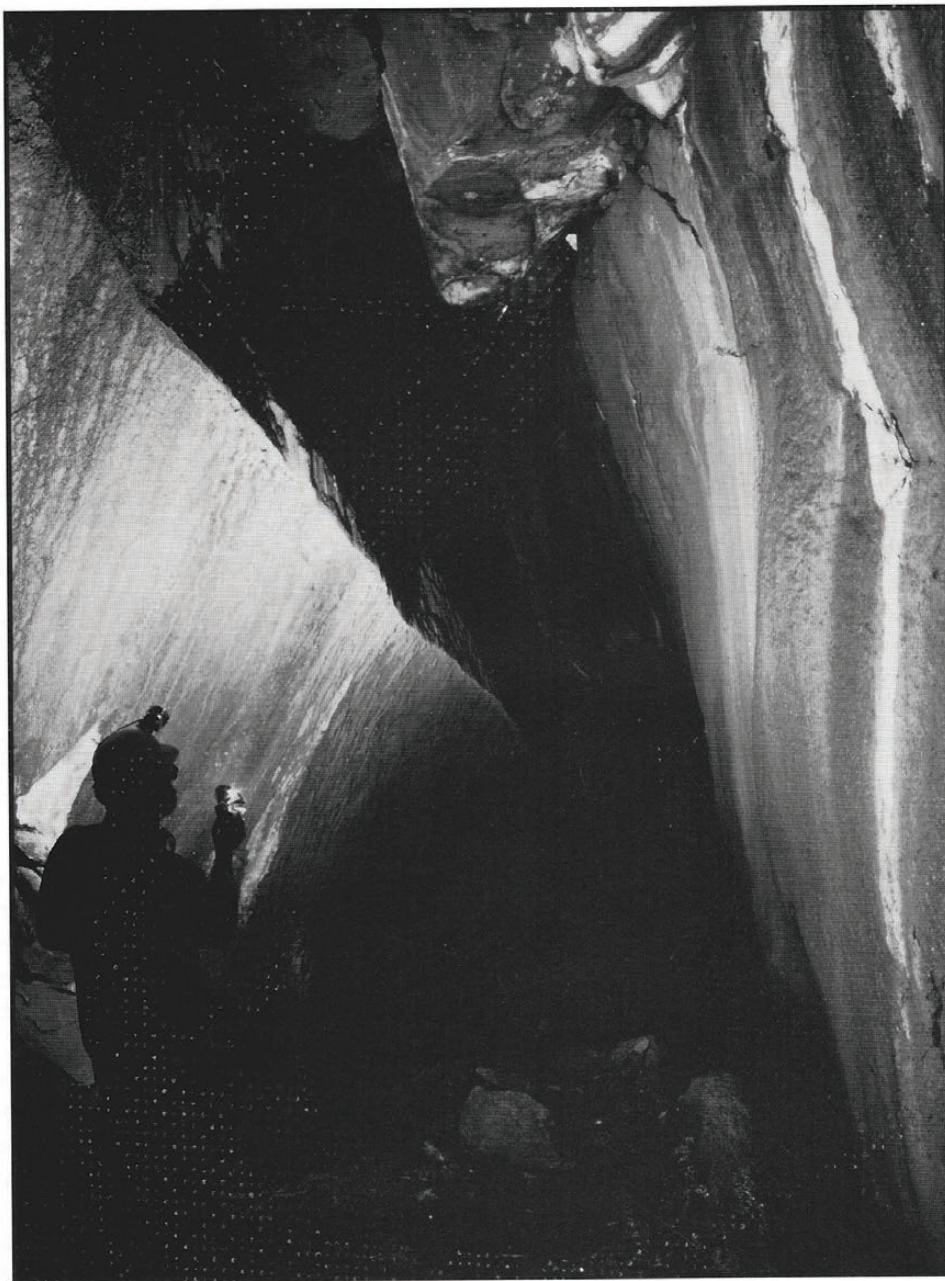
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(check appropriate box)

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| <input type="checkbox"/> Regular/Subscription | \$25.00 | <input type="checkbox"/> Guarantor | \$ 200.00 |
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| <input type="checkbox"/> Family | \$35.00 | <input type="checkbox"/> Patron | \$1000.00 |

ACCA Chapter Affiliation: (VA, TN & NW members only) _____
(20% of your dues will be forwarded to Chapter to assist with conservation projects)

Please mail to: ACCA, P.O. Box 409, Horse Cave, KY 42749



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