

IKC UPDATE

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INDIANA KARST CONSERVANCY, INC

PO Box 2401, Indianapolis, IN 46206-2401

ikc.caves.org

Affiliated with the National Speleological Society



The Indiana Karst Conservancy is a non-profit organization dedicated to the conservation and preservation of caves and karst features in Indiana and other areas of the world. The Conservancy encourages research and promotes education related to karst and its proper, environmentally compatible use.

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Cover: The newly distinguished Hoosier cavefish, *Amblyopsis hoosieri* in Upper Twin Cave, Lawrence County, Indiana. Photo by Jerry Lewis (2012)



QUARTERLY MEETING REMINDER
SATURDAY, JUNE 21th, 4:00 PM EDT
MILLTOWN, INDIANA
ROBINSON LADDER CAVE PRESERVE

The quarterly meetings are for the Executive Board to conduct business, and for our members and other interested persons to have an open forum to talk about caves and karst conservation and related topics. Past, present, and future IKC projects are discussed to solicit comments and input from our members and the caving community as a whole. The meetings are informal, and everyone is encouraged to attend and participate. The IKC Board wants your input.

Preliminary Agenda Items: All things about the Robinson Ladder Cave Preserve; Upcoming workdays at our other preserves; Chestnut trees update; Indiana Cave Symposium review; White-nose Syndrome/DNR cave access update; Wyandotte Cave gate project wrap-up; Financial reports; Land acquisition activities; and more.... **Note:** In case of inclement weather the meeting will be held inside the barn on the property.

Prior to the meeting, starting around 10 AM we will have a workday, trimming brush along the access lane, cutting grapevines, eliminating invasives, and perhaps some timber stand improvements.

Directions to the Robinson Ladder Cave Preserve: The property is located on the east side of SR 66 north of Milltown. From the north, travel 4.2 miles south from US 150. From the south, travel 2.8 miles north from SR 64. The access lane gate is located directly across from Baylor Road (GPS: Lat N38.3938 Long W86.2718). Follow the lane back to the property.

ACTIVITIES CALENDAR

Jun 21 – Robinson Ladder Cave Preserve Workday (see above)

Jun 21 – IKC Quarterly Meeting (see above)

Jul ?? – Weed Control Around Trees at Buddha Karst Preserve

Aug 8-10 – Cave Capers (Crawford County Fairgrounds)

Sept ?? – IKC Quarterly Board Meeting (date & location to be determined)

For more information on the Indiana Karst Conservancy, visit our website at ikc.caves.org or write to our PO box. Membership to the IKC is open to anyone or any organization interested in supporting cave and karst conservation. Annual dues are \$15. Please see inside the back cover for a membership application form or to make a much-appreciated donation. Donations can also be made by credit card using the donation button located on our website's home page.

The IKC Update, distributed for free, is published quarterly for members and other interested parties. The purpose of this newsletter is to keep the membership and caving community informed of IKC activities and other news related to cave/karst conservation. Submission of original or reprinted articles for publication is encouraged.

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RAMBLINGS FROM THE PRESIDENT...

A garter snake slid out of the way as I guided the mower up the sloping trail toward the open grassland at the IKC Shawnee Karst Preserve. I met Keith at the property this morning when he brought the mower down in his truck and now I'm chasing it around the preserve. The irony of the situation isn't lost on me. When Salisa and I moved to our home in the forest ten years ago my number one criterion for our new home was that I didn't want to have to cut grass anymore. When we sold our previous home, we left the mower in the garage. So here I am, cutting the grass for the first time in ten years.

It's actually not a bad way to enjoy the preserve. The mower is self-propelled, so all I have to do is guide it a little as it pulls me along the trail. I'm going at about two miles per hour which allows me to look around and think about other things. As I go through the grassland I think back on all the volunteers at the work day two years ago who helped cut down cedar and poplar trees. Some of the poplars have resprouted and I need to lop them off again. The native grassland is doing nicely, a few spring wildflowers are blooming and I'm thinking that perhaps I could afford to take out a few more trees and give the prairie plants a little more space to grow.

Managing prairies has seemingly become one of our albatrosses... back when the IKC bought the Robinson Ladder Cave Preserve it was suggested that the upper and lower fields there might be transformed into prairies. The IKC has been expending resources... sweat equity and real money... for years now trying to make that sow's ear into a silk purse, and what we have for our effort still looks like a weed field. For the last couple years we've been conducting our June meeting at one of our preserves – first Wayne, then Shawnee – and this year we're meeting at our RLC preserve. One thing on my to-do list for the June meeting is to get everyone together and have a look at both of the fields... and decide what we're going to do about them, continue the efforts to cultivate them into prairies, let them

grow into forest, or maybe something in between, like letting the oaks that are sprouting continue to grow but maintaining some clearings. We've been at an impasse with how to proceed since our checkered experience in trying to conduct two prescribed burns that basically failed.

I figure one of my jobs as president of the organization is to recognize problems and push, gently or otherwise, to get us through impasses. So, we're having the next meeting at Robinson Ladder Cave Preserve and if you want to have input on how the preserve is managed, I'd love to have you come voice your opinion. We're going to decide something, I don't know what, but it's my intention to have a plan for managing those fields for the long-term by the time the meeting is over.

Oops... back from my day-dreaming to cutting the trail. It's a good thing there aren't any cliffs on this preserve... I probably would have walked off the edge. As it is, we now have a little wide spot in the trail that wasn't there a minute ago. Oops. Maybe I can put a bench there and pretend like I meant to do it.

I'm now approaching the "new" wildlife pond and have to pay attention to be sure I don't walk the mower over the edge of the foot bridge. Sometimes we seem to do things in spurts in the IKC and recently we've gone into the pond business. When the IKC bought the Shawnee property there were two breached man-made wildlife ponds. Both ponds needed some help, so one of the first things we did on the preserve was to fix the breach in the wildlife pond dam by the grassland. It was a relatively simple thing to repair the dam so that the pond would re-fill with water... we just put in an overflow pipe and then filled the breach in the dam with dirt. If you visit the SKP in the spring you'll see, or hear, several species of frogs and salamanders that rely on little ponds like that for breeding. Along the edge of the pond the deer and raccoon tracks testify to some of the furry critters that are watering there.

Perhaps speaking more directly to our interests



as cavers is that we're creating a great feeding spots for bats. We have all the ingredients...(1) bats (in the Shawnee Cave System), (2) wildlife ponds for insects to breed in, and (3) the grassland opening adjacent to the ponds for the bats to forage in. Voila... a smorgasbord for bats.

So maybe what we need at the Robinson Ladder Cave preserve is a shallow wildlife pond on behalf of the bats. God knows they need all the help they can get. And maybe it would be a nice addition to a savannah-like environment with scrubby oaks and wildlife openings for the bats to forage in. And that reminds me... I need to drive up to Bloomington to look at a defunct wild-

life pond on the Wayne Cave property to size up what it will take to repair the breach in the old dam there. A lot of bats call that area home and they, too, need all the help they can get.

I'm approaching the parking area now, having rambled a mile and a half around the great trail on the Shawnee Karst Preserve. The trail's now cut and as soon as I get home I can write down my thoughts and I will have rambled in the *IKC Update* as well. I hope we'll see you at the June meeting to hear your thoughts on the management of our karst preserves!

Jerry Lewis

NEWS BRIEFS..

❑ The IKC annual elections on March 22nd saw no change to the Executive Board. Jerry Lewis was re-elected President, Kevin Smith was re-elected Secretary, Keith Dunlap was re-elected Treasurer, and Bruce Bowman, Bob Sergesketter, Bob Vandeventer, and Richard Vernier were all re-elected as Directors. The full Executive Board can be found on page 2.

❑ Attendance at the IKC Annual Business meeting was up significantly from typical, approaching forty members and guests. While we would like to think the larger attendance was due to increased interest in the business aspects of the organization, we suspect it was the offer of a pre-meeting lunch along with a complimentary tour into Marengo Cave after the meeting. The IKC would like to acknowledge the staff at Marengo Cave and particularly Gordon Smith for hosting the meeting and escorting our members on the specially-narrated tour.



❑ In early May, our ikc.caves.org website (first launched in 1997) underwent a major refresh. While the content did not change all that much, visually the website looks a little more modern and hopefully the information is organized a little more consistently. The greatest changes were made "behind the scenes" with the architecture switched from basic html pages to a true Content Management System for easier maintenance and security. The website is also more device-friendly to tablets and smart-phones. The IKC would like to thank Robert Sollman ([Sollman Designs](#)) for providing the directional and architectural effort and our webmaster Bruce Bowman for performing the content migration. Bruce is still working on upgrading the visual content as many of the prior images were purposely reduced to low resolution for performance.

❑ The IKC has gained two new members in the last quarter. Welcome Phyllis Sergesketter (547) and David Schaefer (548). The IKC membership currently stands at 189.

DNR REOPENS FOUR CAVES TO CAVERS

by Keith Dunlap

Since 2009, the Indiana Department of Natural Resources has mandated that all but one cave located on DNR-managed properties be closed. The exception was the boat tour in Upper Twin Cave in Spring Mill State Park. The justification for the wholesale cave closure was initially to slow the progression of White-nose Syndrome into Indiana, but after the disease was detected in 2011 and now generally assumed to be in all significant bat hibernacula, the justification has switched to the fear of spreading the fungus that causes WNS to uninflected regions in the western United States. And while it is reasonable to promote practical procedures and protocols to minimize the risks of spreading the disease, the various agencies until recently were taking a no-compromise approach.

With that said, since 2009, there has been continual dialogue between a small number of cavers and DNR leadership, in particular Deputy Director John Davis. Last year, Mr Davis became amenable to a proposal made by the cavers to reopen ten caves within two properties (Spring Mill State Parks and Harrison-Crawford State Forest). The pilot proposal was later scaled back to just the four caves within Spring Mill/Cave River Valley. The proposal was also modified to

enlist the IKC as the main trip coordinator/permit administrator, and to host the web-based WNS and decontamination training module, required of all participants. Dave Everton was subsequently appointed as the main contact and assess coordinator for the IKC. Dave and Keith Dunlap worked with Mark Young (Property Manager for Spring Mill) and Ginger Murphy (Assistant Director for Stewardship for State Parks) to work out the logistics of the interim access program. The Letter of Understanding between the IKC and DNR can be found on the IKC's website. The pilot program runs for two years with a review after the first and second year.

The four caves with access by permit are: Donaldson/Bronson (year around), the DNR section of Upper Twin (November 1 to May 15), Endless and River caves (both May 1 to August 31). The specific details of how the program works can be found on the IKC website.

In addition to the four mentioned "wild" caves being re-opened, the "dry" room at the entrance to Donaldson Cave and Wolf Cave in McCormick's Creek State Park will be re-opened to the general public.

The April 7th DNR media release is reprinted below.

DNR Relaxes Cave Restrictions At Two State Parks

DNR Media Release 4/7/2014

Hoosiers will have a little more access to some state-owned caves due to recent changes at Spring Mill State Park and nearby satellite property Cave River Valley Natural Area, and at McCormick's Creek State Park.

The changes affect Upper Twin, Donaldson and Bronson caves at Spring Mill, Endless and River caves at Cave River Valley, and Wolf Cave at McCormick's Creek.

The caves have been closed to the public since 2009, in response to the spread of White-nose Syndrome (WNS), a fungal infection that is killing bats in

large numbers.

Upper Twin, Bronson, Endless, River and the wet side of Donaldson will re-open, but will be restricted to self-guided, registered groups only. Such groups must register through the Indiana Karst Conservancy and complete an online training program explaining WNS decontamination procedures.

Registration is at ikc.caves.org/dnr/spring_mill.htm.

Donaldson and Bronson caves will be available for registered groups year-round, but seasonal restrictions apply to Upper Twin, Endless and River caves.

Upper Twin Cave will only be open Nov 1 through May 15 to prevent interference with park-sponsored tours of Twin Caves. Endless and River caves will only be open May 1 through Aug. 31 so that hibernating bats are not disturbed.

The reopening of caves to group exploration at Spring Mill and Cave River Valley is through a partnership with Indiana Karst Conservancy with the common goal of improving outdoor recreation and cave education opportunities for cavers and youth groups.

In addition to the IKC part-



nership activities, the DNR will reopen Wolf Cave at McCormick's Creek and the dry side of Donaldson Cave at Spring Mill to regular park visitors, year-round beginning May 1. The dry side of Donaldson Cave is accessible from Trail 3. No permits are required for access to these two locations.

Twin Caves Boat Tours will continue as usual at Spring Mill.

All other caves and sinkholes on DNR properties will remain closed as research continues on the spread and impact of WNS on bats.

To learn more about WNS, visit dnr.IN.gov/batdisease.

Note: Privately owned show

caves such as Marengo Cave, Indiana Caverns, Blue Springs Cavern and Squire Boone Cavern, remain open to the public for tours.

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UPPER TWIN & DONALDSON/BRONSON CAVE TRIP REPORT

by Joy Biaz

Because of the efforts of a number of individuals, a select group of caves have now been reopened by the DNR under a newly established permit system. Wanting to take advantage of this new found opportunity, I contacted Dave Everton to coordinate the required permits for a visit through Upper Twin and Bronson/Donaldson caves. Permits in hand, on Sunday, May 11, Dave Tibbets, Shay Furbush, Burnis Piper, and I began our cave exploration from the IKC entrance of Upper Twin Cave on the Shawnee Karst Preserve and continued downstream to the boat entrance on the Spring Mill State Park property. The temperatures were chilly, and the water in cave was even more chilly. Upper Twin is a wet cave, and one follows the water through out the trip. It had been highly recommended that we wear wet suits, and with the spring water levels, and the multiple swims, it was certainly proved essential to be properly dressed. The cave begins with hands and knees crawls for a relative short distance interspersed with some stoop walking. Once past the initial areas, the cave opens up to a large room and the rest of the trip is walking/wading/swimming. In a number of places the water has scalloped the rock floor and walls into unique patterns. The traditional turn around spot at the end of the IKC section of the cave is marked with rope and jugs, and having been in the cave once before, it was fun to be able walk past this point and continue the exploration. Each of us tried to guess where the Spring Mill boat tour ends, but it had been too many years since any of us had taken the tour for us to remember the designated spot. Once we exited the "boat dock" entrance, we climbed the steps to the parking area and proceeded by trail to the Bronson entrance.

Even though I had been through Bronson/

Donaldson a number of years prior, the mind forgets, and the experience was brand new and exciting all over again. Like Upper Twin, the stream bed is the route to follow in Bronson/Donaldson, so once again, we were wading through a cave. Only one time did we take the wrong path and have to back track just a bit to stay on course. If one follows the water, it is virtually impossible to lose your way in either of these caves. The most exciting portion of the cave to me was the last few hundred feet. One must negotiate a waterfall followed by a narrow swim to the Donaldson entrance. Prior to my trip years before, I had been warned that this spot took some "doing", but that particular day it seemed a relatively minor climb down. This time with the water at spring levels, the waterfall was running quite strong and stepping down through the raging current took much more effort and skill than I remembered from my first trip. Once down the waterfall, the cave narrows to about three feet and you would expect the water to push you rapidly from the cave. But as we have all seen in caving, what appears at first to be obvious is often deceiving. The water deepens and becomes almost still, requiring a swim to finish the cave. Our group exited the cave to sunshine as the clouds from earlier in the day had departed. A short hike across the valley floor brought us to the 200 plus steps of the staircase leading to the parking lot and our waiting exit vehicle.

Bronson/Donaldson was one of the first caves I had explored with the St. Joseph Valley Grotto, so its closing was heartbreaking to me. Being able to once again enter this particular cave just brings home the fact that any cave can be closed, and all cavers should endeavor to help maintain the landowner relationships that permit caves to

Continued on page 18...

WYANDOTTE GATE REMOVAL

by Keith Dunlap

Last year, the IKC contracted with Bat Conservation International to “relocate” the bat gate in Wyandotte Cave. The reason for the relocation was that 10-20% of the winter Indiana bat population had started to roost outside the old gate, located about 400 feet from the entrance. Phase I of the relocation project was to construct a new gate closer to the entrance (about 70 feet from the entrance drip line). Phase I was completed in late July 2013 (see *IKC Update #110* for details). Phase II of the project was to remove the old gate. The US-FWS wanted to delay the removal of the old gate until they had at least one hibernating season to observe that the bats were comfortable passing through the new gate. The IKC got the approval to proceed with Phase II in late April and volunteers were contacted with several proposed dates. After feedback, the date of May 31st was selected as the workday.

The old “bat-friendly” gate was not all that old, installed in 1991. Roy Powers was the main architect for the gate, assisted by Scott Johnson (DNR) and five caver volunteers (I was one of them). It took three days to install. At the same time the prior (4th gate) was removed.

Our plan was to remove the old gate in one day. We had 17 volunteers and two torch sets. We started moving equipment in by 8 AM and was cutting metal by 9:00. However, we had a regulator problem with one of the torches and ended up blowing out a diaphragm. Fortunately, we had a spare regulator so the setback was only minimal.

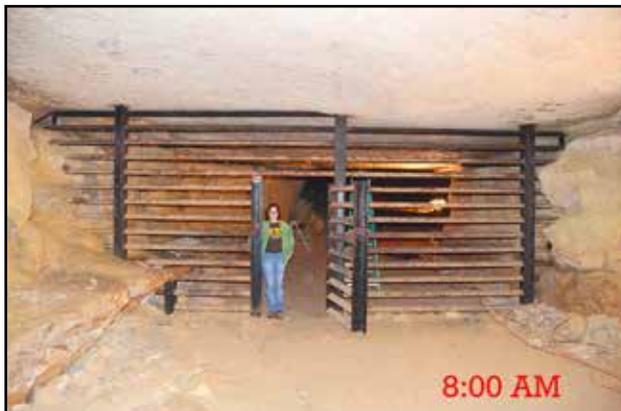
The plan was to remove the horizontal bars bottom to top, using ropes to lower each bar as they were cut free. This worked as we had hoped, although the “stiffener” bars mounted inside the main angle bars required double cuts to expose the inner bars so they could be cut.

Once the horizontal bars were removed, we dropped the three vertical columns. These columns were massive, so we had to cut each in three pieces so they could be reasonably carried. The door also had to be cut in half to allowed it to be transported out of the cave. We used lifting straps and four volunteers to haul each piece of steel across the entrance room, up the stairs, and out the entrance. We then loaded

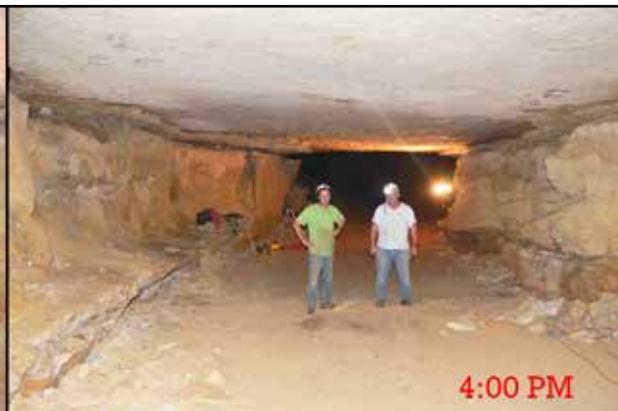
the steel into a trailer provided by the DNR. The DNR was responsible for recycling the steel, estimated to be around 6,000 pounds.

We broke for lunch in two shifts, but otherwise kept a steady pace, hauling the steel out about as fast as it was cut and allowed to cool. By 3:30 the gate was gone. By 4:30 all the equipment was also out. A few volunteers worked on wire brushing and using wet rags to remove the last signs of the smoke and metal from the walls. If you didn’t know where the gate had been located, you be hard pressed to see any evidence of its existence.

Volunteers included John Benton, Nick Benton, Ryan Cox, Keith Dunlap, Renee Farrow, Seth Gower, Glenn Lemasters, Jerry Lewis, Salisa Lewis, Ernie Payne, Everett Pulliam, Bob Serges-ketter, Tom Sollman, Carla Striegel-Winner, Bruce Trotter, Brian Welp, and Jamie Winner.



8:00 AM



4:00 PM

2014 INDIANA CAVE SYMPOSIUM RECAP

by Keith Dunlap

The Lawrence County Fairgrounds' Community Building was again selected for the 22nd annual event, which was held this year on April 26. Indiana cavers were out and about earlier that day; many of them participating in the IKC's Under-Earth Day at the nearby Shawnee Karst and Buddha Karst preserves, while others were off caving, or just enjoying the wonderful spring weather. The Symposium was again co-hosted by the Indiana Karst Conservancy and Indiana Cave Survey, with each organization sharing the facilities rental and food costs, which included burgers, brats, pork country ribs, buns, condiments and soft drinks. Approximately 70 attendees helped out by bringing side dishes, desserts, chips, and the like to complete the cookout for the first part of the event. The program part of the Symposium began around 7 PM. The following summarizes the presentations:

- **Antibiotic Resistance Patterns in Indiana Caves** – Dean Wiseman gave an introduction of a project he and two co-researchers initiated to study the possibilities of antibiotic resistance in cave-dwelling bacteria and fungi. His initial pilot project in 2013 was a proof-of-concept which he now hopes to expand to a larger sample size over the next several years.
- **Interim Cave Access at Spring Mill State Park / Cave River Valley** – Keith Dunlap provided a brief overview of the new access policy to four DNR caves managed by Spring Mill State Park. The access policy is being administered by the IKC and focuses on educating and monitoring visitors to properly perform accepted White-nose Syndrome decontamination protocols. More information about the cave access process can be found on the IKC website.
- **LIDAR Karst Imaging** – Noted cave geologist Richard Powell gave a presentation on how useful LIDAR (Light Detecting and Ranging) can be in looking for caves. The entire state of Indiana was flown and scanned in 2011-2013 to produce high resolution topographical information which greatly allows visualization of sinkholes and spring notches. Richard provided several comparisons of LIDAR vs traditional topographical maps.
- **The French Connection to Indiana Cave Biology** – Jerry Lewis gave a historical presentation of a 1938 international trip by biologists René Jeannel (French) and Cándido Bolívar Pieltain (Spanish) to the United States where they visited dozens of caves including Marengo, Donaldson, and Wyandotte in Indiana. While only spending a few hours in each cave, they discovered/documented several new species, some which to this day are extremely rare.
- **Richard Blenz Nature Preserve Update** – Anmar Mirza updated everyone on several facility and stewardship projects accomplished this past year around Buckner Cave. Most noteworthy is the construction of the new open-sided shelter where the old barn once stood. The trail to the cave was also hardened with crushed stone and a wildlife pond was drained.
- **Closed Caves Historic Photos** – George Jaegers put together a “slide show” of historic caves that no longer exist or are permanently closed.
- **Historic Look at Cave Rescues/Incidents** – John Benton research over fifty Indiana cave rescues from the past one hundred years and highlighted several of the more interesting one.
- **Indiana Winter Bat Counts: 2013 & 2014** – Keith Dunlap summarized bat population numbers from the 2013 and 2014 bat counts. Little Browns and Tri-colored bats have all but disappeared compared to historic populations. Indiana bat numbers in the bigger caves were stable in 2013, but declines were noted in the smaller hibernacula in 2014.
- **Binkley Cave Update** – Dave Everton wrapped up the evening with *more* recent discoveries in the Binkley Cave System including considerable new cave in the upper sections of the Blowing Hole section of Binkley. A new drainage system was also discovered suggesting a whole new area to be discovered.

A hearty thanks to everyone who made this year's Indiana Cave Symposium a success, from planners, to presenters, to sponsors, to burger grillers, and attendees! Interested in presenting next year? Just let it be known!

KARST HISTORY IN INDIANA

by John Benton

Carl H. Eigenmann was born in Germany in 1863. He moved to Rockport, Indiana (Spencer County on the Ohio River) to live with an immigrant uncle at age 14. At age 16, he enrolled at Indiana University to study law. He was drawn to an interest in biology, and came under the influence of Dr David Starr Jordan, who was already a prominent ichthyologist (one who studies fish).



Rosa and Carl Eigenmann

Under Jordan's guidance, Eigenmann studied darters and perches, and was made a biology instructor. His study of darters and perches was published in 1885 and he received his bachelor degree from IU in 1886 while authoring several publications. In 1887 he got his masters degree and his doctorate in 1889, all at Indiana University. In 1891 he was appointed professor of zoology by Jordan who was leaving Bloomington to become the first president of Stanford University. He married Rosa Smith, who by her own right, was a noted ichthyologist, having studied at Harvard. They co-authored several papers, especially in the early years.

Essentially Eigenmann was an ichthyologist and remained devoted to the study of fish throughout the world, however around the turn of the century the blind inhabitants of caves peaked his interest. Cave inhabitants were not new to Eigenmann, since he had done comparative work with Missouri cavefish and Mammoth Cave cavefish. This new interest in cave fauna was not limited to fish; he made many cave trips and introduced many of his students to the subject, most notably A.M. Banta. Among cave animals studied were salamanders and woodrats. From 1898 to 1904 the bulk of his work was devoted to the problem of degenerate evolution centered around comparisons of eye structure. In 1909 he published *Cave Vertebrates Of North America*, a 341-page volume that effectively ended his work on cave fauna. Donaldson Cave inside

what is now Spring Mill State Park is where Eigenmann did a lot of his work. His fish holding tanks made from stone, can still be seen, if one looks closely, just downstream from the Donaldson entrance (see below). A bronze plaque inside the cave, honors Eigenmann and his studies. As early as 1903, he urged the state of Indiana to set aside the area around and including Donaldson Cave (Donaldson estate) as a state reserve. This area was to become Spring Mill State Park, which it is today.

In all, Eigenmann authored or co-authored 41 articles on cave fauna; really just a small portion of at least 231 publications in his lifetime. As mentioned previously, he mentored many of his students. Eigenmann Hall, a large student residence hall on the IU campus was named to honor him. He studied in many foreign countries such as Cuba, British Guiana, Columbia, Peru, Bolivia and Chile. He died in 1927 after suffering a stroke.

His work and studies were a major and ongoing accomplishment on Hoosier caves. He is a major reason Spring Mill is now a State Park.

Sources used include Jim Keith, BIG Newsletter Vol 12#2 (Oct 1975), Bio-Memoir of Carl H. Eigenmann, National Academy of Sciences 1937, and Rockport (IN) Journal January 9, 1903.



Dave Tibbets, July 2001

NEW SPECIES OF CAVEFISH “DISCOVERED” IN INDIANA

Ichthyologists from Louisiana State University in Baton Rouge and the University of Kentucky have announced the discovery of a new eyeless cavefish in the caves of southern Indiana – it is the first new cavefish species described from the United States in 40 years

The new species has been named *Amblyopsis hoosieri*. The common name of the fish is the Hoosier Cavefish.

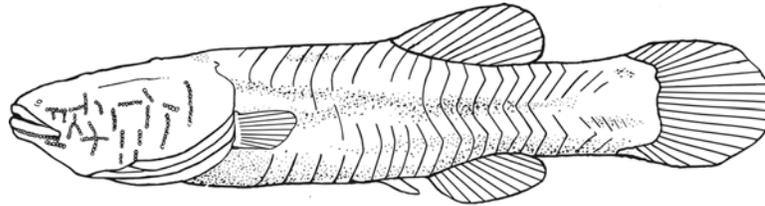
“The specific epithet *hoosieri* is in reference to this species being from the state of Indiana,” the scientists explained in a [paper](#) published in the open-access journal ZooKeys.

“It is also a reference to Indiana University, where biologist Carl H. Eigenmann (1863–1927) was a Professor of Zoology and studied blind cave vertebrates. Notably, Eigenmann’s wife Rosa (1858–1947) is considered by many to be the first female ichthyologist. She and her husband described more than 100 species together.”

“Indiana University was also home to the Father of American Ichthyology, David Starr Jordan (1851–1931), for most of his illustrious career.”

“We derive the specific epithet from the proper noun ‘Hoosier.’ Notably, the senior author of the manuscript is a fervent fan of Indiana Hoosier basketball while the first author is an alumni of the University of Michigan and is not.”

The new fish is the closest relative of *Amblyopsis spelaea*, a previously known cavefish from the longest cave system in the world, Mammoth Cave in Kentucky.



These two species are separated by the Ohio River, which also separates the states of Indiana and Kentucky.

Amblyopsis spelaea has a knockout mutation in the genetic sequence of rhodopsin, a gene important in vision. *Amblyopsis hoosieri*, on the other hand, lacks this mutation and maintains a functional rhodopsin gene, despite lacking eyes and vision.

Amblyopsis hoosieri is a robust, blind (eyes not developed) cavefish typically reaching between 6–8 cm. The head is large, flat dorsally, but broad. Scales are inconspicuous and cycloid.

The body is uniformly depigmented, including inside mouth, pinkish-white, reddish near gills; fins are transparent.

Notably, *Amblyopsis hoosieri* has an anus right behind its head, and the females brood their young in their gill chamber.

The fish occurs in caves developed in carbonate rock of the Crawford-Mammoth Cave Uplands and Mitchell Plain in the South-Central karst region of Indiana within the area that remained ice free throughout the Pleistocene Epoch. It is found primarily in larger cave streams at or near the water table where it has been observed in pools with low flow at depths as shallow as 0.1 m to more than 2 m deep.

This article was reprinted from the May 30, 2014 on-line issue of Sci-News.com. The illustration is by Nathan Coussou from the ZooKeys paper.

AMBLYOPSIS HOOSIERI... TRANSLATED

by Jerry Lewis

Until this year, the Northern cavefish (*Amblyopsis spelaea*), the blind fish with which most cavers in Indiana are familiar, was found between the Mammoth Cave region and the East Fork of the White River. A 2014 publication divided the Northern cavefish into two species, retaining *Amblyopsis spelaea* for the Kentucky populations, and proposing the name *Amblyopsis hoosieri* for the Indiana populations.

From a biological standpoint for any species to be considered different from another requires

demonstration of *reproductive isolation*. That is to say, members of the same species can successfully mate, produce offspring, and the offspring are able to reproduce to continue the lineage (i.e., they aren’t sterile). With some animals, e.g., cats, it’s simple to see that they can mate and reproduce. However, with a cavefish it’s an impossible task... like many cave animals, cavefish don’t reproduce all that often in their natural environments. Getting them to demonstrate that two cavefish populations are (or aren’t) repro-

Continued on page 17...

2014 UNDER-EARTH DAY ACCOMPLISHMENTS

by Keith Dunlap

As has been tradition since 1990 (making this the 25th annual), the IKC has organized and promoted a spring workday to coincide with Earth Day, which we have affectionately branded as Under-Earth Day. While in recent years, most of our workdays have focused on surface projects, they always have something to do with some type of cleanup or stewardship effort.

The 2014 Under-Earth Day event actually split effort and time between two of our preserves. In the morning we completed several projects at our Shawnee Karst Preserve, then in the afternoon, we moved to the nearby Buddha Karst Preserve.

At the Shawnee property, three tasks were completed. First seven hybrid American chestnut trees were planted and protective tubes were installed to protect the trees from browsing deer. Next, a recently located trash dump was cleaned up. Most of the debris was household trash (bot-

les, cans, and some plastic), although there were a few tires and one large appliance. Finally, a couple of large trees had fallen across the hiking trails and needed to be chain sawed to remove. Interestingly, one of the two trees fell directly on the foot bridge installed last summer. What are the odds of a tree hitting a five foot bridge on a 10,000 foot long trail? *[editor's note - while it was a rhetorical question, since there were two trees that fell, the chances would be 1:1000].*

At the Buddha property, we planted seven more chestnut trees, cut some grapevines, and installed another short foot bridge at the back of the property to aid in the mower crossing the perennial stream.

IKC Volunteers for the day included George Cesnik, Keith Dunlap, Seth Gower, Jerry Lewis, Everett Pulliam, Wes Roeder, Kevin Smith, Tom Sollman, Brian Welp, and Jamie Winner.



Upper left – Removing a discarded appliance from a ravine on the Shawnee Karst Preserve.

Middle right – Wes Roeder standing next to a freshly planted chestnut tree on the Shawnee Karst Preserve.

Lower left – Proof testing the new foot bridge at the Buddha Karst Preserve.

ANNUAL CAVE PATRON / PROPERTY MANAGER REPORTS

Each year at the Annual Business Meeting, the Cave Patrons and Property Managers are asked to present a verbal summary and submit a written report describing the prior year's activities and incidents, and to make any future recommendations needing implementing. The following is a compilation of the reports for calendar year 2013:

Buddha Cave Patron Report (Jeff Cody)

We had seven trips for Buddha this past year. Twenty-four people filled out waivers for these trips. One trip on March 27 was scheduled but did not go. For the seven trips, one was arranged through myself, three were through Windy City Grotto, and three were through the Bloomington Grotto. Trips were reported in January, February, March, and August. I did get a couple of planned trips that did not go due to rain concerns. I also received a request in the late fall for a scuba dive trip to dive the upstream area but felt the need to confer with The IKC Executive Board before allowing this activity. No one reported any incidents to me or to any liaisons that I have been made aware. This is a similar number of trips as in the past few years.

I do have a couple of concerns, the first being that I keep hearing about a few groups attempting the traverse across the crevice then climb down the opposite side near the small waterfall instead of using vertical SRT techniques. I tell anyone who arranges trips through me that this practice is not allowed as we see this as an unnecessary risk. One trip a few years ago I had heard of a near miss on the climb down and another trip where assistance (not a rescue) was needed. I would also like to see bolts installed on the main drop. If you rig the obvious natural rig point it puts you in a narrow part of the crevice, I feel larger cavers may get stuck attempting this. There used to be bolts a few feet into the crevice where it is wider but those old bolts are gone. There is an option of a second drop before you get to the main drop but it too is a small opening.

Buddha Property Report (George Cesnik)

Activities included:

- May 17 – Keith Dunlap mowed the trails and parking area. He looked over the trees planted in 2010 and many survived the drought of 2012. The bigger trees looked great.

- June 9 – Keith sprayed 4 tanks of Round-Up. Worked on the trees planted in 2008. Also, did some trimming on trees with double trunks and removed some grapevines.
- June 15 – Keith mowed the trails and parking area,. Everything looked good.
- June 22 – Keith sprayed 2 tanks of Round-Up on most of the remaining 2008 planted trees and 2 more tanks on the oaks planted in 2006. Lots of ticks!
- June 29 – Keith sprayed 5 tanks of Round-Up on trees planted in 2006.
- July 12 – Keith sprayed 5 more tanks of Round-Up. He completed the older trees north of the trail, worked on trees south of the trail adjacent to the parking area, and also the area where Jerry Lewis planted persimmon trees west of the parking area. Also, he sprayed out part of a tank on the Johnson grass and thistle out along the county road south of the parking area to the SE corner of the property.
- August 1 – Keith and George re-hung the gate at the parking area so it would not drag. They then sprayed a total of 4 tanks of Round-Up on vine honeysuckle. Finished off the day by cutting numerous grapevines growing into the trees on the property.

Sullivan Cave Patron Report (Anthony Owens)

No report submitted.

Sullivan Property Report (Keith Dunlap)

This was the IKC's 15th full year of ownership and we continue our long-term stewardship projects. The trees in the small field, planted in 2000, have grown impressively. Those in the larger ridge-top field planted in 2001 have a more mix pattern with some species doing very well and others just holding their own. The only tree maintenance completed in 2013 was some weed treatment of Japanese honeysuckle and minor limb pruning in the smaller field.

The "camping" area and the area out by the highway were mowed three times last. I may try to do some grass over-seeding in the camping area this fall if weather is supportive.

The lane and parking areas are in good shape and no maintenance is anticipated for 2014.



Several members took advantage of the camping area and firewood over the past year, but overall use seemed down compared to a few years back. We are discouraging campers from bringing their own firewood to reduce Emerald Ash Borer transportation.

The porta-potty is still functioning and was pumped in August.

Locks are being serviced by Anthony Owens, as needed (new series started in March 2014).

There were no major problems or concerns encountered on the property during 2013.

I plan to install a 911 Address signage out on the road, having got a number assigned last year.

On the adjacent property to the east, I cut grapevine several times over the last few months and may plant a few more trees. Some additional cleanup around the home site is needed and some earth grading is planned to restore the area. Overflow parking is available there and I may keep an area mowed for alternative camping.

Wayne Cave Patron Report (Dave Everton)

Question: How long did the last WZ lock survive on the Wayne Cave gate?

Answer: Four years, from December 2009 to December 2013!

Question: Could it have lasted even longer?

Answer: Most likely, yes.

Question: How many administrators does it take to remove a jammed lock from the outside of the gate without the key?

Answer: Two, on two separate trips!

Now that we're done with the Q&A part of our report, let's move on to the juicy details. Perhaps the most exciting event (for us administrators) which took place at Wayne Cave during 2013 was trying to use a set of bolt cutters from the outside of the cave gate after someone used excessive force and broke the key off in the lock. I'd like to know exactly who did it so I could have a chat with them. Apparently, they are not aware of (or did not implement) the Patron's lock philosophy: locks are like women and should be carefully finessed! Regardless, master gate designer Keith Dunlap got to reap the consequences of making the lock very difficult to remove, and I had the privilege of being present to witness and also partake of the difficulty. It required him to make two trips during the same week, but during the second one, there was no fooling around when he brought the hot stuff. The Patron got to employ Hoosier

Engineering techniques, and fashioned a mirror on a non-telescoping contraption that helped Keith make short work of the lock removal task.

The Patron's records show eleven trips to the cave during calendar year 2013. It just so happened (Murphy's Law, perhaps), that on the day of the key breakage, *two* different groups were planning to visit the cave! Both had to implement Plan B. As always, it doesn't really matter for my records whether a particular trip was liaison-arranged or patron-arranged, although several of the cavers who visited are affiliated with Indiana grottos. However, two of the eleven trips were Near Normal Grotto cavers. A few cavers made more than one visit, but most of the 65 visitors went only once.

There was a minor problem passed along to the Patron, which was trash and food wrappers found by a reliable source one day after a previous group had visited. My attempts to communicate with the trip leader of the likely-offending group resulted in never hearing back from them. Needless to say, they'll have some explaining to do, lectures to endure, and restitution to complete if they wish to ask for access again.

The Patron made a visit to the cave this year! He and two others visited Camp 4 and the Gypsum Passage in a casual six-hour visit, which included fumbling around route-finding between Camps 1 and 2. Wayne Cave continues to be a source of enjoyment and pleasure for the average visitor. Thanks goes to the IKC for many years of past protection and restoration, as well as regular continued protection and property access.

Wayne Property Report (Robert Sollman)

This will be the 11th year the IKC has owned Wayne Cave. For the 2013-2014 caving season multiple trips were made to Wayne Cave, including overnights, with no serious incidents reported.

Property Maintenance:

- The Assistant District Forester visited/inspected the property and provided feedback on ways to improve the above-ground area.
- The clearing at the top of the hill has been left to grow naturally with the exception of glyphosate sprayed on invasive species (autumn olive, multiflora rose, etc...).
- Trash was removed along the road-frontage as well as the driveway.



- Several trips were made to the property for clearing the trail to the cave of down trees/branches, as well as weed-eating the trail.
- A new combination lock was placed on the gate.

Future Projects include:

- Construction of an informational Kiosk is planned for the 2014 year.
- A workday for invasive and grapevine control as well as Beech and Maple reduction.
- Routine maintenance of property.

Robinson Ladder Property (John Benton)

2013 Property activities:

- IKC member Jamie Winter used his own tractor and mower in July to mow drive lanes, parking and camping areas, prior to Cave Capers. In December, Jamie also cut up and removed a fallen tree which had been blocking the road going up the hill to the barn and upper field. The IKC appreciates the work and thanks him.
- Numerous tree seedlings are sprouting in both the upper and lower fields. Does the IKC want to manage the fields as a prairie or let nature take its course and allow trees to become established? Options are possible burn (tried a couple years ago, but did not burn evenly due to heavy green undergrowth, even with a professional burn team), manually spraying to kill many tree seedlings, especially beech and maple, or bush hogging, or doing nothing.
- In December, Scott Johnson (IDNR Non-Game Biologist) requested permission to visit the cave in January 2014 for the biennial bat census. Permission was granted and Scott visited the cave in January 2014 along with Keith Dunlap; they reported only one bat, a Big Brown. In February 2012, there were approximately 50 Indiana bats observed in the cave, as well as numerous luci and pips, although several of them showed signs of being infected with WNS. At the time, no Indiana bats showed signs of WNS.
- There were no requests to camp at the preserve during 2013. Only two cave trips were requested. No requests from grotto liaisons for cave visitation. Recreational cave visits are allowed from May 1 to the end of Au-

gust, with a signed permit and decon procedures. The cave is closed from September 1 until April 30 to protect the hibernating bats. The preserve consists of about 73 acres, 40 of which were in the original purchase, and 33 acres which were donated by The Nature Conservancy in adjacent ground, part of which borders Blue River on a steep bluff.

- Most of the land (excepting the barn) at RLC remains in the Classified Forest which lowers our taxes. There was some speculation that the barn was built before 1950; if so it would qualify for a tax deduction also. A check of topo maps and records indicate the barn was built in the 1980's or early 90's and thus would not qualify.

Future work needed?

- Continue to watch grapevine growth and minimize where possible.
- Plan for upper and lower fields, spray, burn, bush hog, or do nothing for now? What is best interest of bats? Work day needed?
- Other work?

2013 Robinson Ladder Cave activities: 2 total trips; 9 people total. There was one request for a winter visit, denied due to hibernating bat season, that is now planned for May 2014.

Shawnee Karst Preserve Report (Jerry Lewis)

In 2013 the following tasks were undertaken:

- Completion and maintenance of loop trail about 1.5 miles in length.
- Completion of clean-up of sinkhole dump at entrance to Upper Twin Cave.
- Completion of sinkhole dump clean-up near north boundary of property.
- Completion of sinkhole dump in cedar forest area.
- Completed cleanup of first (of two) waste log dump in edge of sinkhole pond.
- Timber stand improvement.
- Conducted two bird counts.
- Conducted invasive control (e.g., autumn olive, bush honeysuckle).
- Re-graded lane and improved drainage turnouts.
- Planted 400 hardwood trees in former pasture



area, and performed two subsequent weed-control sprayings.

- Constructed small bridge across breach in wildlife pond to allow foot traffic and easier passage of mower.
- Began re-construction of dam on second wildlife pond near cave entrance.
- Established 911 address.

Upper Twin Cave Patron Report (Jerry Lewis)

- Installed SpeLogger to monitor visitation.
- Installed bolts for cable at turn-around spot.
- Three trips were led into the cave comprised of a total of about 15 people.
- Several trips were planned (and forms signed) then cancelled due to weather concerns or anticipated trip difficulty.

Suicide Patron Report (Ronnie Burns)

Please accept this 2013 annual report for Suicide Cave in Washington County. Visitation was up from past years, probably due to caves being closed on state land. There were six visits (up from four in 2012) but many more cavers with a total of 69 compared to only 22 cavers the year before. On one trip the Windy City Grotto of Chicago brought 25 cavers. I have in my file signed waivers for all visitors. There have been no reported injuries, lost cavers, or mishaps.

Orangeville Rise Report (Steve Lockwood)

The property continues to attract trash due to the large road frontage and seasonal flooding, but it is remaining relatively clean between trash pickups. Trash was collected from the property in March 2013, and October 2013. Every cleaning of the property yielded a large garbage bag full of trash or more. The trash collected included glass bottles, plastic bottles, plastic jugs, Styrofoam cups, plastic bags, aluminum cans, boards, plastic sand box, and etc.

The fence built in 2003 on the western side of the property has collected more flood debris, but remains straight and structurally sound. The high strength wire in the fence will eventually need to be stretched again because it is slowly losing tension. A few trees are starting to grow up in the fence also. The concrete property markers installed in 2004 are still intact on the southeast

corner and northwest corner of the property. The property marker on the east side of the property near the bridge over the creek that enters the channel to the rise still has not been located after being washed away in 2011. The erosion on the west bank of the Orangeville Rise streambed at the intersection of the Lost River streambed seems to have decreased in the direction of the fence posts along the west property line.

Activities planned for 2014 include biannual trash pickups, and cleaning further trash from a small ravine located on the west side of the property which continues to erode and uncover objects such as old bicycles, fencing, boards, posts, a lawn mower and other items.

Shiloh Patron Report (James Adams)

The Indiana Karst Conservancy has continued, with the permission of the landowner, to permit up to six recreational trips into Shiloh Cave for the general caving community per calendar year. Each trip is limited to ten participants with three vehicles on the property. During 2013, only four of the allowed six trips were taken into the cave, totaling 35 cavers. No requests for visitation were denied.

In August, a special trip was arranged for Kevin Webster from Indiana University in Bloomington. He is doing gas monitoring in caves as his PhD project. He recently sent some initial data from his visit to Shiloh Cave:

- For reference the methane concentration in open atmosphere is about 1.85 ppm and the concentration of CO₂ is 400 ppm. Oxygen has a concentration of 210,000 ppm (21 %).
- Selenite Passage: CH₄ (methane) concentration 1.89 ppm, CO₂ concentration 2139 ppm; Intersection of Black Damp and Selenite Passages: CH₄ concentration 0.85 ppm, CO₂ concentration 7704 ppm; Water Fall in the Black Damp Passage: CH₄ concentration 0.47 ppm, CO₂ concentration 8037 ppm; Well Casing in the Black Damp Passage: CH₄ concentration 0.41 ppm; CO₂ concentration 7418 ppm.

According to Webster, Shiloh Cave looks pretty normal for caves. It may be slightly enriched in CO₂, but nothing abnormal. He promised to send microbial data once he has that analyzed.

Note: Kevin mentions the second sampling site as "Intersection of Black Damp and Selenite Passages." I believe he is referring to the Black Damp and Main trunk passage intersection, the Selenite



Passage being the low side passage marked on most maps nearer to the Rector Mill Entrance.

Lost River Cave Patron Report (Dave Tibbets)

Last year (2013) saw almost no additional footage added to the Lost River Cave System. Two survey trips were made involving six cavers. One trip gained 350 feet of new passage, and the other found water levels too high to reach the day’s objective. Across the road at Wesley Chapel Gulf, 409 feet were added to Boiling Spring cave as it was pushed to its limit. The latest word I have from the USFS is that the money has been approved for the purchase of the Blanton property, but title has not yet been transferred from TNC.

Indian Creek CE Report (Jamie Winner)

Properties covered by the conservation easement were inspected by Jamie Winner and Keith Dunlap on August 3, 2013. Inspections reports were then mailed to the respective landowners in mid-August. The most significant issue noted was some excessive mowing on lot #9 and some on #10 as well. Previously tilled area on lot #10 has been allowed to revegetate, and picnic shelter remnants have been removed. Lots 8, 11, 12, 13 & 14 are being maintained acceptably. One survey marker PVC cover was missing, and another was laying on the ground. The missing PVC cover will need to be replaced.

Continued from page 11..

ductively isolated is not a realistic expectation.

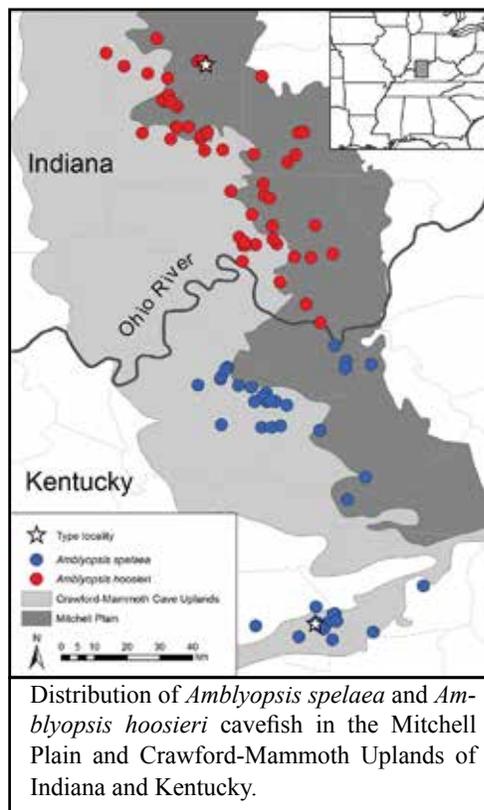
So, barring putting two (presumably a male and female) fish together and then waiting to see if they’re smoking little cavefish cigarettes later, one has to figure out some other way of demonstrating difference or similarity. A tried and true method is to look for *dispersal barriers*, i.e., a physical barrier that prevents two separate populations from “exchanging genes”. When populations are separated by a barrier, over the course of time genetic change occurs as the members of each population adapt to their environments. Voila, evolution.

In the case of this new species of cavefish, the dispersal barrier is the Ohio River. This is not a new idea... for example, when I described Sollman’s cave millipede (*Scoterpes sollmani*, named after Tom Sollman in 2000) the river separated the millipedes in Binkley Cave from the very similar ones in Kentucky. Small anatomic differences in the millipedes on either side of the river were attributed to genetic isolation. This is not a huge leap of faith... it seems quite unlikely that a tiny animal that only occurs in caves is going to be walking across the Ohio River to mate with its buddies in caves in northern Kentucky.

The case is a little less easy to make with aquatic animals like fish. The limestone strata in which the fish occur are known to traverse under the Ohio River and one can speculate that there are caves, and cave animals, under the river... but what’s the probability that cavefish are swimming back and forth under the Ohio River exchanging genes? This seems unlikely.

To test the idea that the populations on either side of the river are isolated, one looks for differences that would be produced by such isolation. In the case of these cavefish, the fins were found to be shaped differently between the Indiana and Kentucky populations, as well as other anatomic differences. Looking deeper, differences in the DNA that underlie the changes in anatomy. It’s only practical to analyze a very few parts of the enormous DNA molecule, and in this case, the pain-staking laboratory work resulted in finding differences between the Kentucky and Indiana populations.

One of the important things about recognition of the species in Indiana as separate from the one in Kentucky is the potential significance for conservation of the fish and their habitats. Perhaps *Amblyopsis hoosieri* will become another tool in the Indiana cave conservation toolbox.



INDIANA KARST CONSERVANCY TREASURY REPORT

**Income/Expense Statement
From January 1, 2014 to March 31, 2014**

INCOME:

Dues Apportionment and Residuals	697.50	
Donations - General	2,452.50	
Donations - Land Acquisition Fund	595.00	
Interest	<u>197.96</u>	
		\$3,942.96

EXPENSES:

IKC Update (printing, production, mailing)	225.48	
Education / Outreach	82.05	
Stewardship/Conservation	46.78	
Business (renewal/ballot letters, misc fees)	106.99	
Ind Acad Science grant	0.00	
Transfers to/from restricted funds/other adjustments	<u>728.30</u>	
		(\$1,189.60)

NET OPERATING EXCESS (DEFICIT) THIS PERIOD: \$2,753.36

**Balance Sheet
March 31, 2014**

ASSETS:

Cash in Checking / Saving Accounts / CDs	135,371.37	
Robinson Ladder Cave Preserve (73.48 acres)	162,000.00	
Shawnee Karst Preserve (50.31 acres)	105,000.00	
Wayne Cave Preserve (20.00 acres)	75,000.00	
Sullivan Cave Preserve (28.00 acres)	72,000.00	
Buddha Karst Nature Preserve (36.84 acres)	29,000.00	
Orangeville Rise Nature Preserve (3.01 acres)	7,000.00	
Indian Creek Conservation Easement (valued at \$1/acre)	<u>13.16</u>	
		<u><u>\$585,384.53</u></u>

FUNDS & OPERATING EXCESS:

Land Acquisition Restricted Fund	29,810.95
Deferred Dues Restricted Fund (187 members)	4,095.00
Indiana Acad of Science	796.40
Stewardship Endowment Restricted Fund	53,451.82

Previous General Fund (total)	44,477.00
Net Excess (Deficit) This Period	<u>2,753.36</u>
Current General Fund (unrestricted)	47,230.36
Current General Fund (committed)	3,550.00
Real estate liquidity (basis value)	<u>450,000.00</u>

Total Liabilities & Operating Excess \$585,384.53

Continued from page 7...

be available to the caving community. I applaud the work that has been done behind the scenes to establish the new permit system for these two caves as well as caves located in the Cave River

Valley property. I hope that others will take the time to visit these newly re-opened caves and enjoy once again all that Spring Mill State Park and Cave River Valley have to offer.

IKC ANNUAL BUSINESS MEETING MINUTES

Saturday, March 22nd, 2014 – School Group Meeting Room, Marengo Cave, Marengo, Indiana

Board Members Present:

Jerry Lewis, President
 Keith Dunlap, Treasurer
 Kevin Smith, Secretary (proxied by Salisa Lewis)
 Bruce Bowman
 Christopher Dick
 Dave Haun (proxied by Sue Vernier)
 Don Ingle
 Everett Pulliam
 Bob Sergesketter
 Karen Silvers
 Tom Sollman
 Bob Vandeventer
 Richard Vernier
 Carla Winner
 Jamie Winner

Board Members Absent:

none

The meeting was called to order by President Jerry Lewis at 12:30 Eastern Time. All board members were present except Dave Haun and Kevin Smith, who had proxies.

Gordon Smith welcomed the IKC to Marengo Cave and invited everyone to a special tour of the cave, led by him, after the board meeting.

Two proxies were accepted: Sue Vernier for Dave Haun and Salisa Lewis for Kevin Smith.

The previous minutes from the September meeting were unanimously approved without changes.

Keith Dunlap gave the Treasurer's report. We are in good standing with \$583,884.05 in total assets. Cash funds include \$53,318.52 in our Stewardship fund, \$29,685.95 in our Acquisition fund, \$3,300.00 in our Deferred Dues fund, \$796.40 in an ad hoc Grant fund, and \$46,783.18 in the general fund, which includes the money from the Wyandotte Cave Gate project. Membership is 187 with 129 currently renewed for 2014 and 58 yet to renew. The date to renew membership is 3/31/14.

Tom Rea was appointed election teller. Results of the election were: Jerry Lewis remains President with no write-in candidates, Kevin Smith remains Secretary with no opposition, Keith Dunlap remains Treasurer with no write-in candidates, and the four Directors, Bob Vandeventer, Bob Sergesketter, Bruce Bowman, and Richard Vernier were all re-elected. One write in vote for Director was received for Arnie Sakmussun, who is not a mem-

ber of the IKC. The Officers and Directors will be seated April 1, 2014.

Annual Cave/Property Management Reports

Reports on the preserves began with the Shawnee Karst Preserve, Jerry Lewis, Property Manager and Cave Patron. The various cleanup projects are mostly completed, with one or two small sinkhole dumps still to be cleaned up. There were three trips into the cave. Some visits were cancelled due to weather and the possibility of flooding in the cave. Jerry proposed purchasing a datalogger for monitoring the stream level and tracking weather-related flooding in the cave to get a better idea of how the cave stream is affected by rainfall on the surface. Keith has investigated a datalogger for this type of monitoring that is submersible, can be anchored, can compensate for barometric pressure changes, and has a 5-year battery life. The datalogger will cost approximately \$300. With the datalogger at stream level and weather reports for the Spring Mill area (it is not known whether the park monitors rainfall), data can be collected and used to predict when trips can safely traverse the cave. There was some discussion about whether the data could be uploaded to the IKC website. The data has to be manually downloaded, so real-time data would not be available on the website. Bruce Bowman made a motion to approve the purchase of the datalogger by Keith Dunlap for \$300. The motion was seconded by Richard Vernier. The motion passed unanimously.

Robinson Ladder Cave Preserve was presented by Property Manager and Cave Patron, John Benton. There was some discussion regarding bat loss and how the bat census at RLC compared with other census numbers this year.

Further discussion about how to manage the property ensued, with Carla discussing the pros and cons of another burn attempt, Jamie talking about letting the trees grow versus trying a prairie planting, which would be expensive and Bruce Bowman suggesting benign neglect/succession. Richard Newton asked about the quality of the trees currently growing there. Other options raised were bush hogging, possible funding of future management by The Nature Conservancy and the option of doing nothing. Further discussion was tabled at this time.

The Orangeville Rise report was given by Property Manager Steve Lockwood. There was some discussion about replacing the lost property marker that was washed away in 2011. Since the flood eroded the land where the marker was placed, there is no place to put a new marker. Some con-

cern was raised about the rise eroding toward the road. Steve reported there is a stone wall under the road and that the erosion may continue at the wall, but at a very slow rate, so it is not a current concern. The monitoring station and the preserve sign are in good shape.

Keith presented the Wayne Cave patron report for Dave Everton. Two trips to the cave on the same day were unable to get into the cave because they could not open the lock. The cave has a new lock and all Grotto Liaisons have new keys. Robert Sollman, Property Manager reported that plans for the construction of a kiosk were underway, with Tom and Robert Sollman creating a shelter-style structure from treated timbers. The structure will have a map of the cave, benches, and IKC information. Approximately \$1500 in materials will be needed for construction of the shelter, and perhaps \$400 or more for signage once the shelter is complete. Tom is considering using screen-printed metal signage similar to the sign at Buddha. Keith made a motion to approve \$1500 for use on this project, Bob Vandeventer seconded this motion. The motion was unanimously approved. Robert and Tom plan to assemble much of the shelter at home and transport it to Wayne Cave Preserve. They plan to schedule a workday in the spring or summer.

Jamie Winner gave the Indiana Creek Conservation Easement Inspection report. Reports were mailed to the property owners in mid-August. Of note, lots 9 and 10 had been mowing on the easement, the tilled area on lot 10 had been allowed to return to grass and the remains of the picnic shelter had been removed. One PVC cap on one property marker post needs to be replaced. A spring 2014 visit is planned.

Jeff Cody gave the Buddha Cave Patron report and Keith reviewed the Property Manager report submitted by George Cesnik. Jeff asked for Board approval to let Adam Haycock and Chris Parks scuba dive in Buddha in the upstream section. Several questions were raised about safety, liability and Conservancy policies. It was suggested that Adam be invited to the June IKC meeting to discuss what he wants to do in the cave. Jeff agreed to notify Adam.

Keith gave the Property Manager report for Sullivan Preserve. Anthony Owens, the Sullivan Cave Patron, was not present and did not submit a report.

Keith read the Shiloh Cave patron report submitted by Jim Adams, the Suicide Cave Patron report submitted by Ronnie Burns, and the Lost River Cave Patron report, submitted by Dave Tibbets. Our agreement with The Nature Conservancy for access into Lost River Cave has been terminated with the assumption of management by Hoosier National Forest. Cavers who are surveying in the cave can finish their project by re-

questing research permits from the HNF.

Full reports of all the above will be printed in the June *IKC Update*.

Stewardship Activities

The annual Under-Earth Day and Indiana Cave Symposium meeting are scheduled for April 26, 2014. The Cave Symposium will be held at the Lawrence County Fairgrounds. Workdays are planned for Shawnee Karst Preserve from 10 AM to approximately noon (sinkhole clean up, tree planting, trail maintenance) and for Buddha Karst Preserve in the afternoon until around 4 PM (bridge building, tree planting, grapevine cutting).

Keith brought up the idea of planting some American chestnut hybrids on the preserve properties. Chestnut trees were once one of the most common and beneficial trees in the eastern United States, but were all but killed off by disease. New hybrid versions of the species appear resistance and are gradually becoming affordable. Chris Dick made a motion to grant up to \$400 for purchasing 20 trees and tree tubes. The motion was seconded by Everett Pulliam. The motion passed unanimously. *[editor's note: After the meeting, Wes Roeder made a \$300 donation to sponsor the cost of the trees, so the IKC only had to pay for the protective tubes and stakes].*

As part of good management of our properties, the need for 911 emergency property signs was raised by Keith. In November, Keith got address numbers assigned to our three preserves in Lawrence County. The 911 signs cost around \$100 and would enable EMS personnel to find the preserves quickly in an emergency. The Board approved \$100 for the signs.

The IKC funds half the expenses of the Indiana Cave Symposium (food and facility rental). Carla Striegel-Winner made a motion to fund our portion of the Symposium up to \$175. Bob Vandeventer seconded the motion. Fourteen Board members voted for the motion, one voted against. Motion passed.

Keith reported that there are currently no new land acquisition activities.

Don Ingle was not present, however Keith reported that Don and the inflatable cave went to the annual Indiana Bat Fest at ISU in September. Also in September Susan Wilkinson attended the IDNR Outdoor Experience in Indianapolis where nearly 20,000 people attended. The Board will need to look at better support for the Outdoor Experience in the future; more staffing, tools, and whatever resources are needed.

The IDNR has approved a program for interim access at the Bronson-Donaldson Cave (year-round) and to Upper Twin (thereby allowing a through trip from Shawnee Karst Preserve to the boat tour entrance) from

November 1 to May 15. Also access to Endless and River caves in Cave River Valley May 1 to August 31. The program will be partially administered by the IKC. Visitors will be required to take a short White-nose Syndrome web-based training module and follow proper WNS decon procedures.

Keith gave a brief 2014 bat survey summary.

Items from the floor

Bill Greenwald brought a guest, Mark Campbell from Scenic Hills Camp. There are several caves on the camp property, and Mark is seeking IKC input in managing the camp's caves. One concern is that an old boxspring is being used as a cave gate on Eversole Cave, and that the cave takes in garbage from a sink and swallow hole. Mark would also like the IKC to provide cave conservation education to staff and campers. Jerry will contact Mark.

Bruce Bowman thanked Robert Sollman for his web design efforts on converting the IKC website. Bruce made a motion to approve the new website migration. The motion was seconded by Chris Dick and unanimously approved. There was brief discussion regarding the new platform, drupal, and bringing links to the NSS site as well as making the IKC page usable by different platforms (web, tablet, mobile).

The removal of the old bat gate in Wyandotte Cave is awaiting approval by USFWS based upon observations made at the new gate last fall. Assuming the removal is approved, the project will likely be scheduled between May 15th and June 30th.

Gordon Smith wanted to remind everyone that Wyandotte Cave is still closed by the state and not really being managed. The cave is a valuable natural resource with educational and economic potential.

Bob Vandeventer asked for donations from members

and the IKC to the NSS to help finance projects at the new NSS Headquarters. Specifically, the HQ Committee is looking for donors to fund re-roofing one of the outside pavilions. There was discussion, with Bruce Silvers suggesting we donate to the NSS as they have helped fund several IKC cave acquisition projects. Bob Sergesketter suggested a donation be made in memory of Terry Clark. Keith made a motion to donate \$500 in memory of Terry Clark to the NSS. Sue Vernier (proxy for Dave Haun) seconded the motion. The motion passed unanimously.

Jerry made a motion that the ballots from the Board election be recycled by Tom Rea. Keith seconded, the motion passed unanimously.

Jeff Cody informed the Board that the Eastern Indiana Grotto was planning to replace the fence at Storm's Pit (Lawrence Co) sometime in August. Keith suggested Jeff submit a brief note about the project to the next *IKC Update*.

Sue Vernier had a few paper copies of the Evansville Metro Grotto newsletter with a tribute to Terry Clark that she handed out.

The entire IKC Board thanked Gordon for his generous provision of the snack shop and drinks for lunch, the education room for the Board meeting, and leading the meeting attendees on a trip through the cave.

The next meeting was set for June 21, 2014 at the Robinson Ladder Cave Preserve. A morning workday would start around 10 AM with the meeting schedule for 4 PM EDT.

The meeting was adjourned at 2:58 EDT. Those wishing to go in the cave were to meet on the patio at 3:15 EDT.

Respectfully submitted, Salisa Lewis, acting IKC Secretary.

INDIANA KARST CONSERVANCY, PO BOX 2401, INDIANAPOLIS, IN 46206-2401

I would like to help the IKC protect Indiana's unique caves and other karst features. Enclosed is:

\$ _____ for IKC membership dues at \$15 per year (dues expire March 31st of each year, please pro-rate @ \$1.25/month).

\$ _____ donation to the general IKC fund.

\$ _____ donation restricted to a specific IKC project. Please specify: _____

_____ I know of an area worthy of protection. Please contact me.

_____ I would like to volunteer to help. Please contact me.

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

PHONE # _____

Make checks payable to the Indiana Karst Conservancy, Inc. and mail to the IKC Treasurer, c/o Indiana Karst Conservancy, PO Box 2401, Indianapolis, IN 46206-2401. The IKC is an IRS recognized 501(c)(3) non-profit organization with membership dues and donations fully tax deductible.

