



The Illinois Cave Watch

Pautler Nature Preserve

Aaron Addison

Background

The Pautler Nature Preserve property once belonged to the Pautler family, who owned much of the land between Waterloo and Valmeyer. The area around the cave is shown on older topographic maps as an orchard. The entrance is adjacent to what is believed to be the original wagon road connecting Valmeyer and Waterloo. The previous owners purchased the property as a building lot.

Bretz and Harris (1961) described Pautler Cave in *Caves of Illinois* as having a large, rectangular cross-section passage similar to other caves in the area such as Illinois Caverns and Fogelpole Cave. This description is accurate for most of the known cave

passage.

There had been no known visitation to Pautler by cavers or local residents for about thirty years before KCI entered into negotiations to buy the property. In fact the previous owners had done all that they could to obliterate the entrance. It was worked over with a bulldozer, reportedly to keep people out of the cave. Numerous large trees were topped and a great deal of silt was shoved down into the entrance pit in the process. Management of the entrance area will include efforts to return it to a more natural condition.

These past activities have helped protect the cave system from vandalism. The cave survives in nearly pristine condition. For this reason alone, KCI sees no advantage to the cave in mak-

ing it accessible for recreational visits.

The entrance was lost to organized caving until Philip Moss and Diane Tecic relocated it with the help of a former owner. The cave was included in the Illinois Natural Areas Inventory based on collections made by Dr. Stewart Peck. KCI purchased the lot in December 2000 and gated the cave in March 2001. The property was approved for dedication as an Illinois Nature Preserve in August 2001.



SEE PAUTLER,
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What is the Karst Conservancy of Illinois?



The Karst Conservancy of Illinois was founded in 1998 by cavers concerned with the protection of caves and karst resources.

In December 2000 KCI acquired its first property, the entrance to Pautler

Cave in Monroe County. This cave is home to the endangered Illinois cave amphipod, and it is part of the most biologically diverse cave system in the state. In 2001 the

SEE KCI,
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Special points of interest:

- *Illinois' first cave conservancy begins work*
- *Status of "cave critters" in Pautler Cave*
- *Photos by Don Coons and Barb Capocy*
- *Biographies*
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- *"Thank You!" to our contributors*

Exploration

The exploration of the Pautler cave system is ongoing. Mapping efforts have documented over six miles of passages thus far. This makes Pautler one of the longest known caves in Illinois. The story of discovery and exploration of the Pautler system is currently being written and we hope to have an excerpt ready for publishing in the near future.

Biology

Pautler Cave is also significant for biological reasons. Based on a bio-inventory done by Dr. Julian Lewis, Pautler Cave has the highest biodiversity known of any cave in Illinois. The Illinois Cave Amphipod, *Gammarus acherondytes*, is among the biological community in Pautler. This is significant, due to the fact that this species was listed as federally listed as endangered in 1998. You can read more about the biological census work ongoing in Pautler in Dr. Lewis's report in this issue.



People and organizations with an interest in the conservation of caves and karst are invited to become members of the Karst Conservancy of Illinois

property was designated as an Illinois Nature Preserve.

KCI is in the process of raising money to pay off the balance of the \$32,500 purchase price for the Pautler tract. The Conservancy is also exploring possibilities for the protection and management of several other caves.

In 2003 KCI was designated a publicly supported charitable organization under section 501(c)3 of the Internal Revenue Code. Donations to KCI are tax deductible.

At its last meeting, the Board of Directors voted to open KCI to membership. People and organizations with an interest in the conservation of caves and karst are invited to become members of the Karst Conservancy of Illinois.

All photos © KCI



Meet the Board of Directors

The KCI Board consists of seven Directors:

Aaron Addison, Chair
Addison@caveresource.com



Aaron became involved with organized caving while still in high school. He

was a member of Little Egypt Grotto while attending Southern Illinois U-Carbondale where he received a BS in Forestry - Natural Resource Management. Aaron has been an National Speleological Society member for over 15 years and is a founding member of the Missouri Cave and Karst Conservancy, the Illinois Speleological Survey and the KCI. He has served as Chairman of various caving organizations for the Texas Speleological Assoc. region of the NSS.

Although Aaron's caving interests take him to other states and occasionally Mexico, his primary caving interest is in understanding the complex

sinkhole plains of Southwestern Illinois. He also has a wonderful wife Anica and a 3 year-old daughter Aslee. In his free time he is pursuing a MS in Geographic Information Science with Northwest Missouri State.

Don Coons, Treasurer
dcoons@maxiis.com

Don has a Bachelors degree in Zoology from Southern Illinois University. He has been a member of the NSS for 34 yrs. and is a recipient of both their Fellowship and Lew Bicking awards. He is

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also a founding Board member of the Near Normal Grotto and a former president of Little Egypt Student Grotto. He worked for ten years as a researcher at Mammoth Cave National Park and is an Honorary Member of the Cave Research Foundation. He also currently serves as president to the Cave Conservancy of Hawaii. In his "spare" time he sometimes still goes caving.

Jack White, Secretary

jwhite@prairienet.org

Jack White is a biologist and self-employed nature preservationist living in Urbana. He has been a caver since 1968.



Barb Capocy, Director

Bec_karst2@juno.com

Barb started caving 26 years ago and joined both the NSS and Windy City Grotto in the late 70's. She is currently a member of the Central Indiana Grotto and is a long-time member of the Indiana Karst Conservancy. She was co-chair of the Fall 1997 "miracle" MVOR, which donated the majority of the proceeds to midwest cave conservation organizations and the Illinois Speleological Survey. Barb has a bachelor's degree in Biology and currently resides in the northern Illinois suburb of Downers Grove. She is employed by The DuPage County Health Department in their Groundwater Protection Program, where she regulates the permitting, construction, and sampling of private water wells and the sealing of abandoned wells.



Jim Jacobs, Newsletter editor

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Jim has a Bachelor's degree in Philosophy from Illinois State University. A founding Board member of the Near Normal Grotto, he has been caving since 1988. He founded the *Near Normal News* and was its editor for eleven years.



Terri Treacy, Director

Territreacy@il.net

An Illinois native; she became involved in sport caving while living in Bloomington, IN in the early 70's. She moved



to Austin, TX in the mid-70's where she became involved in Mexico project and expedition caving -- mapping, biological collection, photography,

drafting, data publishing. Special areas of interest were Sistema Purificacion and the Xilitla area. She moved to southern Illinois in 1988, the same year she received an NSS Fellowship. Elected Chairperson of the Little Egypt Grotto where she tried to encourage the younger generation in mapping, drafting, vertical work, etc.

Over the last decade or so, her focus has shifted from caving to environmental protection on the Shawnee National Forest. This avocation turned into her vocation in 2000 when she began working for the Sierra Club Illinois Chapter, first as Wildlands Outings Coordinator and today as Conservation Field Representative. Serving as a KCI director gives her the opportunity to bring together her love of caves, her knowledge of the Shawnee area, and her background in environmental preservation.

Rick Haley, Director

Haley@ritenour.k12.mo.us

Rick has a Bachelor's degree in Biology from Pan American University, a Master's in Education from Maryville University, and is a science educator in the Ritenour



School District. He has been a caver since 1988. He is a Life Member of the NSS, past president of the Meramec Valley Grotto, past officer of the Middle Mississippi Valley Grotto, founding member of Missouri Cave and Karst Conservancy, member of Missouri Speleological Survey, has served as Director of the Illinois Speleological Survey.

He participated in projects with Fern Cave, LEARN and the Cave Research Foundation. He is a cave rescue Instructor, National Cave Rescue Commission Central Region.

He enjoys all aspects of caving but in particular survey, mapping and data collection.

KCI ADVISORS

THOMAS ALEY, karst hydrologist, Ozark Underground Laboratory, Protom, Missouri.

STANLEY HARRIS, Emeritus Professor of Geology, Southern Illinois University, Carbondale.

JULIAN LEWIS, biospeleologist, J. Lewis & Associates, Clarksville, Indiana.

ARTHUR PALMER, Professor of Earth Sciences, State University of New York, Oneonta.

PATTY JO WATSON, Professor of Anthropology, Washington University, St. Louis.

Introduction

The mission of the Karst Conservancy of Illinois is to protect caves and karst. Why care for these resources? First let's define caves and karst.

What is a cave?

A cave is a natural underground cavity. Some definitions require that the cavity be large enough for a person to enter beyond the limits of daylight. Most caves are formed by water flowing underground and dissolving limestone or dolomite. Groundwater finds its way along cracks in the bedrock, so caves develop along vertical joints and horizontal bedding planes.

What is karst?

Karst is a special landscape that forms in limestone and other soluble rocks. Karst is characterized by sinkholes, sinking streams, caves, and springs. Although karst areas may have surface streams, much of the drainage is underground through cave passages and smaller cavities.

Distribution of caves and karst in Illinois

About 400 caves have been documented in Illinois, and many more remain unreported. At least 33 of the state's 102 counties have caves. Most caves are concentrated in four major karst regions: the Shawnee Hills at the southern tip of the state, the Salem Plateau bordering the Mississippi River in southwestern Illinois, the Lincoln Hills along the lower Illinois River and the adjacent Mississippi valley, and the Driftless Area in the northwest corner of the state. A fifth karst region, centered in Lee and Ogle Counties in northern Illinois, is not well developed because the bedrock is deeply buried by glacial deposits.

Importance of Caves and Karst

Public health and safety

Caves and karst affect our health and safety for two main reasons. First, the earth above a cave may subside or collapse, damaging fields, roads, and buildings. Second, water flows into and through underground cavities so quickly that it is not filtered of farm chemicals and other contaminants. Landowners and developers in karst areas must take these characteristics into consideration: otherwise structures

may collapse, and wells will be polluted.

Biological diversity

Caves harbor unusual forms of life, such as bacteria that get their energy by "eating" rock. Caves also provide habitat for a wide variety of troglobites, which are animals that cannot survive outside of caves. Many Illinois caves are used by endangered species of bats for roosting, raising their young, and hibernating.

Scientific value

The study of caves is called speleology. Knowledge gained from research in caves can assist in planning the proper use of karst lands. Following are some ways in which caves are useful to various fields of science:

Ecology—Caves are valuable natural laboratories because the ecology of a cave is relatively simple and stable: the temperature and humidity are nearly constant, lighting is constant (absent), and sources of food inputs can be identified. Scientific studies in caves can be used to understand surface ecosystems that are much more complex and variable.

Biology—Opportunities for biological research in caves are unlimited. Studies of cave-adapted animals in Illinois are under way in the fields of life history, genetics, and physiology. Scientists have learned about ancient climatic changes and geologic events by studying the present-day distribution of cave insects.

Paleontology and archaeology—Some caves have outstanding deposits of bones, artifacts, and debris from ancient times. A wealth of information about ancient life and changes in the environment can be obtained from these materials. Important bone deposits have been found in caves in Monroe and Hardin Counties.

Caves harbor unusual forms of life, such as bacteria that get their energy by "eating" rock.



Geology and hydrology—

Many caves formed long ago, before the existing topography developed. These caves are often the only evidences of ancient landscapes and drainage systems. Such caves are valuable for reconstructing the history of development of a region's land surface. Study of groundwater flow in karst areas provides information about regional water supplies.

Educational value

A visit to a cave is a stimulating and rewarding experience. A field trip to a karst area provides the opportunity not only to learn about caves, but also to learn about wise land use practices in general.

Recreational, aesthetic, and wilderness qualities

The beauty of some caves is fantastic--from the grandeur of high canyons and waterfall domes, to delicate crystal formations. The darkness and mystery of a cave has a curious psychological effect on the explorer: small streams are called rivers, a 30-foot pit is "bottomless," and 1,000 feet becomes a "cave mile." When a caver is a mile from the nearest entrance, that person is a mile from civilization--even though a house may be 100 feet overhead. With a little determination it is possible to explore cave passages in Illinois that nobody has ever before seen.

Threats to Caves and Karst

Quarries and construction activities can destroy caves by filling or removing them. Such earthmoving projects also alter caves by opening new entrances, closing natural ones, and causing siltation in cave streams.

The great majority of Illinois' karstlands are farmed. Farming can be compatible with the protection of caves if a large enough buffer of uncultivated land is left around sinkholes. When farmland is converted to residential areas, damage increases from chemical

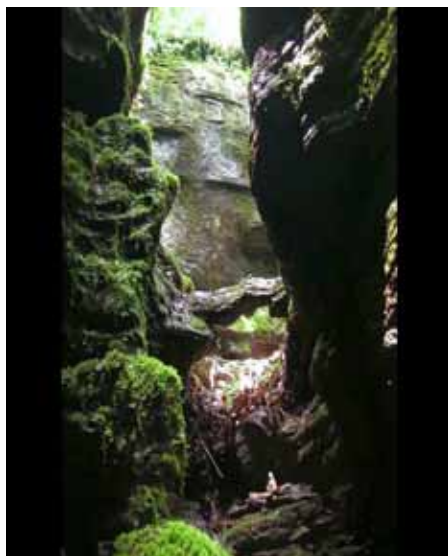
When farmland is converted to residential areas, damage increases from chemical and sewage pollution.

and sewage pollution.

Fragile features of a cave are often the victim of both careless damage and intentional vandalism. Although a cave is formed from rock, it is one of the most fragile products of nature. A stalactite that has grown for thousands of years can be destroyed in an instant. Footprints made thousands of years ago can be obliterated by a careless footstep today.

Cave organisms are easily disrupted by unnatural disturbances. Rare forms of cave life, restricted to a single cave, can be extinguished without any chance to be repopulated from adjacent areas. Many cave organisms live in water and are especially vulnerable to water pollution.

The best-known and most-accessible caves usually are the most damaged. Caves in public parks are commonly stripped of their formations, heavily trampled, and strewn with trash. On the other hand, some small, wet caves appear to be so pristine that it is impossible to tell whether they have ever been entered by a person.



Protection of Caves and Karst

In addition to protecting caves from destruction by construction activities, caves need protection from less-obvious damage by visitors, incompatible land uses, and water pollution.

Caves can be protected from vandalism by restricting access and by educating visitors about cave conservation. Commercialization for the tourist trade gives a cave some degree of protection from vandals--but walkways and electric lights must be installed carefully to minimize damage. Only one cave in the state, Illinois Caverns, is currently operated as a tourist attraction.

The Illinois Cave Protection Act makes it illegal to damage caves and their contents, or to disturb cave life "without the express written permission of the land owner." Other State and Federal laws provide additional protection to some cave-inhabiting animals. Certain karst areas may receive additional protection from groundwater contamination if they are designated by the State of Illinois as Class III Special Resource Groundwater.

If a property with a cave is legally designated as an Illinois Nature Preserve, it is protected from damage by the landowner or by public works projects, but further steps must be taken to protect the cave. Unless the entire cave and its watershed are protected, there may be problems with pollution, siltation, and destruction of that part of the cave outside the Nature Preserve.

The great majority of caves and karst areas in Illinois are privately owned. Conservation of these resources depends on the care of the owners.

Pautler Cave 2003 Aquatic Census

Julian J. Lewis, Ph.D.,

Editor's foreward – Question: Why should we be concerned with the health of these very tiny shrimp-like critters who live in certain Illinois caves?

“The Illinois Cave Amphipod, although a tiny, little-known creature, is an indicator of how healthy the water is in the cave systems it inhabits. That is important because the water in those caves comes from groundwater from the surrounding countryside. When we see a species like the cave amphipod begin to decline, folks should begin to wonder about the quality of the water they use themselves.”—U.S. Fish and Wildlife Service Regional Director William Hartwig.

In 2003, I had a contract from the U.S. Fish & Wildlife Service, administered by the Illinois Department of Natural Resources (IDNR) Endangered Species Program, to perform sample censusing in all of the groundwater basins inhabited by the Illinois Cave Amphipod (*Gammarus acherondytes*). Jack White, Salisa Rafail and I entered Pautler Cave on 31 August 2003 for the purpose of censusing the aquatic community. This was done by examining a 100 foot long transect, measured from the large breakdown blocking the main stream passage downstream for 100 feet. The transect is divided into 10, 10-foot long sections. A square foot sample quadrat is placed by use of a random numbers table. For example a random # 47 would be used to place the quadrat 4 feet up the length of the subsection (using the first digit 4) and 70% of the distance across the total width of the stream (using the second digit 7). The animals were removed from the quadrat using a square foot Surber Sampler, identified to species, counted, measured, and released alive back to the stream after a few minutes in a bowl.

Using this standardized method we found the following animals:



Photo – Larry Page, INHS-CBD
Courtesy, Steve Taylor

- 18 - *Gammarus acherondytes*
- 47 - *Gammarus troglophilus* (troglophilic amphipod)
- 1 - *Crangonyx forbesi* (troglophilic amphipod)
- 2 - *Caecidotea packardi* (troglotic isopod)
- 6 - *Caecidotea brevicauda* (troglophilic isopod)

[Ed. note—a troglophilic animal can live in or out of a cave environment. A troglotic animal cannot exist outside of caves. An isopod is essentially an aquatic pillbug.]

A second census is done of the undersides of rocks and breakdown slabs by timed count. This method is used to glean the presence of animals that might otherwise be missed because they tend to be found only under larger rocks. In Pautler, during this census, this method added the troglotic amphipod *Baetrus brachycaudus* (3) and the snail (troglotic?) *Physella* (1) to the animals recorded.

What does this mean? This indicates a high diversity community with relatively low numbers of troglophiles. The census transect was mapped and was found to be 497 square feet in size. Extrapolating the sample census to this transect suggests a population

of 895 Illinois Cave Amphipods in the 100 foot transect.

The Moss map of Pautler Cave shows over 1600 feet of passage, of which perhaps 1200 feet is main stream passage aquatic habitat similar to that of the transect. Extrapolating the transect population to the entire cave suggests a population of 10,740 Illinois Cave Amphipods in the part of Pautler Cave shown on the Moss map. This extrapolation assumes habitat homogeneity with the transect (which I believe is a reasonable assumption by visual inspection of the cave between the entrance and the transect) and is subject to a +/- error of unknown magnitude. That assumption notwithstanding, I believe it is a reasonable number.

There was some question as to the condition of the aquatic habitat itself. We found that the cave stream was a chain of gravel riffles and mud-bottomed pools. It is apparent that Pautler Cave is a depositional environment for sediment as its natural condition, i.e., water flowing through the large passage, under flood conditions, is dammed up by the crawlway constriction downstream of the Pautler entrance. Under these conditions the water must pool, drop its sediment load, thus creating the large mudbanks occurring in the cave.

Barb Capocy negotiates a low bridge.



Pautler Cave Donation List

\$5,000 or more

Don Coons
Dick Blenz
The National
Speleological
Society

\$3,000 or more

Aaron & Anica Addison
Philip & Rita Moss

\$1,000 or more

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\$100 or more

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Dave Anderson
Joe Slivinski
Stan Harris
Joe Levinson
Dave Luckins
Jerry Lewis

TO OUR MANY FRIENDS,

WE SAY...

"THANK YOU"

Additional Contributors:

Rock River Speleological Society
Windy City Grotto
Kaskaskia Audubon Society
Waubonsee Junior College
Scott Fee
Jack Thomsen
Kevin & LeAnn Rasmus
Jack Kruzich
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Near Normal Grotto
Terry Ragon
David and Angie Carson

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Braye for designing the KCI logo.



KCI Membership and Donations

Address all membership applications
And donations to:

KCI Treasurer, Don Coons
586 E. 9th Road
Rutland, IL 61358

The KCI is a 501(c)3 non-profit Organization.
Donations are tax-deductible.

Cave conservation and stewardship.

NEWSLETTER OF THE KARST
CONSERVANCY OF ILLINOIS



KCI memberships are now available. Regular membership is \$25/yr., and includes a subscription to the

ILLINOIS CAVE WATCH

Other membership levels:

Student – \$15/yr.

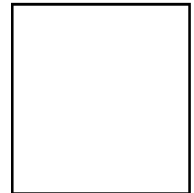
Family – \$35/yr

Organizational – \$75/yr

Credit card payment is available. See the website for PayPal info.

We're on the web:
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