

IKC Update

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INDIANA KARST CONSERVANCY, INC.

PO Box 2401, Indianapolis, IN 46206-2401

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 - Jerry Walker documenting information at the entrance to Mossy Hole, Martin Co, as part of the Crane Karst Study. Photo by Bruce Trotter, layout by James Adams.

Newsletter staff: Keith & Bambi Dunlap



ANNUAL BUSINESS MEETING REMINDER

SATURDAY, MARCH 20th, 10:00 AM

GREENWOOD, INDIANA

GREENWOOD COMMUNITY CENTER

The annual business meeting is for the explicit purpose of elections. It is also for members and other interested persons to have an open forum for talking about cave 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 meeting is informal, and everyone is encouraged to attend and participate.

Preliminary Agenda Items: Elections; Brief recaps of last quarter's activities; Sullivan Cave announcements; Leonard Springs park; DNR bat gate project; HNF inventorying project; NSS BOG meeting; Confined feedlot regulations; and more....

Meeting directions: See page 29 (inside back cover) for directions and map.

EVENTS CALENDAR

- 20 MAR = IKC ANNUAL BUSINESS MEETING, Greenwood (see above)
- 27 MAR = NSS BOARD OF GOVERNORS MEETING, Greenwood (see page 6)
- 10-14 APR = SINKHOLE CONFERENCE, Pennsylvania
- 03 APR = WYANDOTTE CAVE WORK DAY, Corydon (see page 5)
- 11 APR = LOST RIVER STEREO (3D) SLIDE SHOW, Indianapolis (see page 6)
- 17 APR = LOST RIVER TOUR, Orleans (see page 5)
- 17 APR = HNF KARST TEAM MEETING/FIELD WORK, Bedford (see page 10)
- 17 APR = INDIANA CAVE SYMPOSIUM, Milltown (see page 8)
- 18 APR = UNDER-EARTH DAY, Sullivan Cave (see page 8)
- 24 APR = EARTH DAY INDIANA, Indianapolis (see page 6)
- 24 APR = OVR CLEAN-UP AT FREELAND'S CAVE, Ohio (see page 5)
- 08-09 MAY = ABANDONED MINE GATE CONSTRUCTION, Winslow (see page 5)
- 15-16 MAY = CONTINUATION OF MINE GATE CONSTRUCTION, Winslow (if needed)
- 15 MAY = HNF KARST TEAM TRAINING/FIELD WORK, Bedford (see page 10)
- 12 JUN = LOST RIVER TOUR, Orleans (see page 5)
- 19 JUN = HNF KARST TEAM MEETING/FIELD WORK, Bedford (see page 10)
- 12-16 JUL = NSS NATIONAL CONVENTION, Idaho
- 19-23 OCT = NATIONAL CAVE MANAGEMENT SYMPOSIUM, Tennessee

For more information on the Indiana Karst Conservancy, visit our web site at <http://www.caves.org/conservancy/ikc> or write to our PO box. Membership to the IKC is open to anyone interested in cave and karst conservation. Annual dues are \$15. Please see inside back cover for the membership application form or to make a donation.

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...

By now, you should all have your election ballots and have come to the realization that I'm not seeking a 6th term as President of the Conservancy. There are many reasons for this.

First, I'm simply ready to step down; I feel it's time that someone with more energy and enthusiasm takes my place. I've noticed that five years is about as long as anyone will usually remain in this kind of capacity before they start to feel a little jaded. Second, the timing is right; we aren't in the middle of any major projects and we just completed the substantial effort of acquiring our first nature preserve. Last, and most important; I feel very strongly that some turn-over at the top is necessary in a healthy organization. Other people must be given an opportunity to lead and be successful at it, so the operation of the Conservancy doesn't become too dependent on a single person (or a small nucleus of people).

Actually, I believe the time has come for the Conservancy to consider a bylaws change; one that establishes term limits for the officers. There is a strong tendency to reelect the incumbent, and I'd like to do something to counteract that. More often than not, both officers and directors run essentially unopposed, and I wonder if folks who would like to become more involved don't even try; feeling they have no chance. That's not the way things are supposed to work.

At this time I feel compelled to recapitulate a little, to list a few of the things this organization has accomplished during my tenure. I won't attempt to include the many activities that IKC members have pursued on their own initiative; and even then, space doesn't allow me to list them all. I hope you will forgive me if I omit your favorite project.

We've re-energized the Hoosier Forest Projects Committee, completed our first cave management plan, and received a regional award from the Forest Service. We acquired, then re-acquired, management of Suicide Cave; and gated and established working relationships with the owners of both entrances of Shiloh Cave. We did a tremen-

dous job of organizing the 1995 National Cave Management Symposium and publishing the Proceedings. We've continued our funding and basic research of Binkley Cave water quality, Indiana bat populations and hibernacula temperatures, monitoring access violations, re-inventory of Mayfield's Cave, blind cave crayfish counts in Shiloh, and a number of other projects. We've encouraged and promoted IKC/ICS members conducting karst inventory work at Jefferson Proving Ground and Crane Naval Depot. We've continued with workdays at many sites including Indian Creek Sinks, the Spicer Lane property, Under-Earth Day at Sullivan, Big Spring Nature Preserve, Gory Hole, Endless Cave, Saltpeter Cave, Wesley Chapel Gulf, and many others. We've expanded our educational outreach efforts through additional reprints, poster distribution, presentations, brochures against sinkhole dumping, and the IKC web page. We were instrumental in creating new gas drilling permit requirements for karst areas, and expanded our relationships with other divisions of Indiana DNR. We established a land acquisition committee, created a prioritized list of properties to acquire, and have made substantial inroads in acquiring a significant Lost River property. And, of course, we actually purchased our first nature preserve -- the third-longest cave in Indiana, Sullivan Cave.

Obviously, I didn't do all this by myself. It is only through the dedication of our directorship, and the grassroots activism of our members, that we've been able to achieve this much in the five years I've served as President. I'm very proud to be associated with this organization, and your help has made my responsibilities that much easier to deal with. In many ways, I have been blessed.

While I plan to continue in some capacity with the IKC for the foreseeable future, come March 20, I will no longer be President. I want to thank each of you for the support you have given me, and I trust you will do the same for my replacement.

- Bruce Bowman

DON'T FORGET TO RENEW YOUR DUES

NEWS BRIEFS...

- ❑ With the relatively inactive winter winding down, the caving calender is once again full of cave conservation/educational projects. Check out the calender on page 3 (and related articles throughout this issue) and pick a few projects to volunteer/participate in while having a little fun too. IKC projects can be very rewarding and there is always lots of fellowship in accomplishing good things together.
- ❑ The annual restoration workday at Wyandotte Cave is scheduled for Saturday, April 3rd. Caving volunteers in past years have tackled numerous projects throughout the cave including photo-documentation, non-historic signature removal, formation repair, mud-ball removal, trail reconstruction, rock moving, and debris clean-up. Several different projects are scheduled for this year so there is something for everyone. If you would like to volunteer for this workday, you must call Roger Gleitz (812-738-2782) at the cave. There will be a limit of 20 volunteers.
- ❑ As a follow-up to the Ohio Valley Region's clean-up of Freeland's Cave (Adams Co, Ohio) last fall (*IKC Update* #51, page 10), another workday is scheduled for April 24th. For more information, contact John Cole, or visit the OVR's web site at www.webpub.com/jhagee/ovr.html.
- ❑ Bob Armstrong will once again be conducting his guided tours of the Lost River area, starting from the east at its head waters in Washington County, through Orange County to its disappearance near Orleans, and on to its rise near Orangeville. This year there will only be *three* tours: April 17th, June 12th, and October 2nd. The tour will leave the southeast corner of the square in Orleans at 8 AM sharp on each of those Saturdays. Reservations are not required. Tours are "go, especially if it rains". There will be some moderate hiking and sturdy footwear and long pants/sleeves are strongly recommended. The tour is free, but a small donation is suggested for the optional printed handouts. This is a must do tour, if you are interested in Indiana karst. For more information, contact Bob at (317) 926-4266.

**ABANDONED MINE BAT GATES PROJECT - MAY 8-9**

As was covered in the last *IKC Update* (#51, page 5), the Indiana DNR is interested in gating several old mine entrances that are used by bats. Generally these mine openings are closed by bulldozing, but the DNR would like to be more pro-bat, thus they would like to do a pilot project using gates. The DNR contacted the IKC and we are finalizing a contract agreement which would have IKC members manage the project and perform the actual work. In exchange, the DNR would cover all the costs of the materials, supplies, camping, etc; *plus* appropriately compensate the IKC for our efforts (i.e., this could be viewed as a fund raiser to support other IKC projects). This is a win-win situation, especially for the bats who are now living in these mines.

This project is ambitious, including the construction of seven bat gates (requiring over 10,000 lbs in steel). The construction will be done in two phases. The first phase consists of three gates at mine site #778 near Winslow (Pike Co). These will be started on **May 8/9** and finished up on May 15/16 (if needed). The second set of gates (four at site 859 near Petersburg) will be done in late June or early July (dates have not been finalized). We need your support on one or more of these days.

If you are interested and can help, please contact Keith Dunlap at 317-882-5420, KDunlap@atd.gmeds.com. Specific details (schedules, directions, etc) will be provided as the time gets closer. Camping will be provided for those that can stay for the weekend.

- ❑ Bob Armstrong will also be presenting a 3D/stereo slide of the Lost River on Sunday, April 11, 2 PM, at the Indiana State Museum (downstairs meeting room). While not as exciting as seeing the Lost River in person, this slide show literally gives a unique perspective, and only as Bob can present it. The program is free and open to the public, as is the museum.
- ❑ On April 24, the IKC will again sponsor a booth at Earth Day Indiana in downtown Indianapolis. Featuring live bands, food, and a great number of organizations; this event is an excellent opportunity to network with groups having similar interests, build our membership, and educate the public. The event runs from 11 AM to 5 PM at the American Legion Mall (two blocks north of the War Memorial where CIG meetings are held). *Admission is free.* Members are encouraged to stop by, enjoy the show, and man the IKC booth for short periods. Be sure to also pick up a copy of the Grassroots Environmental Handbook, which contains a feature article written by the IKC president. For more information, contact Nick Noe or Bruce Bowman.
- ❑ The NSS Board of Governors spring meeting is being hosted by the Central Indiana Grotto on Saturday, March 27th. The meeting will be held at the Greenwood Community Center (same location as the IKC business meeting the week before), starting at 9 AM. This is a good opportunity for NSS members to see their leaders in action and observe how a national organization functions. In addition to the meeting, there will be a "howdy" party the evening before, allowing for a little informal interaction between local and national cavers. Also on Sunday, some of the NSS Board will visit Sullivan Cave, allowing them to visit the cave/property that they helped to purchase (the NSS donated \$5000 from their Save-the-Cave fund towards the acquisition).
- ❑ As part of the IKC's involvement in karst related activities on the Hoosier National Forest, Bruce Bowman and Keith Dunlap are participating on a work group committee that is assisting in the development of the Special Interest Area (SIA) management plan for Wesley Chapel Gulf. The other committee members are Bob Armstrong (Lost River Conservation Association), Judy Gray (Orange County Tourism), Kelle Reynolds (HNF) and Les Wadzinski (HNF). The committee had their first meeting in February and will meet again on March 24th. The general consensus is that the property should have minimal development, but efforts should be made to maximize the properties educational/interpretive potential as it relates to the whole Lost River karst system.
- ❑ Efforts continue on the systematic karst inventory work being done on the Crane Navel Depot by IKC and Indiana Cave Survey members. To date, after 20 visits, 49 features have been identified and documented. The second phase of the project, now underway, is to survey/re-survey all the located caves, with four surveys complete and a fifth now underway (the five totaling 4100+ feet). Both Aunt Liz and Pleasant caves have yielded some nice virgin passage by pushing low stream crawls. It is anticipated this project will be rapped up by this fall. For more information, contact Ray Sheldon or Bruce Trotter.
- ❑ Members are reminded that the IKC has a slide show that can be used to introduce people to cave conservation in Indiana. The show includes a complete script for those who aren't inclined to *ad lib*. On March 5th, Bruce Bowman used portions of this slide show at the meeting of the Greater Cincinnati Grotto; followed by discussion of the status of Sullivan Cave. The presentation lasted about an hour and a half, was attended to 50-60 members, and was very well received. The following weekend, Dick Vernier used the slides for a similar presentation to the Indiana Audubon Society.
- ❑ The Ohio Biological Survey has just published a comprehensive book on the bats of Ohio, appropriately entitled *In Ohio's Backyard: Bats*. The ring-bound book is 195 pages long and contains color photographs, range maps, and factual tables and figures. In addition to chapters on basic bat biology and species accounts, it contains sections on applied topics such as rabies and public health, caves, mines, nuisance control, viewing etiquette, and bats as major insect predators. This book will be an important and practical resource for anyone interested in bats and is very applicable to Indiana, as we share most species with Ohio. The book is available for \$15 (plus \$1.50 S&H) from: The Ohio Biolog-

ical Survey, OSU Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212-1192 (or phone: 614-292-9645). It can also be ordered though most bookstores (ISBN 0-86727-125-6).

- ❑ This past year, members of the Central Indiana Grotto working in cooperation with the management of Wyandotte Cave stabilized and gated the entrance to B-B Hole in Crawford County. The cave was originally dug opened in 1956 but collapsed due to its unstable entrance. It was re-opened again in 1973 but again collapsed. After digging it open for a third time in the summer of 1998, it was decided to place a steel culvert through the unstable section and gate the end of the culvert to control access. The cave is basically a single base-level stream passage. B-B Hole's most notable characteristic is its significant inward airflow during the winter, likely caused by some unknown connection to nearby Breathing Hole.
- ❑ During the months of January and February, Dr Virgil Brack conducted the biennial Indiana bat (*Myotis sodalis*) census for the Indiana DNR. The project consisted of visiting 24 caves (all previous know *sodalis* hibernacula) and counting the bats. This information, along with the systematically collected data from the past twenty years is providing population trends for the species. Participants in the project included IKC members Keith Dunlap, Tom Sollman, Steve Collins, and Bambi Dunlap. The results of the census will be presented at the Indiana Cave Symposium in April. The written report should be available later this year.
- ❑ The regulations for Confined Feeding Operations continue to be strengthened. Due in part to the efforts of the Hoosier Environmental Council, IDEM has reopened the interim rule and has taken the working group through a second stage of negotiations to make the regulations more friendly to the environment. Since some of these operations have been located in karst areas, the potential for coliform contamination of groundwater from one of these operations is very real.

At the urging of IKC member Kevin Strunk, Bruce Bowman and Keith Dunlap met with two representatives of IDEM (Bruce Palin and Tim Method) on February 18. Formal, written point-by-point comments addressing the draft rule in the *Indiana Register* were also provided in a subsequent mailing. The main concerns expressed by the IKC were the minimal guidance provided to regulate manure application acreage, and some karst-related details that were not specifically required to appear in the farmstead plan.

IDEM will be holding several outreach, education and public forum events on this topic from March 16th through April 6th. Locations are Rensselaer, Vincennes, Plymouth, Greensburg, Frankfort, Warsaw and Jasper. For detailed locations, times and dates, contact Bruce Bowman. For more general information, browse to www.state.in.us/idem/oshwm/confined.html

- ❑ In November of 1997, IKC member Aaron Atz witnessed a group in Langdon Cave kill several bats and damage formations. He pursued these violations of the Indiana "cave law" which ultimately resulted in a conviction of Robert Grant (see *IKC Update* #49, page 8). Since Aaron was more than instrumental for the prosecution, he was awarded the maximum reward of \$1000 from the Cave Vandalism Deterrence Reward fund sponsored by the NSS. The reward system is set up to encourage witnesses to pursue prosecution even when the justice "system" is less than cooperative (as in Aaron's case). Note: This was the second time IKC members have collected a reward from this reward fund.
- ❑ Each March, the IKC likes to recognize its tenth-anniversary members. This year, we'd like to congratulate Bruce Barnes, Don Schofstall, Chris Carpenter, and Eric Schmidt. The membership roster now includes 45 members with ten or more years of IKC service.
- ❑ Three new members have joined the IKC in the past quarter. Welcome the Sub-Urban Chicago Grotto (342), Jennifer Reiss (343), and Lora Shrake (344). The IKC membership now stands at 161. A complete membership/mailling list starts on page 26.

1999 INDIANA CAVE SYMPOSIUM

by David Black

The seventh annual Indiana Cave Symposium will be held on Saturday, April 17 at the Cave Country Canoe Rental's Group Meeting Hall in Milltown, Indiana. A hot-dog roast will be held at 5:30 PM local time (4:30 Indy time) and talks will begin at 7:00 PM local time (6:00 Indy time). Please bring a covered dish and/or dessert to the cookout. Hot-dogs with fixings and soft drinks will be provided. Camping will be available at the adjacent campground. This year the Indiana Karst Conservancy, Indiana Cave Survey and Marengo Cave are co-sponsoring the event.

The purpose of the event is to get the active caving groups together to share and discuss their projects, and for cavers and cave researchers to network. Presently, speakers for the symposium are being solicited from caving groups within Indiana and neighboring states. The emphasis will be on exploration, surveying, science, and conservation projects. It is preferred that the talks be on activities within Indiana. Exceptions will be made if the caving group's most significant project is outside the state. Talks should be from 15 to 30 minutes in length. A slide projector and an overhead projector will be provided. This will be an excellent way of showing off your grotto's recent projects.

At this time, there are seven confirmed speakers, with several other potential talks. David Black, President of the Indiana Cave Survey will begin the symposium with a welcoming and a brief explanation of the goals of the ICS. John Bassett and Jim Keith are giving a talk on their recent dye tracing in Washington County. Keith Dunlap will present a summary on the biennial bat census. Ray Sheldon and Bruce Trotter will give an update on their activities and progress on the Crane Karst Study. Jerry Lewis and Tom Sollman will present their recent research work in Binkley Cave. Allen Purcell will give an update on The Nature Conservancy's activities related to caves. John Benton will give a program on lost caves of Harrison/Crawford counties. Kriste Lindberg will give an update on the Hoosier National Forest Karst Inventory project.

Additional speakers are needed. Please talk to the active members of your caving group about a presentation. It is hoped that every caving group that is active in the state will make a presentation. For more information, or to schedule a talk, contact Dave Black at (812) 951-3886 or e-mail dblack@venus.net, or visit the ICS web site at <http://www.caves.org/survey/ics>.

UNDER EARTH DAY X - APRIL 18th

The Indiana Karst Conservancy will once again be sponsoring a workday at the Sullivan Cave property (Lawrence County) to celebrate Earth Day. This year's date is Sunday, April 18th, starting at 10 AM.

For cavers who are not familiar with Sullivan Cave, it is Indiana's third longest, with over nine miles of passage. Last year, the cave was acquired by the IKC, but has previously seen its share of abuse over the last thirty years. In 1989, the Central Indiana Grotto installed a gate on the entrance at the request of the previous owner. Since that time, numerous restoration trips have been completed, improving the aesthetics of the cave significantly. However, there is still much to be done in the cave and your participation would be appreciated.

There will also be a number of above-ground projects. These will include some minor surface trash removal, continued hardening

of two trails constructed last year, and a gate post replacement. Please bring whatever hand tools you feel would help with these projects.

For those planning to work in the cave, please have the appropriate caving equipment including a helmet with chin strap, proper footwear, and adequate light sources. A liability waiver must also be signed, children under twelve must be accompanied by a parent, and trips may be limited by the number of leaders available.

Those needing more information or directions to the property may contact Keith Dunlap at 317-882-5420 / KDunlap@atd.gmeds.com or Bob Vandeventer 317-888-4501 / vandeventerb@tce.com.

NOTE: Parking is limited. Please carpool! Do not park at the house, as it no longer is associated with the property.

SENATE BILL 392 MAY IMPACT KARST PROTECTION

by Bruce Bowman

Indiana Senators Becky Skillman (R, Bedford) and James Lewis (D, Charlestown) have introduced a bill into the General Assembly to redefine several terms related to "karst."

These redefinitions are to be used in the context of locating appropriate sites for solid waste landfills. Under the current definitions, the Washington County landfill is located in karst and has been ordered closed by IDEM since by Indiana rules, landfills are not permitted in karst areas due to groundwater quality issues. The sponsors of the bill hope that the new definitions would allow the landfill to continue its operation.

Although the current landfill isn't known to be causing a problem with groundwater quality at present, these redefinitions could have long-term and unanticipated consequences. The proposed bill requires any cave to contain an active stream to be protected from landfill siting efforts. Also, the definitions require a sinkhole to have a cross-sectional area of 100 square feet or more to be qualified as a sinkhole (as most IKC members know, a sinkhole can have a significantly smaller area and still provide a direct conduit to sub-surface). In practice, the bill fails to provide *functional* definitions for karst determination; and could result in inappropriate siting of landfills in the future. Perhaps worse, the new definition could easily be latched onto when writing regulations for unrelated purposes (e.g.: siting/managing of Confined Feeding Operations).

Despite these and other objections by the IKC, the bill was unanimously passed by both the Senate Environmental Affairs Committee and the full Senate (Senator Skillman did amend the bill to narrow the scope slightly). The bill is now being transferred to the House, where Representative Dennie Oxley (D, Milltown) is sponsoring it. Representative Dale Sturtz (D, LaGrange) chairs the House Environmental Affairs Committee where the bill has been assigned.

IKC members who are alarmed by this turn of events should contact Representatives Oxley and Sturtz, their own district representative, and especially governor Frank O'Bannon to oppose this bill. Comments should be brief and state your purpose up-front. State representatives can be con-

tacted by e-mail at Rxx@ai.org, where "xx" is their district number. For example, Representatives Oxley and Sturtz may be contacted at R73@ai.org and R52@ai.org, respectively. Although I couldn't find an e-mail address for the governor, he can be reached by form-mail at http://www.ai.org/gov/gov_mail.html or by phone at (317)232-4578. To receive consideration, be sure to provide your name, address and phone.

More timely information can be found at <http://www.state.in.us/cgi-bin/legislative/bills/completeBillInfo.perl?billnum=3D0392>.

Following is the full text of the bill:

SENATE BILL No. 392

A BILL FOR AN ACT concerning environmental law.
Be it enacted by the General Assembly of the State of Indiana:

SECTION 1. [EFFECTIVE UPON PASSAGE]

a) Before February 1, 2000, the solid waste management board shall amend 329 IAC 10-2 to incorporate the following definitions of terms used in 329 IAC 10-2-99:

- (1) "Cave" means a natural cavity in rock that is:
 - (A) large enough for a person to enter or greater than twenty-four (24) cubic feet;
 - (B) laterally or vertically extensive or greater than twenty-five (25) feet in length;
 - (C) formed by solution from current or past conduit flow; and
 - (D) part of a natural subsurface conduit flow system.

The term refers to a landform feature that generally develops in carbonate and evaporite rock regions (such as limestone, dolomite, and gypsum) and is formed by solution or a combination of solution and collapse.

- (2) "Sinkhole" means a funnel shaped depression in the land surface with:
 - (A) greater than three (3) feet of topographic relief; and
 - (B) a map surface area greater than one hundred (100) square feet

The depression provides active storm water drainage as part of a subsurface conduit flow system developed by solution of bedrock. The term refers to a landscape feature that generally develops in carbonate and evaporite rock regions (such as limestone, dolomite, and gypsum) and is formed by solution or a combination of solution and collapse of carbonate or interbedded carbonate and sedimentary bedrock.

HNF/IKC KARST PROJECT UPDATE

by Kriste Lindberg

This issues's HNF/IKC Karst Project Update will cover the time period from January through mid-March 1999. Lots has happened and will be happening.

In particular, before I say anything more, please take note of the following:

MINI-HNF/IKC KARST INVENTORY PROJECT TRAINING SESSION MAY 15, 1999, 10:00 AM, FIELDWORK TO FOLLOW AT ABOUT 2:00 PM HNF HEADQUARTERS IN BEDFORD (see below for more details)

Now, onto other things... Let's give a warm welcome to our new HNF Rep - Kelle Reynolds, Wildlife Biologist. Kelle (yes, that is the correct spelling!) started towards the end of February. Her home state is in the Midwest, Illinois to be exact, and she graduated from Purdue University. She recently worked for the NF out west but has come home to us. I will be conducting an interview with her soon so please look for it in the next IKC Update.

In January, just after the almost-blizzard, a few of your HNF/IKC Karst Project volunteers reconnaissanced the "Tincher Pond" area with our guide, Ray Rough. Thanks to him as well as our mainstays Jack Wood, and Keith and Bambi Dunlap. Also, welcome and thanks to Bruce Devore, Gene Pelter and his son Aaron, and Josh and Tanya, as well. We located a few little cave entrances, checked out some karst features, and just had a nice time walking around in the snowy woods as the sunlight shone through the trees. Was quite interesting keeping track of where we were, too, as this is an area where four quads meet - Williams, Bedford West, Huron, and Georgia! While scouting about, we even came across an old homesite and poked around it for a bit of culture. On the way back, we turned over a piece of pottery in a stream and found a few flatworms working their way across the bottom of it. Neat stuff.

After the HNF/IKC Committee meeting in February, we head out to Rose Cave to check out a few things for the management plan that is in the process of being written (two others are also in the works - Patton Cave and Elrod Cave). Thanks to Jack Wood, Kurt Volle, Christine Hunt, Bill Ackerman, and Steve Lockwood. Had a fun time climbing around looking for bear wallows, etc. Actually, we found quite a few! Lots of

interesting biota and fossils in there, too. Tried to find the elusive "exit" but water was up a bit high and no one felt like pushing it at the time. Maybe next time. Worked up a good appetite and headed over to the neighboring town, Jasper, for some excellent German food at a restaurant by the name of the Schnitzelbank (sp?). If you are ever in the area, you've got to check it out!

Please be advised that the March HNF/IKC Karst Project will not be happening as it conflicts with the IKC's Annual Business Meeting. Instead, we invite everyone to attend this meeting. It is to take place at the Greenwood Community Center at 10:00 AM. Hope to see you there!

On other business, your HNF/IKC Karst Project has been asked to return as an Indiana Cave Symposium presentation. This year, it will be held on the evening of April 17 (it is, conveniently, also the day of a HNF/IKC Karst Project Committee Meeting and workday). Updates will be made to last year's presentation. We plan to include the many accomplishments we have made during the past year as well as related information - including signing of the first management plan, Wesley Chapel Gulf past present and future, the karst biota workshop and other biota stuff, the Anabat study, the Eastern Region Honors Award. If you have any photos that you'd like to contribute and/or if you would like to be part of the planning process, let me know.

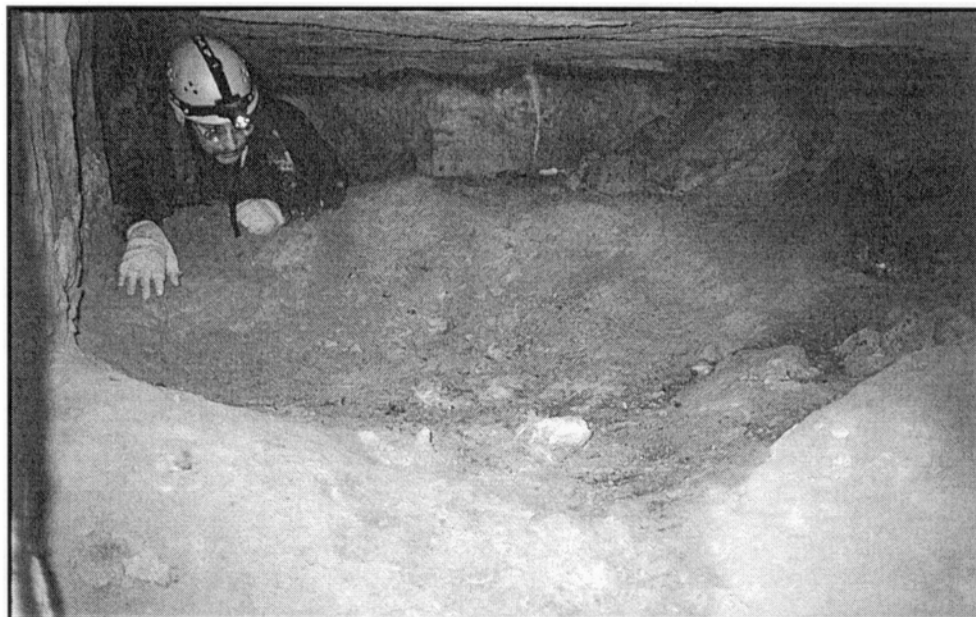
And remember, May is the Mini HNF/IKC Karst Project Training Session. This will serve as an introduction for those who are new and a refresher for those who have been with us for awhile. The last one was in the Fall of 1996! It will include information and experts in the fields of cave biota, geology, hydrology, paleontology, recreation, etc. The classroom part will begin at 10:00 AM and end around 2:00 PM, at which time we will go out to do some fieldwork...

Feel free to contact me for more information:

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HNF/IKC Karst Project
Volunteer Coordinator/Biota Leader
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lindberg@indiana.edu



Recent HNF Karst Inventory field team at the entrance to Rose Cave (Martin Co). Left to right: Jack Wood, Kurt Volle, Christine Hunt, Bill Ackerman, Steve Lockwood.



Inventory team member Bill Ackerman looking at one of many bear wallows found in Rose Cave. Documenting these types of cave values will assure that the management prescriptions for the cave will acknowledge and protect such resources.

THE BINKLEY CAVE PROJECT

by Julian J "Jerry" Lewis, Ph.D.

INTRODUCTION

In 1996 Allen Pursell, the manager of the Blue River Project for The Nature Conservancy wrote a grant to the US Fish & Wildlife Service asking for funding for a project. Although this was to become known as the "Binkley Cave Project", the actual title of the grant was "Groundwater monitoring in significant aquatic caves that lie beneath impending residential developments in the Blue River basin of southern Indiana". Funding for \$5,500 was approved in 1997. At that time The Nature Conservancy transferred the funding for the project to me and we were off and running. Allen explained to me that the intention of the project was to conduct a study of the water quality and the fauna of the cave to gather a baseline set of data. This data would be used to determine if there were any problems that needed to be addressed immediately and provide information for future reference.

I immediately contacted Tom Sollman to see if he would be interested in working on the project. I knew that Tom was already in the midst of conducting a census in a couple of other Indiana caves and suspected that he would be interested in teaming up to work on Binkley. My suspicion was correct and the foundation for the project was laid. On the evening of September 17, 1997 Gary Roberson introduced me to the owner of the cave, Doug Henrickson. Doug struck me as being not only interested in his cave, but interested in seeing productive things happen in it. He was obviously proud and protective of the cave.

That evening Gary led a group of us, including Allen Pursell and myself, down through the entrance breakdown to Binkley River. The trip was a short one, only covering the first half mile or so of the cave between the entrance and the Big Break (a 200 foot long breakdown crawl that partially blocks the walking passage). One of my first impressions of Binkley Cave was watching Allen slosh down Binkley River Trail with his hands in the pockets of his coveralls. The passage was so large that you could walk down in nearly effortlessly in mostly ankle deep water.

A sign of things to come occurred as our group were standing around talking near the point where we stopped. I glanced over at

the passage wall and noticed over a dozen millipeds walking around on the rock. It was immediately obvious that these were not the knobby, grayish looking millipeds (*Pseudotremia indianae*) that were common in caves through most of the Blue River basin. These were snow white, much smaller and had many fine bristles on the back if you squinted at them hard enough. I immediately knew that this was something good and collected several into an alcohol vial. Upon examination under a microscope they proved to be a new species of the milliped *Scoterpes*. This group of millipeds is common in caves further to the south in Tennessee and Alabama, but were totally unknown in Indiana.

Tom Sollman and I decided that we would visit the cave once a month for one year. Additional funding for the project was brought in through my existing grant from the US Geological Survey, Species at Risk Program. As part of the Blue River area cave bioinventory I had received significant funding from the USGS and decided that a careful bioinventory of the longest cave in the state would be an appropriate use of the funds. The IKC also contributed \$800 which was used entirely for paying for additional water testing.

Each month we conducted a stream census in Binkley between the entrance and the Big Break. All fish and crayfish were netted so that they could be measured and sexed. If the animal eluded capture, we sight-estimated its length. Thirty-five small (4 ounce) pitfall traps were placed along the first mile of passage in various spots to aid in sampling the invertebrates in the cave.

We also measured the temperature, pH, and conductivity of the water at several sites. Stream depth was measured at the entrance and Big Break on each trip. Air temperature was measured starting at the pasture above the cave, the entrance area, and at several sites established along Binkley River Trail. Funding was only sufficient to measure a very limited number of water quality indicators on four trips. In addition to pH and conductivity, we took samples to test for nitrate and phosphate levels, as well as fecal coliform bacteria. On the first trip samples were also taken to test for BOD, but this was abandoned after the first trip as it was felt the cost outweighed the information that it provided.

On about half of the trips we surveyed as far as the Big Break, then exited the cave to sample other caves or springs around the Corydon area. On several occasions we made the trip through the Big Break, which was no big deal, but usually meant a longer trip that wouldn't allow time to hit other caves that day.

As in every cave project, there are always stories that never make it into reports or maps. To make the best use of our time, on several occasions Tom and I would split up. On a couple of occasions we went to the Mountain Room together, then Tom would head downstream while I went up into the Sandy Road. Another time I went to sample Miles, Pflanz, and Grable springs while Tom was going to "run in" and take a water sample from the stream in Blowing Hole. I had been into Blowing Hole as far as the stream passage twice without really getting wet, so didn't think it would be an eventful trip. It was a hot summer day and I was able to sample the springs and get back to the designated meeting spot at Fairgrounds Spring before Tom. When Tom drove up he looked pretty disgusted. He had gotten the water sample, but had found the entrance passage (much of it a crawlway) was flooded to within a foot of the ceiling along much of the route. In reading through the final report on the project there are page after page of columns of numbers and other data. Some of the figures, like the Blowing Hole sample, definitely had some stories behind them that escaped mention in the report!

RESULTS

Biodiversity - The faunal sampling revealed a total of 74 species inhabiting the caves and springs of the Corydon area. These 74 species were distributed among 64 genera, 45 families, 21 orders, 10 classes and 5 phyla. This assemblage of species were assigned to ecological categories as follows: 20 troglobites (excluding the 19th century report of *Typhlichthys*), 16 troglophiles, 35 troglonexes, 2 edaphobites and 1 accidental.

Twenty-one species were found that were believed to be of significant global rarity. These species (shown in Table I) are classified as G1 (felt to be critically imperiled, known globally from 5 or fewer localities), G2 (imperiled, known from 6-20 localities), or G3 (vulnerable, 21-100 localities).

One species on the U.S. endangered species list, the Indiana bat, was present in Binkley Cave. This species was discovered

there during the Indiana bat survey in January, 1997. A ten inch rain in March of 1997 flooded the hibernaculum below the entrance of Binkley Cave and killed all or most of the Indiana bats present at the time.

Eight species new to science were found in the caves of the Corydon area. These were the milliped *Scoterpes* sp., the amphipods *Crangonyx* sp., *Stygobromus* sp., the pseudoscorpion *Kleptochthonius* sp., the springtails *Isotoma* sp., *Arrhopalites* sp., and the campodeid dipluran *Litocampa* sp. Of these, the *Scoterpes*, *Isotoma* and *Arrhopalites* were discovered during this project. The genus *Scoterpes*, unknown in Indiana one year ago, remains known in this state only from Binkley Cave and BB Hole (Crawford County). The new species of *Stygobromus* also occurs in Devil's Graveyard Cave, which is about four miles southwest of its population in Manhole. The species is being described by Dr John R Holsinger (Old Dominion University). The undescribed species of *Crangonyx* occurs from central Kentucky north into south-central Indiana. A description has been prepared by Drs Jun Zhang and John R. Holsinger. A description of the *Kleptochthonius* from Baelz cave is underway by Dr William Muchmore (University of Rochester). *Litocampa* sp. is known only from less than ten localities in the Blue and Lost river basins of southern Indiana. A description of this species is being prepared by Dr Lynn Ferguson. The undescribed springtails *Arrhopalites*, *Isotoma* and *Onychiurus* were identified by Dr Kenneth Christiansen, but there are no plans for their description at present.

Eight of the species are endemic to the Blue River basin: *Stygobromus* undescribed species, *Kleptochthonius packardi*, *Kleptochthonius* undescribed species, *Scoterpes* undescribed species, *Onychiurus* undescribed species, *Isotoma* undescribed species, *Pseudotremia indianae*, and *Pseudanophthalmus tenuis*. An additional three species are endemic to Indiana: *Sphalloplana weingartneri*, *Litocampa* undescribed species, and *Sinella alata*. Three species are endemic to an area that encompasses the region between Mammoth Cave, in central Kentucky, to the Blue River basin in southern Indiana: *Crangonyx* undescribed species, *Antroselates spiralis*, and *Amblyopsis spelaea*.

The greatest subterranean biodiversity yet discovered in Indiana occurs within the Binkley/Blowing Hole groundwater basin. Of about 200 caves inventoried for fauna in

<u>Critically Imperiled</u>		
<i>Stygobromus</i> undescribed species	Devil's Graveyard Cave amphipod	G1
<i>Kleptochthonius packardi</i>	Packard's cave pseudoscorpion	G1
<i>Kleptochthonius</i> undescribed species	Baelz Cave pseudoscorpion	G1
<i>Scoterpes</i> undescribed species	Binkley Cave milliped	G1
<i>Onychiurus</i> undescribed species	Binkley cave springtail	G1
<i>Isotoma</i> undescribed species	Manhole springtail	G1
<u>Imperiled</u>		
<i>Sphalloplana chandleri</i>	Chandler's cave flatworm	G2
<i>Sphalloplana weingartneri</i>	Weingartner's cave flatworm	G2
<i>Glyphalinia rimula</i>	Karst glyph snail	G2
<i>Antroselates spiralis</i>	Shaggy cave snail	G2
<i>Arrhopalites</i> undescribed species	Binkley Cave springtail	G2
<i>Arrhopalites lewisi</i>	Lewis' cave springtail	G2
<i>Tomocerus missus</i>	Relict cave springtail	G2
<i>Litocampa</i> undescribed species	Indiana cave dipluran	G2
<i>Myotis sodalis</i>	Indiana bat	G2
<u>Vulnerable</u>		
<i>Crangonyx</i> undescribed species	Barr's cave amphipod	G3
<i>Orconectes inermis</i>	Northern cave crayfish	G3
<i>Pseudotremia indianae</i>	Blue River cave milliped	G3
<i>Sinella alata</i>	Wingless winged cave springtail	G3
<i>Pseudanophthalmus tenuis</i>	Blue River cave ground beetle	G3
<i>Amblyopsis spelaea</i>	Northern cavefish	G3

TABLE I

Harrison, Crawford, Washington and Orange counties, Binkley Cave had the highest number of globally significant species (Lewis, 1998). A characteristic of major cave systems, e.g., the Mammoth Cave System of central Kentucky, is the presence of greater biodiversity as compared to smaller caves. Reasons for this include the possibilities for habitat partitioning, as well as the greater number of kinds of habitat available for use. Not all of the species present in a system necessarily occur in the "main" cave. In the Mammoth Cave System, several species included in the checklist of animals known there actually occur in smaller caves such as Whites Cave, rather than in Mammoth Cave itself. The same can be said in the Binkley System, where different species of the flatworm *Sphalloplana* or the amphipod *Stygobromus* are found in different caves of the overall system.

Partitioning of the habitat appears to occur in Binkley Cave with the millipeds. Binkley Cave and BB Hole are the only sites known in Indiana where two species of troglobitic millipeds occur. *Pseudotremia indianae* and *Scoterpes* sp. have certainly been

found in the same proximity in Binkley Cave. However, *Pseudotremia* appears to be an inhabitant of the vast riparian mudbanks, whereas *Scoterpes* was found almost always on the bare limestone walls of the cave. *Pseudotremia* came readily to cheese baited pitfalls, but *Scoterpes* was entirely absent from pitfalls, even when placed at the base of the limestone walls known to be inhabited by the millipeds.

Water Quality - Five physical/chemical water quality indicators were sampled from several parts of the Binkley Cave System, as well as Grable Spring, Miles Spring, Pflanz Spring and Kings Cave. These were: (1) temperature, (2) pH, (3) conductivity, (4) nitrate, and (5) phosphate. Fecal coliform bacteria levels were also sampled.

Temperature -- As would be expected, stream temperature showed little variation, ranging from 52.9 to 59.2 °F. Binkley River at the point of its emergence near the entrance to the cave was measured 11 times. The temperature ranged from 53.2 - 56.0 °F, mean 54.5, standard deviation 0.9. There was no evidence for thermal pollution at any site tested during this project.

pH -- The pH of groundwaters sampled ranged from 6.9 to 8.4. Binkley River at the point of its emergence near the entrance to the cave was measured 11 times, with a range of 7.1 - 8.1, mean 7.5, standard deviation 0.3. These levels are certainly within the range of what one would expect for the bicarbonate charged water found flowing through limestone. No indication of pollution modifying the acidity/basicity of the water was found at any site sampled.

Nitrate/phosphate -- These two anions were sampled as indicators of nutrient enrichment from fertilizers or a variety of other kinds of pollutants. The EPA drinking water standard for nitrate is a level of 10.0. However, the relevance of using drinking water standards for judging cave and spring water is questionable. There is probably not a single surface stream in Indiana that has water that meets drinking water standards. Since wildlife (deer, etc.) contributed coliform and other kinds of contamination to surface and groundwaters even prior to the appearance of the white man in North America, it is possible that many streams *never* had so-called drinkable water.

Be that as it may, the levels found ranged from 0.233 (sinkhole pond surface water) to 15.64. Most of the groundwaters sampled had levels between 1.7 to 5.0. Any level above that might be viewed with some suspicion of contamination, such as several sites in Binkley Cave (5.74 in the Sandy Road east dome, 9.25 in Powell Avenue, or 6.36 at the dome tributary of Binkley River), Bickel Spring (6.99 on 7/19/98), or the river in Blowing Hole (8.32 on 7/19/98).

Three sites in Binkley Cave exceeded the drinking water standard. These were 15.64 in the water in the first side passage prior to Rocky Hall, 11.7 in the first tributary past Rocky Hall, and 10.42 in the second tributary past Rocky Hall. Phosphate levels sampled ranged from 0.03 to 0.33.

Conductivity -- Quinlan & Rowe (1977) found conductivity to be an excellent indicator of heavy metal contamination of groundwater. The groundwaters sampled ranged from 210 to 410. Binkley River was sampled 12 times at monthly intervals at the entrance to the cave. Levels ranged from 140 (during flood) to 350, mean 284, standard deviation 57. There was no indication of pollutants affecting conductivity in any of the sample sites.

Fecal coliform bacteria -- The EPA standard for drinking water is that no (zero) fecal coliform bacteria be present. Using this

standard, not a single site sampled had water acceptable for drinking with levels ranged from 2 to 8,200. By far the highest fecal coliform level was found in the stream flowing through the North Section, at 8,200 per 100 ml on 9/27/98. Although no cavefish were present in this section of the stream, cave crayfish were noted. The sample was taken from the stream directly above the little waterfall the separates Binkley River from the North Section stream, just a few upstream from Binkley River. This water could come from either the waterfalls issuing out of Twin Domes, the passage upstream of Twin Domes, or from the smaller Grand Avenue stream. Based on a single sample below the confluence of these streams, it is impossible to say where the source of the contamination might be. Similarly, based on a single "snap-shot" sample it is a matter of speculation the degree to which there is even a problem. However, traveling upstream to Grand Avenue requires doing a hands and knees crawl through potentially fecal contaminated water. It would be best to avoid this part of the cave until such time as the source and magnitude of the problem can be delineated.

Samples exceeding 200 per 100 ml were taken at the following sites: Binkley River at the entrance (240 on 4/26/98; 490 on 7/19/98), the first tributary past Rocky Hall (600 on 5/17/98), Binkley River at the waterfall passage intersection (730 on 5/17/98), Binkley River at the North Section passage intersection (220 on 9/27/98) Bickel Springs (320 on 7/19/98, the other three samples there were <100), Fairgrounds Spring (300 on 5/17/98, the other four samples there were <200), pools in the entrance passage of Blowing Hole (330 on 1/19/98), the main river in Blowing Hole (500 on 7/19/98), Grable Spring (490 on 7/19/98) and Pflanz Spring (480 on 7/19/98).

Aquatic communities - The typical aquatic population found in Binkley River consisted primarily of four species of troglobites, the isopod *Caecidotea stygia*, amphipods *Cragonyx sp.*, crayfish *Orconectes inermis*, and cavefish *Amblyopsis spelaea*, as well as two troglophiles, the crayfish *Cambarus laevis*, and the sculpin *Cottus*. The rock counts conducted in the entrance area of Binkley River revealed that the small invertebrate population there was dominated by isopods, ranging from 2-39, in the first quadrant area, and ranged from 1-13, in the second. The third area had no rocks and no invertebrates were ever noted there.



Crayfish were the most conspicuous aquatic animal in Binkley River between the entrance and the Mountain Room. Examination of census data in appendix 1 indicates that no significant fish nor crayfish population exists in Binkley River between the entrance and Rocky Hall. An occasional cavefish did occur in that section of the stream. Between Rocky Hall and the Big Break (at Grunge Hall), cave crayfish were usually more conspicuous if flow conditions were conducive for viewing (i.e., base flow). Of the 12 censuses conducted, in that section of the stream the range of *Orconectes inermis* found was between 2-16, with the average about 9. Between the downstream end of the Big Break and the Mountain Room was also a good place to find *Orconectes*, but was censused fewer times since crawling through the Big Break was necessary. A short distance downstream of the Mountain Room the community changed abruptly. The waterfall

at Binkley Canyon, although only a couple of feet high, apparently limited sculpin dispersal from the presumed point of origin in Indian Creek. Below the waterfall sculpins were found by the hundreds, where only the occasional *Cottus* was noted above the waterfall.

REFERENCES

Lewis, Julian J. 1998. *The subterranean fauna of the Blue River area*. Final report for the Blue River Project, The Nature Conservancy, 267 pages.

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POLLUTED WATERS: Bacteria invade Indiana cave

by GRACE SCHNEIDER

Widespread pollution has been discovered in a major Southern Indiana cave system, raising questions about the impact of development that is rapidly gobbling up Harrison County farmland.

Binkley Cave, which lies beneath the county seat of Corydon, is the largest mapped cave in the state and contains a variety of rare animal species.

A recently released study, commissioned two years ago by the US Fish and Wildlife Service, found fecal coliform bacteria in every place tested along 21 miles of waterways inside the cave.

The source of the pollution isn't clear. Possible culprits include animal waste on farms, leaking septic tanks or even a break in Corydon's sanitary sewer lines.

The study's finding is significant because underground water often finds its way to the surface and enters the drinking-water supply. Under federal drinking-water guidelines, the study said, no fecal coliform should have been detected.

The study was designed to il-

luminare what's happening to the cave system as Harrison County, one of the fastest growing counties in Southern Indiana, rapidly evolves from a rural community to a sprawling outer suburb of Louisville.

Moreover, the study has delivered the first snapshot of life inside the cave, a picture that conservationists and planners hope will serve as a benchmark for future studies.

"The county's becoming more and more populated," said J.R. Eckart, the Harrison County surveyor and chairman of the county plan commission.

"...We're going to have to have people thinking differently than they do now. What we do on the surface affects what happens underground."

At this point, though, county officials aren't sure how they will proceed. The study's findings are only now beginning to be discussed.

Harrison County is far from alone in grappling with the threat posed by underground pollution.

Such problems have led other communities -- most notably, perhaps, in the Mammoth Cave area

of south central Kentucky -- to install new sewer systems and limit development.

Harrison County is part of a large area of Indiana that has what geologists call karst terrain -- containing deep sinkholes, and underground caves and streams. The Hoosier region is similar to the porous landscapes found in Kentucky's cave country and in central Illinois.

Underlaid by limestone, the bedrock in such areas is eaten away by surface and underground water to form the honeycomb of sinkholes, caves, underground streams and springs.

Experts note pollution found in such caves has alarming implications for the quality of drinking water, especially with increasingly strict federal standards for cleanliness.

One problem is that what's underground eventually will re-emerge in springs and above-ground streams -- to pollute drinking water supplies and possibly kill wildlife.

People in Horse Cave Ky., saw the connection after the town's

continued on page 19 ➡

LOUISVILLE GROTTO PURCHASES CAVE AND 67 ACRES

by John Benton

The Louisville Grotto has recently purchased the property containing Lone Star Saltpeter Cave in northern Hart County Kentucky. To be known as the Lone Star Preserve, the 67 acre tract also has other caves, and it is hoped the primitive site can be developed as a permanent Speleofest site as it is centrally located in cave country with caves being located in all directions from the preserve. That way, caves used for Speleofest could be used approximately every four years to prevent wearing out the cavers welcome to certain property owners. Speleofest has been hosted by the grotto over Memorial Day weekend for 27 years and is the primary fund raiser for the grotto; funds from previous Speleofests provided a substantial down payment on the land.

A Lone Star Preserve Committee has been established by the grotto and the committee has prepared a mission statement for managing the preserve both above and below ground. It is the desire of the group to develop the land to promote the preserve as a place for community education on cave ecosystems and the historical significance of caves on the property. Lone Star Cave itself has been used in the past as a mushroom farm, a source of saltpeter for the Civil War and possibly other time periods. There are Civil War era signatures in the large room of the cave. Also it appears the 50 feet wide by 15 feet high entrance was used by prehistoric Indians as a shelter and campsite as many flint chips can be found. The site is in the process of being designated an archaeological location with the state of Kentucky.

Donations are actively being sought to reduce the debt as soon as possible. The Louisville Grotto is established as a non-profit organization so all contributions are tax deductible. Avenues for grant money are also being pursued. Checks should be payable to the Louisville Grotto and sent to Lone Star Preserve; PO Box 408 Upton, KY 42784. The grotto website, www.caves.org/grotto/louisvillegrotto/ (or link off NSS web page) is being updated with information on the Lone Star Preserve property. According to the level of contribution, various thank you items such as caps and T-shirts are offered. Workdays are being scheduled inter-

mittently. The Preserve can be visited any time by grotto members and their guests.

In May of 1998, grotto member John Benton noticed a real estate ad in a Hart County newspaper that featured a commercial cave for sale. As it turns out, the realtor figured that since the cave was once used to grow mushrooms it was a "commercial" cave. John casually mentioned the cave and land being for sale to Gordon Smith at Marengo Cave. Gordon, being a good friend to many grotto members, urged the grotto to investigate due to the location of the property and the need for a permanent Speleofest site. In early June 1998, numerous grotto members walked the boundaries and/or many square feet of woods, bottoms and ravines. The pros and cons were debated; some very strong opinions were supported on each side. By a majority the grotto voted to purchase this parcel of karst land for a sum not to exceed \$540 an acre on July 20, 1998. The initial offer was for less and several counter offers later, the property was closed on November 21, 1998.

Much work remains to be done. Clearing of brush, bush hogging, flagging boundaries, investigating the terrain for roads and camping spots. Outhouses and shelter will have to be built or acquired. Parking areas established, caves to be mapped and explored! Contact any Louisville Grotto member if you would like to visit or help with the project. The Lone Star Preserve Committee has set a goal of having the site readied for Speleofest in four years.

Thanks for help in gathering information on this article to Paula Mitchell-Glore, Bill Napper and J Pat Stephens, all of the Louisville Grotto.



SULLIVAN ACQUISITION STATUS & DONOR'S LIST

by Keith Dunlap

In early December, the IKC reached it's fund raising goal of \$70,000 to purchase the Sullivan Cave property. Thanks to several large donations at the end, and the challenge grant by Dick Blenz, we were able to retire our short term loans in less than three months. To think that we were able to complete this acquisition project in just over twelve months is a real testament of our commitment to Indiana caves. Of the funds raised, over half (\$37,000) came directly from our 160 members. The excess money raised will be used to fund the driveway construction on the property this summer. If there is any access beyond that, it will be kept in reserve for the next acquisition initiative.

This will probably be the last time the donor's list is published in the *IKC Update*, but it will remain on our website indefinitely and will eventually be part of the kiosk display on the Sullivan property. Again, thanks for your impressive support.

\$5,000 or more

Dick Blenz
Central Indiana Grotto
IPALCO Golden Eagle Grant
National Speleological Society

\$1,000 to \$4,999

Bruce Bowman
Danielle Burden
Bob Decker
Keith Dunlap
Bambi Erwin
Jeff Farr
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Steve Lockwood
Tom Rea
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Evansville Metro Grotto
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Marengo Cave
Richmond Area Speleo Society
The Robertson Association
Virginia Karstlands

\$250 to \$999

Robert Armstrong
George Brutchten
Chris Carpenter
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\$100 to \$249

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Mitchell Norris
Bill Owens
Everett Pulliam
Matt Reece
Robert Roundy
Don & June Shofstall
Kevin Strunk
Stan Weinzapfel

Steve Weinzapfel

Norbert Welsh
Jeff Weston
Rich & Joyce Whisler
Kevin Wools
Bloomington Indiana Grotto
IU Spelunking Club
Mid-Hoosier Grotto
Northern Indiana Grotto
Paha Sapa Grotto
Tri-State Grotto
Windy City Grotto

\$50 to \$99

James & Kim Adams
Tom Ahlers
The Boehler Family
Jeff Bray
Carl Brown
Larry & Linda Bundy
Dale Chase
Jack Countryman
Dave Everton
Patrick & Nathana Jarboe
Gary Napper
Richard Newton
Sandy Packman
Walter Pirie
Steve Ragsdale
Charles Rex
Ron Richards
Stephen & Diana Schuh
Gregory Stamp
Kent Wilson
James Wright
Dayton Underground Grotto
Meramec Valley Grotto
Michigan Interlakes Grotto
MSM Spelunker's Club
Near Normal Grotto
VPI Cave Club
Wittenberg Univ Speleo Society

\$5 to \$49

James Adler
Jay & Karen Arnold
Marty Atherton
Jackie Belwood
John Benton
Brandon Billings
James Braswell
Barb Capocy
George Cesnik
Jeff Cobb
Jeff Cody
Bill Davis
Michael Dowden
Ron Dowell
Bruce Foyer
Ted Frost

Matt Gibson
James Helmbold
Tim Heppner
Hilary Lambert Hopper
Robert Jarboe
Kate Johnson
John Koch
Thomas Liddle
Dan McDowell
Jon Miller
Art & Peggy Palmer
Theresa Peterson
Jan Pursley
Kevin Rasmus
Rusty Riley
Jo Schaper & Eugene Vale
Susan & Dave Strickland

Barry Welling
John Wilkerson
Frederick Grotto
Mark Twain Grotto
Miami Valley Grotto
Western Indiana Grotto

Summary (as of 03/07/99)

Donations collected: \$70,142
Outstanding pledges: \$500
Total raised: \$70,642
Fund-raising Goal: \$70,000

➡ continued from page 16...

tourist attraction, Hidden River Cave and its underground stream, turned into an open sewer during the 1930s and 1940s. Years of dumping raw sewage down sink-holes finally had caught up with them.

The subterranean environment of Kentucky's cave country, including Mammoth Cave National Park, has made a remarkable comeback since residents replaced septic systems with modern sewers and targeted farm practices to reduce the polluting runoff from animal waste.

However, during the worst period, pollution in the Horse Cave waterways was more extensive than that found in Harrison County's Binkley Cave, said Julian "Jerry" Lewis, the biologist and consultant who conducted the \$10,000 study for the Fish and Wildlife Service.

"At this point, where (the contamination) is coming from is pure speculation," Lewis said.

Lewis and fellow researcher Thomas Sollmon, a board member of the Indiana Karst Conservancy who lives near Evansville, visited Binkley Cave each month between Oct 19, 1997, and Sept 27, 1998. Lewis also was preparing a massive study on the subterranean animal life of the Blue River area commissioned three years ago by The Nature Conservancy.

The men collected gallon-size

jugs of water at 25 points and sent the samples to a lab, which analyzed them for nitrates; fecal coliform; phosphate; conductivity; and ph, a measure of alkalinity or acidity.

Lewis also baited dozens of four-ounce jars with Limburger cheese to catch insects and other cave dwellers to document Binkley's biodiversity. That produced some exciting information -- and at least one serious concern, the study noted.

Lewis found 74 species inside the cave, including small brown fish called sculpin, four types of bats and pseudoscorpions, millipedes and Northern cavefish. Twenty-one of the inhabitants are considered globally rare and five had never been found anywhere else, according to his report. The new ones included a pseudoscorpion, a millipede, two types of springtails and an amphipod.

In the meantime, Lewis had heard that cavers in the 1970s had reported seeing vast swarms of cave fish on treks inside Binkley's north section. Lewis, however, saw only six such fish during 12 trips, and none in the northern reaches.

Eckart, who crawled into Binkley and other caves for fun between the late 1960s and the early '80s said he was disturbed to hear that.

"It's kind of like the canary that

the old coal miners used (to warn of dangerous gas buildups). As insignificant as those (fish) are, they're our canary in the caves. If they've started to disappear, we've done something."

The water tests also showed that there's no drinkable ground water in Binkley. Some measurable levels of fecal coliform contamination were found in every sample taken during the year's visits.

Some of the cave tests showed relatively minor levels of contamination -- only 5 colonies per 100 milliliters in some places. But Lewis said on a dry September day, when contamination readings typically should be low, he and Sollmon waded into a remote passageway and collected samples with 8,200 colonies per 100 milliliters -- the most polluted batch they'd found all year.

It was in the cave's north section, close to Corydon's southern town limits. By comparison, a municipal swimming pool can be shut down for readings that reach 200 colonies per 100 milliliters.

Lewis and others who have just begun to examine his study say they want to avoid drawing conclusions based on a tiny snapshot. More tests, for instance, may point to whether the fecal contam-

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THE NATURE CONSERVANCY AND HENDERSON PARK

by Allen Pursell

During the 1930s and '40s a series of spring caves at a site called Henderson Park provided drinking water for the City of Salem, Indiana. In the late 1940s a new reservoir was constructed by the City and the Park was left gated and nearly forgotten. But behind these gates remained one of the best natural areas in Indiana, containing two of the most northern limestone glades in the country, 400 acres of hardwood forest, and three large aquatic caves that provide habitat for some globally-rare invertebrates.

The Nature Conservancy (TNC) began discussions with the City about the significance of the park as early as the 1970s. Although nothing transpired, negotiations began again earnestly in 1996 as part of TNC's new emphasis on the Blue River area. Initially, TNC proposed the City voluntarily and formally dedicate the site as a nature preserve thereby giving it a high degree of protection. Outright acquisition of Henderson Park by TNC was also proposed. But finally, after the course of many months, an agreement was reached in late 1998 to secure the glades, caves, and hardwood forest through a conservation easement.

Among other things this easement gives TNC the timber rights to the property in perpetuity along with the right to manage and restore the limestone glades through the reintroduction of fire. Salem retained the water rights with restrictions.

The property continues to remain accessible to the public as before although a few changes will be implemented. The most not-

able change will be that the park will be accessible *only* to foot traffic. A small parking area will be constructed near the current entrance to the park (until this is completed, continue to check out the key from the Salem Police department and state your anticipated departure time). In all other respects, the park will remain available for hiking, wildlife observation, and caving, although camping will be curtailed. TNC has reserved the right to limit access to the caves if it ever becomes apparent the caves are suffering significant ecological or material damage, although limiting access is not anticipated and would not be implemented without close consultations with partners such as the Indiana Karst Conservancy.

Hopefully there is something for everyone in the protection of Henderson Park. To benefit the community, Salem immediately invested the proceeds of the transaction in the local community foundation and as a result will enjoy annual income in lieu of cutting timber at the park. For TNC a significant natural area has been permanently conserved. And for those who enjoy using the park, it will remain relatively undisturbed and available for use for years to come.

No one every accomplishes this kind of conservation alone and The Nature Conservancy wishes to acknowledge the generous donation of Miss Sally Reahard for the protection of Henderson Park. I would also like to mention that TNC owns another nearby 130-acre tract that was the gift of Mrs Helen Roberson of Salem.

➡ continued from page 19...

ination is coming from septic systems or farms. Dye tests can help locate the pollution's source.

"No one has a handle on this right now," said Allen Pursell, manager of The Nature Conservancy office in Corydon. But "we thought it would be wise of us to get a picture of what the quality of life is like before the area is developed... It points to the health of the environment for people."

Lewis said he hopes Harrison

County leaders, especially those who deal with planning and zoning issues, use his study to consider how to prevent more contamination.

Doing that will require a new mindset by farmers and others who have viewed sinkholes as a convenient dumping ground, said Eckart, the plan commission chairman.

"The karst system in this area has been looked at for years as the

easiest way to get rid of what you don't want: dead cows, old tractors, refrigerators," he said. "We need to start finding alternative methods of waste disposal."

Eckart said this is only the beginning: "This (the study) is a great step. I hope we see more of it."

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INDIANA KARST CONSERVANCY TREASURY REPORT

Income/Expense Statement From October 1, 1998 to December 31, 1998

INCOME:

Dues Apportionment and Residuals	595.00	
Donations - General	10.00	
Donations -Sullivan fund used	68262.22	
Interest	<u>232.18</u>	
		\$69,099.40

EXPENSES:

IKC Update (printing, production, mailing)	309.28	
Membership (postage, meeting notices, etc)	106.45	
Conservation/Management/Education	270.00	
Sullivan (fund-raising)	36.09	
Insurance	284.50	
Misc (HEC meeting, PO Box, bank charges)	<u>99.75</u>	
		(\$1,106.07)

NET OPERATING EXCESS (DEFICIT) THIS PERIOD: \$67,993.33

Balance Sheet December 31, 1998

ASSETS:

Cash in Checking Account	3440.55	
Cash in Savings Account	7540.54	
Sullivan property	<u>68262.22</u>	
		<u><u>\$79,243.31</u></u>

LIABILITIES & OPERATING EXCESS:

Hancock Property Maintenance Fund	154.79
Indiana DNR Nongame Fund	134.00
Sullivan Aquisition Fund	-4485.94
Sullivan Loan	6000.00
Hat fund (excluding 23 hats in inventory)	63.83
Deferred Dues Fund: 155 members - 1998	581.25
25 members - 1999	375.00
2 members - 2000	30.00

Previous Operating Excess	8397.05
Net Excess (Deficit) This Period	<u>67993.33</u>
Current Operating Excess	<u>76390.38</u>

Total Liabilities & Operating Excess \$79,243.31

IKC QUARTERLY MEETING MINUTES

Saturday, December 5th, 1998

Bloomington, Indiana

BOARD MEMBERS PRESENT:

James Adams
Bruce Bowman
Bruce DeVore
Keith Dunlap
Kriste Lindberg
Steve Lockwood
Nick Noe
Tom Rea
Bob Sergesketter
Tom Sollman
Bill Tozer
Bob Vandeventer
Richard Vernier
Kathy Welling

BOARD MEMBERS ABSENT:

Dave Haun

The December meeting was called to order at 7:10 PM at the IU Geology Building in Bloomington, Indiana, President Bruce Bowman presiding. The minutes of the September meeting were approved as published in the December issue of the *IKC Update*.

Treasurer Keith Dunlap reported \$9,445.80 in the general and non-Sullivan restricted funds. The Sullivan Fund has \$68,262.22 in property assets (the cost of the property). We have debt of \$5,672.94 associated with the purchase. Pledges have been received of \$7,291. Fund raising efforts have produced \$69,880 for the purchase of the property. Essentially, the project is fully funded.

The IKC has changed banks from Huntington to Peoples. A legal resolution is required by the bank to be included in the minutes. Bowman read the resolution into the record and a copy is attached. Approval of the resolution was moved by Kathy Welling and seconded by Dunlap. Motion approved, 14-0.

Now that the conservancy has some significant legal documents, Dunlap moved that we rent a safe deposit box at Peoples for \$30.00 per year. James Adams seconded. Motion approved, 14-0.

An insurance policy has been purchased on the Sullivan property. Dunlap noted that the policy is written in legalese and would like someone to review the policy to verify that the policy does cover the items that we had originally asked for coverage on. The original letter requesting the coverage will be filed with the policy in the safe deposit box and the agent also has a copy of that letter in their files. Several Officers and Directors asked to review the document.

Our property tax status was discussed. Applying for any change was not indicated.

Bowman noted that several changes should be made in the Sullivan Property Management Plan. The Sullivan Committee has met and Dunlap prepared a written summary as did Bowman. Committee Chairman Bill Tozer noted in addition to the documents submitted by Dunlap and Bowman, the committee feels that a standing management committee needs to be established. This point was read by Dunlap and would be considered as part of the total amendment to the Management Plan. Tozer will consolidate the various documents and prepare exact wording which will then be distributed to the Directors.

Three items were put up for auction that were donated for fund raising. A Justrite hand lamp donated by John Hartman was sold for \$33 to Bowman. A six bar rack was sold for \$10 to Bill Tozer. A chest harness was sold for \$3 to Bob Vandeventer. Both the rack and harness were donated by Dave Everton.

Dunlap asked that since the Sullivan purchase is fully funded, what will we do with excess money that we continue to receive? It was agreed that we need to spread the word that we have reached our fund raising goal. All excess money will be kept in a restricted fund.

Tozer attended the IPALCO banquet at which we received the check for their \$7,000 grant to the Sullivan Fund. The IKC was also presented a trophy as a recognition of the award. Tozer will keep custody of the trophy until a more appropriate display can be arranged.

Dunlap noted that the adjacent landowner to the Sullivan property has been allowed to let his horses run on the property. The board will need to make some decision on whether we should allow this practice to continue. Dunlap noted that the pasture is overgrazed. Bowman will draft a tactful letter and notify the owner to cease grazing on the property.

Dunlap suggested that the Sullivan Management Committee be appointed now rather than to wait for the Management Plan to be modified to create the Sullivan Property Management Committee. Bowman asked that the current Sullivan Committee remain as the Sullivan Property Management Committee.

Adams spoke about the parking situation at Shiloh Cave. Elliott Special Products has closed and the quarry has moved the gate which now cuts off access to the parking area. No problem has been encountered so far. Workers leaving the quarry have left the gate open for trips. Adams will contact the landowner to clarify the situation.

Bowman suggest three items to change in the Shiloh Management Plan. Item one would update the history section to reflect the new gate at the sinkhole entrance. There was discussion on changing the number of trips from 6 to 12 (Item #2). Tozer moved to make the change. Welling seconded. Adams move to postpone until the next meeting. Motion approved to postpone, 12-1-1. Adams will talk to the owners and see if there would be an objection to allowing 12 trips per year.

Dunlap moved and Steve Lockwood seconded to approve the update to the history section and to amend the visitation section to delete mention of Elliott Special Products and insert "adjacent land-owners or businesses" (Item #3). Motion approved, 10-2-2.

Bowman spoke about updates that he'd like to make to the IKC web page. Sullivan Cave Patron Bob Vandeventer is getting a lot of requests for access to Sullivan Cave. Bowman will remove several of the Sullivan property references to downplay the availability of the cave for visitation. He will put all the IKC's management plans on the web site but not make the URL addresses public. Bowman will also add a link to a FAQ page on Scouting and caving.

Kriste Lindberg is stepping down as Bloomington Indiana Grotto liaison. The BIG needs to appoint someone to replace her.

The water sampling project at Binkleys Cave that was partially funded by the IKC is complete. A summary article will appear in the *IKC Update*, possibly in the March issue.

The Hoosier National Forest project has received an award from the US Forest Service Eastern Region. Plaques were presented to members of the committee who were in attendance at the IKC meeting.

As mentioned in the December *IKC Update*, the Indiana Department of Environment Management is proposing new regulations for confined cattle/hog lots. Bowman has a copy of the proposal and will draft an official IKC response.

A group of Michigan Geology students are planning a visit to the Bloomington area in early 1999. They have asked for help in planning the event. WonderLab is a local group that was interested in obtaining help in presenting cave information but they have

not responded to our E-mail.

Nick Noe has the "new" IKC display but it needs work to be usable. He wants to get rid of it. Bowman will take it.

Dunlap noted that new guardrails have been built around the Orangeville Rise and some small trees have been cut. Dunlap feels that these changes were inappropriate and has written several letters. No replies have been received. The Nature Conservancy owns the property.

The NSS Board of Governors will be in Indianapolis in March. Dunlap noted that the IKC could offer to sponsor dinners, lunches, coffees, cave trips, etc. Bowman will put this on the agenda for the February business meeting.

Noe wanted to know where information signage is located and if the information on the signs is current. The Spicer Lane sign does not have a current address. Noe moved to update all IKC signage. Tozer seconded. Bowman offered to rout new signs for Spice Lane, Grotto and Coon Caves. Noe accepted a friendly amendment to fund the update by Bowman. Motion passed, 12-2-0.

The Evansville Audubon Society, would like to use the IKC slide show in March.

Lindberg gave a presentation to the American Geographic Society and they have sent several copies of their journal for our members. These were distributed.

Tom Sollman asked about any new activity on the proposed mine gates in SW Indiana. The IKC will help with this project.

A reprint is scheduled for inclusion with the March *IKC Update*.

Next meetings: Directors Meeting on Saturday, January 23, 1999 at 5:00 PM at the home of Keith Dunlap. Dinner will be provided. Annual Business Meeting on Saturday, March 20, 1999 in Greenwood at the Greenwood Community Center beginning at 10:00 AM.

Meeting adjourned at 9:46 PM.

Submitted by James Adams, Secretary

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(3) "Large spring" means a place where water flows naturally from bedrock or soil onto the land or into a body of surface water with an average annual flow of greater than five (5) gallons per minute.

b) The definitions adopted under this SECTION apply only to karst terrains of landfills described in 329 IAC 10-2-99.

SECTION 2. An emergency is declared for this act.

IKC DIRECTOR'S MEETING MINUTES

Saturday, January 23rd, 1999

Greenwood, Indiana

BOARD MEMBERS PRESENT:

James Adams
Bruce Bowman
Bruce DeVore
Keith Dunlap
Dave Haun
Kriste Lindberg
Steve Lockwood
Nick Noe
Tom Rea
Bob Sergesketter
Tom Sollman
Bill Tozer
Bob Vandeventer
Richard Vernier (by proxy)
Kathy Welling

BOARD MEMBERS ABSENT:

none

The Saturday, January 23, 1999 meeting was called to order at the Greenwood home of Keith and Bambi Dunlap at 5:43 PM, President Bruce Bowman presiding. Prior to the official meeting, Bambi served a fine meal for the attendees.

All Directors were present with Ernie Payne accepted as a proxy for Richard Vernier.

Treasurer Keith Dunlap reported a cash total of \$11,351.42. Of this amount, \$1,830.06 is earmarked for the Sullivan Fund, with \$9,521.36 in the general and other restricted funds. Our short term Sullivan loans were retired in early January and the property is now completely paid for with a couple of pledges still outstanding. The remaining funds in the Sullivan account will be used for the driveway construction later this year.

Bill Tozer has distributed copies of the revised copy of the Sullivan Management Plan. No one has proposed any changes. Kathy Welling moved to accept the management plan, seconded by Bruce DeVore. With no discussion, the motion passed, 15-0-0.

The annual Under-Earth Day cleanup at the Sullivan property was scheduled for Sunday, April 18, the day after the annual Indiana Cave Symposium. In addition to the traditional cave cleanup, other projects will include above-ground trash removal, replacing the gate post on the lane, some culvert work, and trail hardening and repair, if needed.

Bowman has sent a letter to the adjacent landowner to notify him that he must cease to graze his horses on the Sullivan property.

A person who in the past lead trips to Sullivan Cave and has been collecting money for "expenses", has asked to use the cave in the future. There was dis-

cussion about this potential cave-for-pay situation. After discussion, the group seemed to be in agreement that this situation should not be permitted.

Bob Decker has had our insurance policy on the Sullivan property reviewed. His risk consultant has reported that the insurance is adequate and covers not just the Sullivan property, but the IKC in general. His consultant suggests that we might want to purchase additional coverage for vehicles that are engaged in work for the IKC. Nick Noe moved to investigate adding the additional vehicle coverage to our existing policy and for Dunlap to purchase the additional coverage for up to \$350 for the total policy. Jim Adams seconded the motion. After some discussion the motion passed, 13-1-1.

There was some discussion on the IKC's lobbying activities in light of our current bylaws. It was restated that the IKC can not support lobbying activities as an organization.

Several members announced their candidacy for the upcoming elections scheduled for the March meeting: Nick Noe, Tom Sollman, Bruce DeVore, Bob Decker, and Bambi Dunlap for Director; Adams for Secretary; and Dunlap for Treasurer. Other candidates are being sought.

Earth Day Indiana is scheduled for April 24 in Indianapolis. In the past, the IKC has maintained a booth at this event. Noe volunteered to man the booth at the event. Dunlap moved to fund the event fees for up to \$50. Seconded by Welling. Motion passed, 15-0-0.

The Indiana Cave Symposium is scheduled for Saturday, April 17. The event will be funded again this year from the NSS Convention honorarium of several years ago. No additional funds are needed.

The NSS Board of Governors meeting is scheduled for the weekend of March 27. Bob Sergesketter moved that the IKC sponsor lunch for the group for up to \$100. Dunlap seconded. Motion passed, 15-0-0.

Gary Gibula is a new liaison for an NSS grotto near Chicago, the Sub-Urban Chicago Grotto.

Steve Lockwood gave the Hoosier National Forest report: The house at Wesley Chapel gulf has been burnt and buried by the HNF. A concrete slab and a lot of fence wire have also been removed. The IKC had hoped that the slab would remain as a location to park an interpretive trailer. Bowman noted that work must be completed on the management plan and communication with the HNF and their contractors needs to be improved.

Management plans need to be written on about 20

----- INDIVIDUAL MEMBERS -----

FIRST	LAST	ADDRESS	CITY	ST	ZIP	IKC	JOINED
Joshua	Abdulla	2354 Winding Brook Circle	Bloomington	IN	47401	281	03/1995
James	Adams	620 Jackson Rd	Greenwood	IN	46142	140	03/1991
Kim	Adams	620 Jackson Rd	Greenwood	IN	46142	272	07/1994
James	Adler	8760 N Crystal Rd	Dubois	IN	47527	321	08/1997
John	Ahlberg	19054 Sherman St	Lansing	IL	60438	082	04/1988
Tom	Ahlers	1715 E 43rd St	Anderson	IN	46013	042	04/1987
Robert	Armstrong	3101 Washington Blvd	Indianapolis	IN	46205	300	03/1996
Marty	Atherton	1180 Diablo Road	Greenwood	IN	46143	023	04/1986
Aaron	Atz	1588 Nye Street	Corydon	IN	47112	324	10/1997
Bruce	Barnes	150 Park Blvd	Malverne	NY	11565	103	06/1989
John	Benton	208 W 19th St	Huntingburg	IN	47542	123	06/1990
Ted	Bice	20260 Maple Rd	Argo	IN	46501	287	08/1995
Brandon	Billings	PO Box 241	Morgantown	IN	46160	339	11/1998
David	Black	PO Box 147	Georgetown	IN	47122	073	12/1987
The Boehler Family		503 West St	Genoa	OH	43430	207	02/1993
Bruce	Bowman	8364 S SR 39	Clayton	IN	46118	112	03/1990
Jeff	Bray	401 Fairfax Rd, Apt 322	Blacksburg	VA	24060	118	04/1990
Carl	Brown	7710 Camby Rd	Camby	IN	46113	310	12/1996
George	Brutchen	306 W South St	Winchester	IN	47394	010	03/1986
Larry	Bundy	499 Young St	Franklin	IN	46131	113	04/1990
Danielle	Burden	3410 S Rural St	Indianapolis	IN	46237	228	03/1993
Ronnie	Burns	1005 Legislative Lane	Jeffersonville	IN	47130	289	09/1995
Stephen	Cahill	6480 Springhill Way, #177	Indianapolis	IN	46254	135	11/1990
Keith	Calkins	610 N Main St	Berrien Springs	MI	49103	099	02/1987
Paul	Cannaley	4253 Senour Rd	Indianapolis	IN	46239	066	11/1987
Barb	Capocy	4628 Seeley Ave	Downers Grove	IL	60515	196	02/1993
Chris	Carpenter	3221 Georgetown Rd	Indianapolis	IN	46224	106	07/1989
Kenny	Carrigan	6888 MC 5014	Everton	MO	72633	083	04/1988
George	Cesnik	4331 Clifford Rd	Brownsburg	IN	46112	007	03/1986
The Church Family		9156 E BC Ave	Richland	MI	49083	198	02/1993
Terry	Clark	7124 Cairo Dixie Rd	Corydon	KY	42406	284	05/1995
Jeffrey	Cobb	1332 Liberty Ave, Apt 1	Terre Haute	IN	47807	312	01/1997
Jeff	Cody	7818 Venetian Way	Indianapolis	IN	46217	014	03/1986
Stephen	Collins	2401 Double Branch Rd	Columbia	TN	38401	011	03/1986
Adam	Craig	2545 Eckman Drive, Apt H-26	Lafayette	IN	47905	327	01/1998
Tony	Cunningham	29588 CR 18 W	Elkhart	IN	46517	253	10/1993
Rane	Curl	2805 Gladstone	Ann Arbor	MI	48104	043	04/1987
John	Danovich	5111 Heathwood Dr	Indianapolis	IN	46237	226	03/1993
Robert	Decker	3401 E Loretta Dr	Indianapolis	IN	46227	186	02/1993
Mark	Deebel	440 E Chippewa Ave	South Bend	IN	46614	331	02/1998
The DeVore Family		15001 Mill Rd, Lot 32	Fort Wayne	IN	46816	129	07/1990
Ralph	Doerzbacher	3133 Kiser Lake Rd	St Paris	OH	43072	247	05/1993
Ron	Dowell	2231 E French Dr	Pimento	IN	47866	315	03/1997
Bambi	Dunlap	32 Troon Ct	Greenwood	IN	46143	309	12/1996
Keith	Dunlap	32 Troon Ct	Greenwood	IN	46143	001	02/1986
Cheryl	Early	70 E Kelso Rd	Columbus	OH	43202	216	02/1993
Lorlie	Esterly	8708 Blue River Rd	Pekin	IN	47165	179	02/1993
Jeffrey	Farr	4320 S 450 E	Middletown	IN	47356	200	02/1993
Scott	Fee	2501 Gable Blvd	Birmingham	AL	35215	026	05/1986
Bruce	Gahimer	1304 Hwy 57 S, Lot 43	Washington	IN	47501	330	02/1998
Joseph	Gasperi	6271 Apache Dr	Indianapolis	IN	46254	273	12/1994
Harold	Geick	0N660 Prince Crossing Rd	West Chicago	IL	60185	296	01/1996
Allen	Goodcase	8940 Shields Ave	Brookfield	IL	60513	109	03/1990
David	Green	1555 Happy Valley Rd	Crown Point	IN	46307	341	11/1998
David	Haun	PO Box 47961	Indianapolis	IN	46247	012	03/1986
Timothy	Heppner	420 W 12th St, 2nd Floor	Davenport	IA	52803	092	11/1988
Mike	Hood	23 Wells Dr	Dayton	OH	45431	181	02/1993
Hilary	Hopper	1858 Marlboro Dr	Lexington	KY	40505	313	02/1997
Richard	Horn	7156 E Payne Rd	Indianapolis	IN	46239	128	07/1990
Tem	Hornaday	4384 Bonillo Dr	San Diego	CA	92115	065	11/1987
Henry	Huffman	8358 N Mt Tabor Rd	Ellettsville	IN	47429	071	12/1987
Donald	Ingle	1924 Spang Ave	Terre Haute	IN	47805	268	04/1994
Patrick	Jarboe	997 Sunset Dr	Danville	IN	46122	311	12/1996
Scott	Johnson	Ind DNR, 553 E Miller Dr	Bloomington	IN	47401	111	03/1990
Rauf	Khalid	5406 Shelby St	Indianapolis	IN	46227	325	09/1997
Jonathan	Knott	2227 Lucas St	Muscataine	IA	52761	144	04/1991
John	Koch	66 E Private Road 925 N	Brazil	IN	47834	238	04/1993
Glenn	Kotnik, MD	4085 Country Pl	Zionsville	IN	46077	166	06/1992

caves on HNF property.

According to Kriste Lindberg, Kelle Reynolds has been appointed as the HNF Karst Specialist.

There may be a HNF land exchange (the Thompson Exchange) near Lake Monroe. The land being given up is in Jackson County and there needs to be a check to see if any caves exist on the property before the exchange occurs.

The Indiana Department of Environment Management is revising its Confined Feeding Operation regulations. The IKC has submitted its official comments.

Legislation has been proposed (SB 392) to redefine "karst". The proposed definition would eliminate many caves, springs, and karst for legal purposes. It appears that the new definition would benefit a solid waste site in Washington County. It is hoped that this bill will die before a vote can be taken.

One of the signs at a cave location that has an incorrect IKC address on it has been pulled. Dunlap will remove a second sign and Bowman will rout new signs.

Dunlap reported that the mine gates project is still in the works and work days will be scheduled, possibly beginning in early May.

Dunlap reported that the biennial bat count is now

underway. His perception is that the Indiana bat population in the smaller caves appears to be down. He cautioned that we really need to total up the numbers before a clearer trend can be found.

Several karst presentations by IKC members for various groups are scheduled. There was discussion about producing an Indiana karst conservation video. There was a question from Noe and Dunlap concerning editing and re-printing the "sinkhole" brochure. Bowman will find out more about the status.

Adams showed a Justrite hand lamp that has been donated by Marty Church to benefit the Sullivan property. The lamp will be auctioned at the March meeting.

Sollman asked about the DNR permit system. There are lots of rumors on the status and implementation of the system.

Bill Tozer asked about the possibility of obtaining annual reports from the cave patrons for the various IKC-managed caves. There was some discussion about requiring cave patrons to file annual reports. Adams volunteered to draft a short report form.

The next meeting is on March 20 at the Greenwood Community Center beginning at 10:00 AM. Meeting adjourned at 8:33 PM.

Submitted by James Adams, Secretary



Part of the Sullivan Acquisition committee posing with the IPALCO Golden Eagle statue given to the IKC along with a \$7000 grant towards the purchase of Sullivan Cave. Left-to-right: Bruce Bowman, Bob Vandeventer, Bill Tozer (committee chair), Kathy Welling, Tom Rea. Not pictured: Keith Dunlap, Bob Decker, Dave Haun. Photo by Jim Adams.

Steve Lanning	105 Vann Ave	Evansville	IN	47714	237	04/1993
David Lasser	1746 Beachview Court (LOFS)	Crown Point	IN	46307	335	07/1998
Glenn Lemasters	5020 W 300 N	Bargersville	IN	46106	003	02/1986
Julian Lewis	217 W Carter Ave	Clarksville	IN	47129	326	12/1997
Kriste Lindberg	2354 Windingbrook Cir	Bloomington	IN	47401	303	06/1996
Stephen Lockwood	RR 1 Box 107	Mitchell	IN	47446	197	02/1993
Daniel Lucas	11234 Lantern Rd	Fishers	IN	46038	145	04/1991
Bob Masta	2247 Prairie	Ann Arbor	MI	48105	221	02/1993
Richard Maxey	173 W Kanawha Ave	Columbus	OH	43214	185	02/1993
Angie May	2422 Cedar Crest Dr	Columbus	IN	47203	055	06/1987
Steve McKenzie	PO Box 11101	Ft Wayne	IN	46855	159	12/1991
Jane Miller	4020 S Rural St	Indianapolis	IN	46227	040	04/1987
Jon Miller	PO Box 65	Celina	OH	45822	243	05/1993
Lynn Miller	4020 S Rural St	Indianapolis	IN	46227	015	03/1986
Douglas Moore	335 Cherry Valley Rd	Vernon Hills	IL	60061	305	08/1996
Lawrence Mullins, Jr	140 Shoal Creek Cir	Montevallo	AL	35115	088	07/1988
Carl Nelson	6163 Ralston Ave	Indianapolis	IN	46220	290	09/1995
Richard Newton	9611 S CR 425 E	Marengo	IN	47140	124	06/1990
Nicholas Noe	534 E Edwards Ave	Indianapolis	IN	46227	064	11/1987
Scott Nordhoff	5839 Ralston Ave	Indianapolis	IN	46220	261	01/1994
Mitchell Norris	PO Box 344	Muncie	IN	47308	165	06/1992
Richard Orr	334 S Marguerite	Ferguson	MO	63135	291	10/1995
Ernest Payne, Jr	6131 Holly Berry Dr	Evansville	IN	47715	032	08/1986
Gene Pelter, Jr	720 Poplar St	Fort Wayne	IN	46802	116	04/1990
Donald Peters	508 Jefferson Ave	LaPorte	IN	46350	041	04/1987
Joe Petersen	RR 1 Box 129E	Paragon	IN	46166	271	06/1994
Rosemary Petersen	RR 1 Box 129E	Paragon	IN	46166	270	06/1994
Theresa Peterson	PO Box 935	Fremont	IN	46737	323	09/1997
Everett Pulliam	560 W Lincoln St	Danville	IN	46122	307	12/1996
Jan Pursley	13175 Fairwood Dr	McCordsville	IN	46055	283	04/1995
Steve Ragsdale	5460 Shawkoto Trl	Belmont	MI	49306	134	10/1990
Kevin Rasmus	203 S State St	Bloomington	IL	61701	059	07/1987
Tom Rea	8677 S SR 243	Cloverdale	IN	46120	008	03/1986
Kenneth Redeker	443 W Wilson #110	Palatine	IL	60067	190	02/1993
Larry Reece	2929 E Southport Rd	Southport	IN	46227	148	05/1991
Jennifer Reiss	3240 Locust Point Rd SE	Corydon	IN	47112	343	01/1999
Charles Rex	4926 N Marmora	Chicago	IL	60630	214	02/1993
Ronald Richards	8141 Pickford Dr	Indianapolis	IN	46227	117	04/1990
Gary Roberson	Marengo Cave, PO Box 217	Marengo	IN	47140	171	10/1992
Robert Roundy	5668 Bergan Dr	Dayton	OH	45424	202	02/1993
Jay Savage	1991 W Dunmore	Hoffman Estates	IL	60195	204	02/1993
Eric Schmidt	2424 N CR 425 W	Danville	IN	46122	107	09/1989
Diana Schuh	3175-3 Watergate Place	Indianapolis	IN	46224	267	04/1994
Stephen Schuh	3175-3 Watergate Pl	Indianapolis	IN	46224	252	08/1993
Bill Schulze	479 Kernel Ridge Rd	Rockholds	KY	40759	249	06/1993
Robert Sergesketter	1090 Hopf Ave	Jasper	IN	47546	070	12/1987
Lora Sharke	1109 Chatfield Dr	Indianapolis	IN	46220	344	02/1999
Ray Sheldon	16195 E 300 S	Elizabethtown	IN	47232	149	05/1991
Don Shofstall	5004 Bassett Ave	Evansville	IN	47715	104	06/1989
Bruce Silvers	3528 Fairfield Ave	Ft Wayne	IN	46807	334	03/1998
Clyde Simerman	1121 Sinclair St	Fort Wayne	IN	46808	282	03/1995
Noel Sloan	8715 Garden Rock Ct	Indianapolis	IN	46256	033	09/1986
Gordon Smith	9850 N Skyline Dr	Floyds Knobs	IN	47119	126	06/1990
Thomas Sollman	RR 2 Box 23A	Fort Branch	IN	47648	150	05/1991
Gregory Stamp	5551 Lesourdsville-W Chester Rd	Hamilton	OH	45011	205	02/1993
Susan Strickland	1701 E 58th St	Indianapolis	IN	46220	046	04/1987
Kevin Strunk	6068 Riverview Dr	Indianapolis	IN	46208	027	06/1986
David Thompson	536 Gately Terrace	Madison	WI	53711	337	08/1998
Robert Thompson	PO Box 20	Kings Mills	OH	45034	293	12/1995
Bill Tozer	9698 S 150 W	Pendleton	IN	46064	017	03/1986
Bruce Trotter	5580 E Baseline Rd	Columbus	IN	47203	060	07/1987
Regina Turner	1280 Peachtree St NW Apt 1012	Atlanta	GA	30309	302	04/1996
Charles Vandeventer	525 Lawndale Dr	Greenwood	IN	46142	217	02/1993
John Vargo, Jr	7419 S Linden Rd	Swartz Creek	MI	48473	054	06/1987
Richard Vernier	RR 2 Box 350	Princeton	IN	47670	047	04/1987
Jennifer Walters	City Hall, 401 W Morton	Bloomington	IN	47404	294	01/1996
Eric Weaver	12123 Mid Pines Dr, Apt 41	Sharonville	OH	45241	340	11/1998
Mark Webb	PO Box 194	Franklin	IN	46131	009	03/1986
Stan Weinzapfel	4221 Wabash Ave	Terre Haute	IN	47803	319	05/1997
Stephen Weinzapfel	1787 W Division Rd	Jasper	IN	47546	318	04/1997

Norbert Welch	PO Box 6872	Lafayette	IN	47903	244	05/1993
Barry Welling	717 Woodruff Pl W Dr, Apt 1	Indianapolis	IN	46201	316	03/1997
Kathy Welling	8679 S SR 243	Cloverdale	IN	46120	002	02/1986
Jeffrey Weston	27W668 Galusha Ave	Warrenville	IL	60555	336	08/1998
Rich Whisler	1670-A Monticello Ct	Wheaton	IL	60187	329	02/1998
Bruce White	319 N Fess, Apt 4	Bloomington	IN	47408	328	01/1998
John Wilkerson	20970 Delaware St	Southfield	MI	48034	170	09/1992
Jonathan Willett	8012 E SR 45	Unionville	IN	47468	333	03/1998
Tom Willett	304 N Morton	Bloomington	IN	47404	332	03/1998
Jack Wood	848 W Lakeside PL, #22	Chicago	IL	60640	338	09/1998
Kevin Wools	5828 W 300 S	New Palestine	IN	46163	222	02/1993
The Wright Family	7400 Brophy Rd	Howell	MI	48843	194	02/1993

----- ORGANIZATION MEMBERS -----

Central Indiana Grotto	PO Box 153	Indianapolis	IN	46206	136	01/1991
Dayton Underground Grotto	23 Wells Ave	Dayton	OH	45431	262	01/1994
Evansville Metro Grotto	1787 W Division Rd	Jasper	IN	47546	152	08/1991
Harrison-Crawford Grotto	6917 Dalby Rd	Georgetown	IN	47122	141	03/1991
Mid-Hoosier Grotto	PO Box 632	Franklin	IN	46131	075	01/1988
Northern Indiana Grotto	PO Box 10297	Ft Wayne	IN	46851	146	04/1991
St Joseph Valley Grotto	PO Box 1302	Mishawaka	IN	46546	322	09/1997
Sub-Urban Chicago Grotto	3 S 511 Fourth St	Warrenville	IL	60555	342	01/1999
Windy City Grotto	PO Box 299	Pell Lake	WI	53157	052	06/1987
Bluespring Caverns, Inc	RR 11 Box 1245	Bedford	IN	47421	292	11/1995
Wyandotte Cave SRA	RR1 Box 85	Leavenworth	IN	47137	314	02/1997

----- COMPLIMENTARY -----

American Cave Cons Ass'n	Dave Foster	PO Box 409	Horse Cave	KY	42749
American Cave Cons Ass'n	William Elliott	PO Box 180	Jefferson City	MO	65512
Bat Conservation International		PO Box 162603	Austin	TX	78716
Cincinnati Nature Center	Jackie Bellwood	4949 Tealtown Rd	Milford	OH	45150
Hoosier Environmental Council	Tim Maloney	1002 E Washington St	Indianapolis	IN	46202
Hoosier National Forest	Kelle Reynolds	811 Constitution Ave	Bedford	IN	47421
Karst Waters Institute, Inc		PO Box 490	Charles Town	WV	25414
Michigan Interlakes Grotto		Box 218	Union Lake	MI	48387
Mitchell Plain Research Center	Thomas Brent	1516 R St	Bedford	IN	47421
Virginia Dept Of Conservation	Terri Brown	PO Box 1506	Dublin	VA	24084
US Fish & Wildlife Service	David Hudak	620 S Walker St	Bloomington	IN	47403
US Fish & Wildlife Service	Ron Ressenider	Fed Bld, Ft Snelling	Twin Cities	MN	55111
IDNR-Division of Forestry	Ben Hubbard	402 W Washington St	Indianapolis	IN	46204
Harrison-Crawford State Forest	Pete Thorn	7240 Old Forest Rd	Corydon	IN	47112
Spring Mill State Park	Mark Young	PO Box 376	Mitchell	IN	47446
Southeastern Cave Conservancy	John Hickman	2226 Blair Blvd, #3	Nashville	TN	37212
Michigan Karst Conservancy	Rane Curl	2805 Gladstone Ave	Ann Arbor	MI	48104
The Nature Conservancy	Allen Purcell	PO Box 5	Corydon	IN	47112
The Cave Conservationist	Evelyn Bradshaw	10826 Leavells Rd	Fredericksburg	VA	22407
Ohio Valley Region	John Cole	1196 Mill Creek Dr	Lexington	KY	40517
Indiana Cave Survey, Inc	Bruce Trotter	5580 E Baseline Rd	Columbus	IN	47203
Bloomington Indiana Grotto		PO Box 5283	Bloomington	IN	47407
Detroit Urban Grotto	Daniel Crowl	1025 Crestwood Glade	Hancock	MI	49930
Dogwood City Grotto Library		3232 Cobb Pkwy	Atlanta	GA	30339
Eastern Indiana Grotto	Brian Leavell	1627 S M St	Elwood	IN	46036
Fort Knox Grotto	Steve Gray	263 Forest Trce	Radcliff	KY	40160
Greater Cincinnati Grotto	Nancy Swartz	5562 Liberty Woods Dr	Hamilton	OH	45011
Louisville Grotto		PO Box 408	Upton	KY	42784
Western Indiana Grotto		PO Box 1471	Terre Haute	IN	47803
Windy City Grotto	Ralph Earlandson	802 S Highland	Oak Park	IL	60304
Wittenburg U Speleo Society	Horton Hobbs	Witt Univ, PO Box 720	Springfield	OH	45501
Waynes Cave Patron	Serena Smith	405 N Johnson Ave	Bloomington	IN	47404
BIG Liaison	Anmar Mirza	1600 E 3rd Street	Bloomington	IN	47401
NSS President	Fred Wefer	PO Box 47	McDowell	VA	24458
NSS Executive Vice President	Ray Keeler	22354 N 68th Dr	Glendale	AZ	85310
NSS Operations Vice President	Mike Hood	23 Wells Dr	Dayton	OH	45431
NSS Administrative V-President	Doug Medville	11762 Indian River Rd	Reston	VA	20191
NSS Treasurer	Paul Stevens	5964 Seabright Rd	Springfield	VA	22152
NSS Conservation Chair	David Jagnow	1300 Iris #103	Los Alamos	NM	87544
NSS Conservation Grants Chair	Al Krause	1721 SW 76th Trce	Gainesville	FL	32607
NSS Conservancies Committee	John Wilson	9504 Lakewater Ct	Richmond	VA	23229
NSS Speleo Digest	Scott Fee	2501 Gable Blvd	Birmingham	AL	35215
NSS Library		2813 Cave Ave	Huntsville	AL	35810
NSS News Newsletter Review	Bob Springston	17034 Wilson Way	Watsonville	CA	95076

ANNUAL BUSINESS MEETING

SATURDAY, MARCH 20th, 10:00 AM

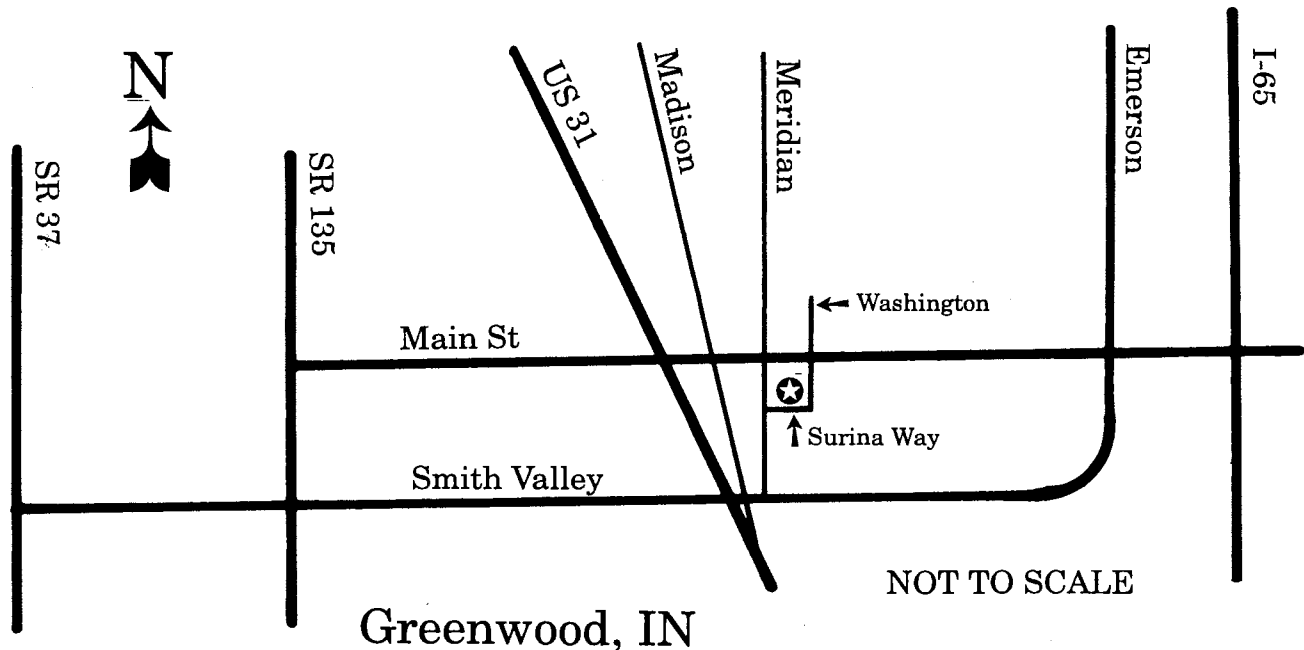
GREENWOOD, INDIANA

GREENWOOD COMMUNITY CENTER

Directions from SR 37: Take Smith Valley east across SR 135, US 31, Madison Ave, to Meridian. Turn north on Meridian pass the schools. Turn east on Surina Way (Craig Park entrance) to the Community Center.

Directions from I-65: Take Main Street west approximately 1.5 miles. Immediately after crossing the railroad tracks and before the fire station, turn south on Washington. Cross the little bridge and continue to Surina Way. Turn west past the police government center to the Community Center.

Enter the Community Center via the main entrance and turn right. Our meeting room is on the right just past the game room.



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 _____

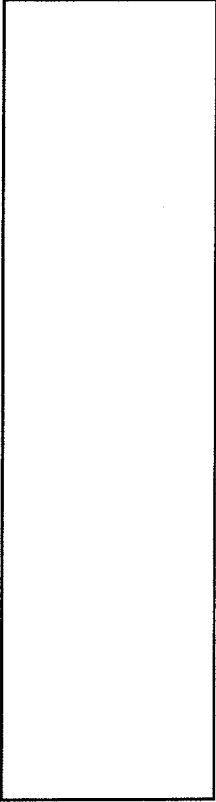
CITY/STATE/ZIP _____

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.

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PO Box 2401
Indianapolis, IN 46206-2401

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