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# **IKC Update**

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NUMBER 55

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INDIANA KARST CONSERVANCY

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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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### Grotto Cave

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Cover: Clustering Indiana bats (*Myotis sodalis*) during winter hibernation. This photos shows approximately 10% of the *entire* species population. See article starting on page 11. Photo by Scott Johnson (Indiana DNR), January 1999

Newsletter staff: Keith & Bambi Dunlap

**QUARTERLY MEETING**  
**SATURDAY, DECEMBER 4th, NOON**  
**ANDERSON, INDIANA**  
**ANDERSON PUBLIC LIBRARY, 111 E 12th Street**

The quarterly meetings are 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 meetings are informal, and everyone is encouraged to attend and participate. The IKC Board *wants* your input.

Preliminary Agenda Items: Brief recaps of last quarter's activities; DNR abandoned mine gate project for 2000; Land Acquisition Committee activities, Leonard Springs park activities; HNF inventorying project; Bylaw changes; and more....

Meeting Directions (see map on page 21):

From Indy - Take I-69 to the first Anderson Exit (#22) and turn north on Business 9. Continue 4-5 miles to Jackson St. Turn north on Jackson, then east on 12th St to the library. Park in the lot across the street.

From Ft Wayne - Take I-69 south to the first Anderson Exit (#34) and turn west on SR 32. Continue for approximately 4 miles through Chesterfield, past the airport, across the river, to Scatterfield Rd. Turn south on Scatterfield, then west on 8th St, then south on Main St, then east on 12th St to the library. Park in the lot across the street.

### ACTIVITIES CALENDAR

- 04 DEC = IKC QUARTERLY MEETING, Anderson (see above)
- 18 DEC = HNF INVENTORY FIELD DAY, contact Kriste Lindberg
- 15 JAN = HNF COMMITTEE MEETING/FIELD DAY, contact Kriste Lindberg
- 19 FEB = HNF INVENTORY FIELD DAY, contact Kriste Lindberg
- ?? FEB = IKC DIRECTOR'S MEETING, location and date TBD
- 18 MAR = HNF COMMITTEE MEETING/FIELD DAY, contact Kriste Lindberg
- ?? MAR = IKC ANNUAL BUSINESS MEETING, location and date TBD
- ?? APR = INDIANA CAVE SYMPOSIUM, location and date TBD
- ?? APR = UNDER-EARTH DAY, Sullivan Cave, Bedford (date TBD)

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...

Where to begin? As far as outreach is concerned, things are really taking off for us. It seems that over the past few months, many of our projects are coming together -- whether they be working with realtors, land acquisition concerns, governmental agencies, like organizations, or individuals in general. Some of the issues even overlap, as you will see by reading the rest of this issue.

Although they differ somewhat in nature, one thing they all have in common is an educational aspect. Working with caves and karst is not something that is in everyone's background. Sometimes, others' ignorance is seen as being "anti" to our goals. However, I'm finding out more and more that many are actually concerned but just don't know how to go about taking care of their environment. They tend to be quite relieved when they discover that there is an organization such as our's out there to turn to. We are seen as having a wealth of information. It is to our benefit to work *with* them.

For example, the City of Bloomington has called upon us to help in the development of the Leonard Springs Nature Park. From there, the county that Bloomington is in, Monroe, has used some of our knowledge to help revise ordinances involving development in karst areas. It has also been suggested that other counties could use our help as well.

This is just the beginning. The word is getting out to other like organizations, including Audubon, as well. All of the above are also spreading the word that we exist and are available to consult with.

In order to assist with this, I have become certified to teach a cave and karst education workshop known as *Project Underground*. This workshop helps by offering several educational activities for all ages.

One such activity involves a cave and karst groundwater model. This model is based on the ant farm principal -- it includes various layers/strata of ground between two layers of plexiglass. By introducing colored (polluted) water into the sinkhole at the top, observers can see how the water quickly flows to the well intake and back to the surface. Seeing this process really helps to get the point across! Hopefully the IKC can construct one of these demonstration units. Please see the article on the National Cave and Karst Management Symposium (page 6) for a photo and more information.

Would you like to help with any of these items above? If so, please contact me by e-mail, [lindberg@kiva.net](mailto:lindberg@kiva.net) or telephone at 812-849-5766.

Hope you have a safe and happy holiday season.

*Kriste Lindberg*

## NEWS BRIEFS...

- ❑ At the September IKC quarterly meeting, IKC member Tom Willet was appointed the new cave patron for Wayne's Cave. Those interested in arranging a trip to Wayne's should contact Tom several weeks in advance for information and the key. Tom's phone number is 812-332-8004 or [TWillet@earthlink.net](mailto:TWillet@earthlink.net). Grotto members in the BIG, CIG, EMG, MHG, or NIG can also arrange trips through their respective grotto liaison (see page 2).
- ❑ Also at the September meeting, Steve Lockwood was appointed the property manager/committee chair of the Orangeville Rise Property. Anyone wishing to assist Steve by serving on the committee should contact him.
- ❑ Also at the September meeting, Keith Dunlap was appointed the property manager/committee chair of the Sullivan Property. Keith is succeeding Bill Tozer who lead the effort through the initial acquisition phase. Keith is looking for some committee volunteers who are interested in dedicating effort over the next several years both below and above ground. It should be noted that arranging trips into Sullivan Cave or camping on the property should still be done through the cave's patron, Bob Vandeventer.
- ❑ On Wednesday, November 17, Kriste Lindberg gave a presentation to an Audubon group in the Terre Haute area concerning recent projects of the IKC. It included a bit of the history of the organization in addition and was very well received. The participants were quite inter-



ested to learn what we do. They were so inspired that they planned to include the Leonard Springs Nature Park in their monthly field trip on Saturday, November 20! Several of their members have suggested other organizations which they believe could benefit by hearing from us, as well. This is the second presentation we have given to an Audubon group this year and is right in line with our education mission.

□ On Saturday, November 13, Kriste Lindberg and Steve Lockwood attended the Illinois Speleological Society (ISS) and Karst Conservancy of Illinois (KCI) meeting in Carbondale, Illinois. They are in earlier stages of development and we were pleased to learn that they are looking to us for some of their strategies. It's beneficial for all to strengthen relations and have an open line of communication, share ideas, reduce duplication, network, etc.

□ Last year, The Nature Conservancy acquired a conservation easement on Henderson Park which is owned by the city of Salem. Since that time, TNC has been working to restore a sensitive limestone glade (a dry, grassy barren on thin-soil over limestone) located above Mill Cave. The restoration work has consisted of clearing cedar trees and preparing for a controlled burn (drought permitting). A workday on October 16th saw a dozen volunteers, including Keith and Bambi Dunlap, laboring to clear a fire line and removing additional cedars. Restoration work there will continue indefinitely to improve this wonderful natural area.

□ With the completion of seven abandoned mine bat gates this past year by the IKC for the IDNR Division of Reclamation, the IKC is now looking towards next year. Kriste Lindberg, Keith Dunlap, Bambi Dunlap, and Mark Stacy (IDNR) recently visited four potential sites consisting of six gates. We will be discussing this project at the December meeting to decide to what extent we want to commit to build these gates next summer.

□ For those looking for Indiana karst-related publications, the Indiana Geological Survey has just released study 99-10, *Karst Geology, Hydrology, and Water Quality of the Spring Mill Lake and Lost River Drainage Basins in Southern Indiana* by Hasenmueller, Rexroad, Buehler, and Krothe. The 36-page document is in the form of a guidebook with road log depicting various points of interest. Extensive use of photos, color maps, and graphics and an extensive bibliography makes this a good library addition. The publication (OFS99-10) is available from the IGS Publication Sales office at 812-855-7636. Cost is \$10 plus shipping.

□ For another karst-related educational material, the main article in the second issue of *Ohio Geology* for 1999 is entitled "Mapping Ohio's Karst Terrain." The article is six pages long, including graphs; and discusses karst formation in general, karst in Ohio in particular, and provides a short bibliography for further reading. For a free subscription to *Ohio Geology*, contact the Ohio Geological Survey by phone at 614-265-6576 or e-mail to madge.fittak@dnr.state.oh.us. Back issues are available on the web at [http://www.dnr.state.oh.us/odnr/geo\\_survey/oh\\_geol/oh\\_geol.htm](http://www.dnr.state.oh.us/odnr/geo_survey/oh_geol/oh_geol.htm).

□ The IKC recently received a donation of a bound collection of the *NSS News* (12 issues) and the *NSS Bulletin* (4 issues) from 1978. The collection is being auctioned to the highest bidder on our web site (<http://www.caves.org/conservancy/ikc/promo.htm>) with proceeds going towards the IKC's land acquisition fund. The 380-page classic features a black binding with gold embossed lettering on the cover and spine. The book includes divider sheets between each issue, a map pocket with Ogle Cave, plus a bonus caver poem inserted into the middle. The binding alone would cost \$35. The book is in A1 condition with the exception of a few white paint specks on the cover. Bids may be placed by e-mail to [beb@lilly.com](mailto:beb@lilly.com) or use the link from the web page. Note: bidding is restricted to current NSS members.

□ Several donations have been received during the past quarter. A special thanks to George Brutchin, Gene Pelter, Sherry Sloan, Richard Vernier, the East Central Indiana Audubon, and the Western Indiana Audubon. The IKC also received a \$250 donation from the General Motors Foundation in recognition of the volunteer hours put forth by Keith Dunlap.

□ Five new members have joined the IKC in the past quarter. Welcome Michael Green, Tom Kotawski, Wayne Tucker, Sherry Sloan, and Robert Zatarski. The IKC membership now stands at 166.

## NATIONAL CAVE AND KARST MANAGEMENT SYMPOSIUM

by Kriste Lindberg

The National Cave and Karst Management Symposium took place on October 19 - 22 in Chattanooga, TN. It was made possible by the help of the Southeastern Cave Conservancy and many others. They did a very professional job of putting the symposium together and making it a success.

In addition to myself, Kelle Reynolds, our Hoosier National Forest contact, attended the Symposium.

Much information was shared by all. There were a variety of presentations given, field trips led, and workshops to participate and learn from.

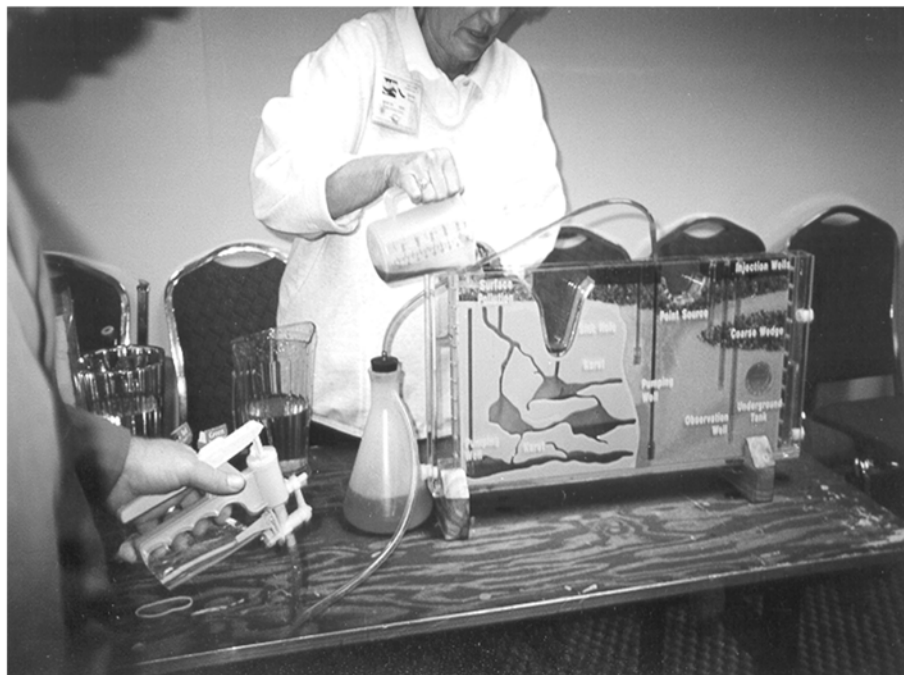
I gave a presentation entitled, "Recent Projects of the Indiana Karst Conservancy." It included work we have done on the IDNR abandoned mine gates, Leonard Springs Nature Park, Hoosier National Forest, and even a little snippet on our most recent acquisition, the Orangeville Rise. It was very well received. Based upon comments and comparison to other conservancies, the IKC is right on track. Actually, we are one of the more progressive ones in terms of how we are organized, what we have accomplished, what we plan to do, and our focus on education beyond the caving community.

In addition to the above, I attended an educational workshop by the name of, "Pro-

ject Underground." The workshop includes various activities to help people deal with caves and karst, including cave life, development strategies, etc. We were busy all day. It was led by Carol Zokaites. Other participants included Patty Daw of Illinois, Dale Pate of New Mexico, Sandy Trout of Arizona, and Hilary Vinson of North Carolina. In addition to learning a lot, we were also certified to teach these workshops in the future.

One of the highlights of the workshop was a cave and karst groundwater model based upon the ant farm principal and includes various ground layers between two layers of plexiglass. Within these layers are such features as sinkholes, caves, underground storage tanks, and wells. Basically how it works is that you pour colored water into the point source (a sinkhole) and pump the well to see how the water moves through the system. Observing this process really helps to get the point across! It will be quite helpful in our educational mission. I am working on funding for one of these structures and hope to have it settled sometime soon.

Following the Symposium, other organizations met, including the Cave Research Foundation, the NSS Board of Governors, and the National Speleological Foundation.



Dale Pate of New Mexico and Sandy Trout of Arizona demonstrating the cave and karst groundwater model.

## ORANGEVILLE RISE WORKDAY

by Keith Dunlap

On September 25th, twenty volunteers gather at the Orangeville rise for the IKC's first workday since taking possession of the property from The Nature Conservancy. Much time was spent walking the three-acre property, picking up trash and other unnatural materials deposited there over the years. We also removed a "swing" rope local swimmers have used to swing out into the rise pool. All totaled, we collected four large trash bags to be hauled away to the landfill.

Another task to be accomplished was the placement of six Nature Preserve signs along the boundaries of the property. These signs, provided to us by the IDNR Division of Nature Preserves, warning visitors and other that the property is protected and that certain activities are prohibited. Hopefully these signs will cut down on unintentional abuse to the property.

The last task accomplished was our familiarization of the boundaries. With the help of Bob Armstrong who assisted with the original survey in 1974, we were able to



Several IKC members excavating for an old survey corner pipe defining the Orangeville Rise property boundary. The pipe was not found.

locate one of the original survey pipes and unsuccessfully dug around looking for a second one. Despite that, we were still able to approximately re-construct the north and east boundaries, allowing the proper location of the boundary signs.

Participants included Bob Armstrong, Bruce Bowman, Bruce Devore, Bambi Dunlap, Keith Dunlap, Kriste Lindberg, Steve Lockwood, Nick Noe, Shawn Noe, Ernie Payne, Tom Rea, Gladys Reece, Larry Reece, Danny Rice, Gretchen Schenk, Bob Sergesketter, Ron Sergesketter, Rob Thomas, Richard Vernier, Sue Vernier, Jamie Winner, and Robert Zatarski.

Note: We encourage *all* members who might be in the area to stop by and visit the Orangeville Rise and report any questionable activities/observations to Steve Lockwood, the property manager for this IKC property.



One of the six Nature Preserve boundary marker signs installed during the September workday.

## LEONARD SPRINGS NATURE PARK UPDATE

by Kriste Lindberg

On a beautiful Monday morning, October 18, the Leonard Springs Nature Park was officially dedicated. Over thirty people gathered for this special event, including the Mayor of Bloomington, heads of Bloomington's Parks and Recreation, local landowners, and others. The dedication began with speeches and ended with a tour of the grounds. During the speeches, the IKC, the Bloomington Indiana Grotto, and the Eastern Indiana Grotto, were thanked for their help in the development of the park.

The next day, a well-written article came out in the local paper, *The Herald-Times*, featuring the dedication as the main article on the front page for the day (see below). It included a photo of yours truly talking with local residents in front of the reservoir and within the caption it mentioned the IKC. There was also a little map to the park (but not to the caves!).



Photo of Bloomington Mayor John Fernandez pitching the first shovel of dirt during planting of a Bur Oak tree at the LSNP dedication on October 18.

In addition to the information in the article, as far as the caves are concerned, we are taking a low impact approach. For example, we have put up a simple split rail fence in front of Shirley Springs Cave, have built an observation deck in front of Shirley Springs Shelter Cave (you can see the entire 45 feet of the cave from the platform), and have stressed cave conservation in the signage. We hope this works. If there are signs of abuse, we will take more stringent measures. Let's keep our fingers crossed. This has been and continues to be an interesting study in human/nature interaction.

As far as the future of the park is con-



Split-rail fence at the opening of Shirley Spring Cave in the Leonard Spring Nature Park.

cerned, we are planning to do more work with education, including teaching classes for groups including schools, developers, and agencies; restore vegetation with native plants, build observation decks for the wetlands and dam overlooks, clean up and develop a new trail system on the west and south sides of the reservoir, compile an oral history of the area via local landowners, etc. Also, recently we learned that the Ohio Valley Region is interested in helping with the above as part of their conservation project for next year. We look forward to partnering with them to strengthen relations and improve the quality of the park.

If you would like to help, please contact me at [lindberg@kiva.net](mailto:lindberg@kiva.net) or 812-849-5766.



The nature trail observation platform outside Shirley Spring Shelter Cave. This will allow visitors to see the cave without having to enter it.



## Nature in charge of new park -- Beyond roads and restroom, little human interference planned at Leonard Springs

by John Meunier

The 83-acre Leonard Springs Nature Park west of the city is open for visitors, but the city's work isn't quite done.

The one-mile trail is marked, but still needs some work. The interpretive signs are ready, but not yet in place. The composting restroom has yet to be installed.

Putting on the finishing details will continue into the spring.

But the real work of managing the park doesn't belong to a city employee.

The wooded slopes and limestone outcroppings, the caves and the beaver-dammed wetland where Leonard Springs and Shirley Springs come together before dumping into Clear Creek have all been returning to their natural state for 50 years.

"Mainly, we'll just be letting this site take care of itself," said Steve Cotter, natural resources coordinator for the

Bloomington Parks and Recreation Department at a Monday morning dedication ceremony.

"It's been healing for several decades and it will continue to do so," he said, "We'll just let nature manage the park."

The site of grain and saw mills in the early 1800s, the Leonard Springs area was one of Bloomington's primary water sources for much of the first half of the 20th century.

The porous limestone of western Monroe County never held water well, however, leading to the need to develop Griffy Lake, Lake Lemon, and Lake Monroe over the years.

Since the area reservoirs ceased operations in the 1940s, the land has slowly returned to its natural state.

In 1998, the Bloomington Utilities Service Board gave the land to the Bloomington Parks and Recreation Foundation.

With the help of a \$133,452 Hometown Indiana grant from the Indiana Department of Natural Resources, the city has con-

structed a stairway and paths and built a gravel roundabout large enough for school buses.

The grant will also help pay for first-year maintenance costs in the park.

The terms of the grant ensure the park will remain a nature preserve in perpetuity, according to the DNR's Bob Bronson, who spoke at the dedication ceremony.

The Hoosier Hikers Council and the Indiana Karst Conservancy have helped the city develop the park.

Kriste Lindberg, president of the Karst Conservancy, will continue to act as Leonard Springs trail supervisor.

The park will be open for use from dawn until dusk all year round.

School groups and others can schedule walking tours guided by naturalists by calling the parks department at 812-349-3700.

Reprinted with permission from the Tuesday, October 19, 1999 issue of *The Herald-Times*.

## SULLIVAN PROPERTY UPDATE

by Keith Dunlap

With the tough part behind us (owning the cave and property free and clear), we are now in the "fun" phase of implementing the management strategies outlined by our Sullivan property management plan. This middle phase will take several years to complete before we reach the "maintenance" phase where we attempt to enjoy and protect the resources (both cave and surface) while minimizing our financial and labor resources.

As you will see, much of the activities related to our management strategies focus on the surface. This is not to downplay the importance of the cave, but is a reflection that the IKC and hundreds of Indiana cavers

have already spent the past *ten* years working to restore it, while little attention has been given to the above ground.

The largest (and most expensive) task has already been completed. That was the installation of the new driveway providing permanent access to the existing lane from the highway (this was necessary because we sub-divided the house from the rest of the property, losing access from the existing driveway). Installation of the driveway was contracted out after it was determined it was a larger job than we could do with volunteer labor and rented equipment. Steve Lockwood headed up this task by obtaining



quotes from four vendors. Dott's Excavating was awarded the job and spent two days in September grading 225 tons of fill dirt and 60 tons of crushed rock into a driveway. We also had the contractor replace the two existing culverts (one rusted out, the other collapsed and plugged) on the existing lane and re-grade/put down new rock the entire length (approximately 400'). Keith Dunlap, Bambi Dunlap, and Kriste Lindberg finished the project by sowing grass and fertilizing the disturbed areas.

The new driveway will allow access to off-highway parking, access for maintenance activities, and access for camping. The management plan allows primitive camping in the central clearing, but this privilege is extended only to IKC members and their guests. Generally only one group will be allowed on a first-come, first-served basis with arrangements made through Bob Vandeventer.

Two major projects will be tackled next spring. We hope as part of Under-Earth Day to rent a 20 cu-yd dumpster and raze the old travel trailer and remove other trash on the property.

Secondly, we hope to start a re-forestation

project by planting 400 trees in the western clearing. By re-planting this clearing and the ridge top clearing (1500 trees in 2001), we will be eligible to enroll the property in the Classified Forest program to reduce our property tax liabilities.

In summary, there is still a lot of work to be done in the cave and on the property, but members should also take advantage of enjoying both. Contact Bob to arrange a trip into the cave or stop by on your own to explore the 28 acres above ground.

Photos by Kriste Lindberg and Larry Reece



View of new driveway looking north (towards SR 54) during construction. Two culverts were installed under the driveway for drainage.



View of new driveway looking south (SR 54 is at your back). The driveway snakes between the existing trees to intersect the old lane (where van is).

# POPULATION TRENDS OF INDIANA BATS IN INDIANA

by Keith Dunlap

As part of the recovery plan for the federally endangered Indiana bat (*Myotis sodalis*), biennial population counts are made to assess the status of the bat. In this article, I will present the cumulative data systematically collected over the past ten censuses (1981-1999), along with some historic data dating as far back as 1950. The majority of the recent data has been amassed by Dr Virgil Brack, originally as part of his PhD work in the early 1980's, and more recently under contract with the Indiana Department of Natural Resources. The exceptions are the population figures for Batwing and Twin Domes caves which were censused under the direction of Richard Clawson of the Missouri Department of Conservation. Clawson is the USFWS Indiana Bat Recovery Team leader and since 1981 has been responsible for censusing the original seven Priority I caves in Indiana, Kentucky, and Missouri.

The table below represents the summary of over 170 cave visits to twenty-eight different caves documented to have had Indiana bats in recent years. In addition, another

twenty-four caves have been visited one of more times over the past eighteen years to look for Indiana bats without success (although four caves have historic records).

It is interesting to note that most of the active hibernacula have been "discovered" in the last twenty years, many originally reported by cavers. Most of these new caves have small colonies that do not contribute much to the overall population; nevertheless, these caves could be significant in the long term recovery of the species.

The table lists the caves in descending order of colony size based upon the most recent census. Studying the right-most column of the table, one can see that two-thirds of the state's population is in just two caves, while over 90% of the population hibernate in just five caves.

The Indiana bat (*Myotis sodalis*) was one of the first species to be protected under the 1973 Endangered Species Act. The reason for the bat's listing was the well documented observations of population declines in the seven major hibernacula known at the time

## RECENT POPULATIONS OF MYOTIS SODALIS IN INDIANA CAVES

CAVE NAME	1981	1982/83	1985	1987	1989	1991	1993	1995	1997	1999
Ray's Cave (Greene)	12500	13475	16200	22990	28581	41854	38386	41157	51365	62464
Twin Domes (Harrison) <sup>1</sup>	98250	70750	56650	79650	70800	78500	87350	78875	67100	59775
Wyandotte (Crawford)	2152	4550	4627	6681	10344	12994	17304	23878	25424	26854
Jug Hole (Harrison)				5535	6424	7640	13924	12463	20741	11900
Batwing Cave (Crawford) <sup>1</sup>	29950	26650	14750	17450	14500	13150	9350	9300	7400	10125
Coon Cave (Monroe)	1190	550	777	2950	2103	3696	4451	4455	4786	6341
Grotto Cave (Monroe)	3190	2692	4198	3778	2985	1996	1568	2018	2435	4361
Parker's Pit (Harrison) <sup>2</sup>		(500)		1803	1104	926	1045	1276	1139	(987)
Saltpeper (Crawford)		352		427	295	508	375	647	577	800
King Blair/Brinegar (Monroe) <sup>3</sup>				(12)			442	514	663	453
Endless Cave (Washington)		2		1		134	335	450	404	403
Wallier Cave (Harrison)						36	72	465	409	381
Clyfty Cave (Greene)		66		198	412	357	307	299	369	379
Robinson Ladder (Crawford)					(95)	388	376	219	326	223
Nichols Cave (Orange) <sup>4</sup>							(200)			
Panther/Neyman (Washington)								86	156	167
Binkley Cave (Harrison)									84	
Leonard Springs (Monroe)					135	112	92	82	92	81
Sexton Spring Cave (Greene)						(0)	67	117	98	75
Saltpeper (Monroe)		(83)		(19)		221	245	175	136	40
Mitchell Quarry (Lawrence)						9				31
Swinney Cave (Harrison)									(11)	29
Wildcat Cave (Crawford)		29		0		31	61	34	48	19
Buckner Cave (Monroe)		488	301	336	24	51	25	41	15	6
Achcraft Cave (Greene)							20	28		3
Bentz Cave (Crawford)		0			3					
River Cave (Washington)		104		5		1				2
Salamander Cave (Monroe)		74		0		0			1	
<b>TOTAL (adjusted)<sup>5</sup></b>	<b>155800</b>	<b>127000</b>	<b>105500</b>	<b>143000</b>	<b>138900</b>	<b>163100</b>	<b>176000</b>	<b>176800</b>	<b>184000</b>	<b>188200</b>

<sup>1</sup> Censused by Richard Clawson for the USFWS.

<sup>2</sup> Partial census in 1983 by Michele Wright. Partial census in 1999.

<sup>3</sup> Partial census in 1987 - Brinegar Cave only.

<sup>4</sup> Censused by Scott Johnson & Keith Dunlap in 1992; permission denied on subsequent attempts to visit cave.

<sup>5</sup> For the purpose of comparisons, populations for non-censused (or unknown) caves were estimated to give an adjusted total.



in Indiana, Kentucky, and Missouri.

Looking at the overall populations from twelve states which have wintering Indiana bats, there was a decline of 56% from 1960 to 1997. If you exclude Indiana, the drop is even more dramatic at 73 percent. Indiana appears to be the only major bright spot for the species with the 1999 population probably the highest in modern history. In the past 40 years, Indiana has gone from having approximately one-fifth of the winter population to having over one-half.

Figure 1 shows the estimated “adjusted” Indiana bat population in Indiana hibernacula for the period from 1981 to 1999. As can be seen, since 1985 the population has been gradually increasing. It should be noted that this increase is *real*, not just the result of more caves being included in the census.

Looking at population trends in individual caves is interesting in that several caves have been showing consistently increasing trends, others caves have been generally decreasing, while the remainder have undeterminable trends or there has not been enough data collected to make a determination. (*I should state a disclaimer here that all the trend predictions made in this article are unscientific and represent a relatively*

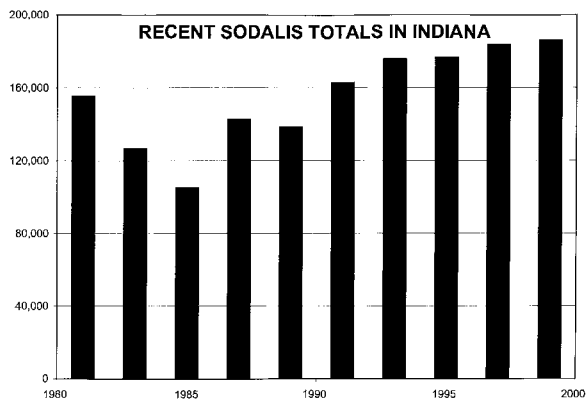


Figure 1

*short sampling period which may or may not reflect anything significant.)*

Recent Indiana bat populations in Twin Domes cave (figure 2) have fluctuated up and down over the past twenty years, but has shown a definite decrease during the last three census. The 1999 population was the second lowest ever recorded and is cause for concern since this cave’s population is such a large component of the total population. For the first time, Twin Domes is no longer the largest hibernacula in Indiana.

Perhaps the biggest disappointment among Indiana hibernacula has been in Batwing Cave (figure 3) where the population has decreased almost every census since the cave

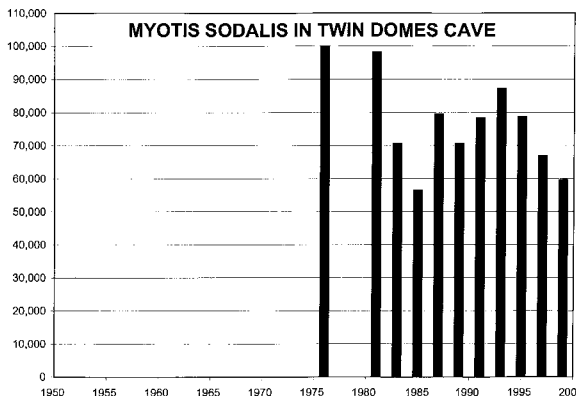


Figure 2

was originally found to be a hibernacula in the mid-70’s. The 1999 census did show a slight increase compared to 1997, but it’s still only one-fifth of the population compared to 1977. While it is conceivable that the gate installed in June of 1988 could be part of the problem, the design has proven successful in other situations (including Wyandotte). It is also speculated that increased entrance debris may have restricted airflow causing the cave to warm sufficiently to be a marginal habitat (temperature monitoring equipment was installed in 1998 to test this hypothesis). The latest explanation for the decreasing population is the observation that the bottom of the cave floods occasionally. In the spring of 1996, heavy rains caused water to back up into the cave to an estimated depth of 36 feet which was sufficient to drown at least several hundred bats (this observation was made in August of 1996).

Wyandotte Cave is an interesting contradiction in resource management. While it serves as an ever increasingly significant hibernacula, it is also a commercial tourist cave run by the Department of Natural Resources. Large populations of bats have been documented in this cave for over one hundred years (in fact, the *sodalis* was first classified as a separate *Myotis* species in this cave and thus the “Indiana” designation). Numerous gates have been placed on the cave with different degrees of air flow restrictions. A 1953 report by Mumford estimated the population at 10,000 bats (see figure 4). However, just a few years later and



after a solid stone wall gate was installed, the population was only one-tenth that size. The population fluctuated around 2000 bats until the late 1970's when the original gate was replaced with a more open grate-type gate. It is presumed that this partially restored the pre-gate airflow into the cave, providing a better winter habitat. Since 1981, the population has increased to over 26,000 (number 3 in Indiana). The gate replacement in July of 1991 apparently has been acceptable to the bats and may have further improved airflow into the cave, witnessed by a significant increase the past five counts.

Just a short distance north of Wyandotte Cave is Saltpeter Cave. While the number of bats hibernating there is small compared to its neighboring caves just discussed, it is nevertheless an important cave for Indiana bats and was probably a very significant hibernacula historically (Merlin Tuttle, personal communication). Figure 5 shows a general seesaw, but increasing trend that hopefully will continue.

Previous research supports the observation that Indiana bats are very habitual in using the same hibernacula year after year. But with the population increasing so fast at

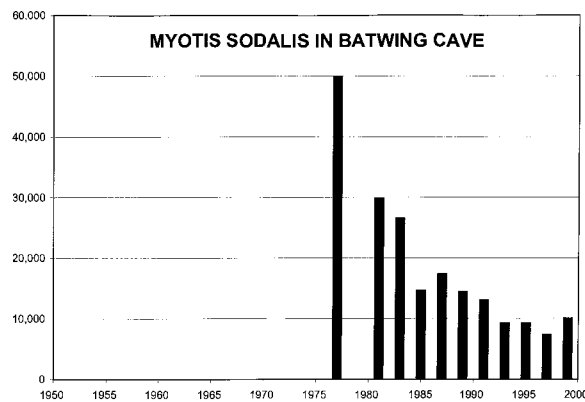


Figure 3

Wyandotte while similar decreases are being experienced at nearby Batwing and Twin Domes, one can only speculate that at least some transferring is occurring. To better quantify this Wyandotte area meta-population, figure 6 shows the combined numbers from Twin Domes, Batwing, Wyandotte, and Saltpeter caves which accounts for approximately half of the total Indiana population. It can be observed that the population appears to be much more stable and indicates that the number of bats hasn't really

changed much over the past ten census. It is my hypothesis that the majority of new bats in Wyandotte are migrating from Batwing and Twin Domes because Wyandotte has

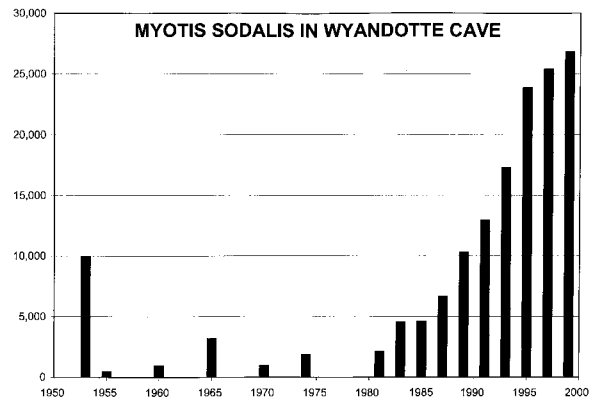


Figure 4

now become a better hibernacula with its airflow restored. Since banding Indiana bats is disallowed and recovering banded bats in Wyandotte would be difficult anyway due to the inaccessibility of the bats on the high ceilings, the question of bat inter-cave transferring may go unanswered.

Of the other caves in the Harrison/Crawford area, Jug Hole is of the greatest importance with the fourth largest population. First censused in 1987 with 5500 bats (see figure 7), the populations in 1989 and 1991 showed modest increases, but nearly doubled in 1993 to almost 14,000 bats. The 1995 census showed a slight decrease, but the cave took another large jump to over 20,000 in 1997. The 1999 census dropped the population back to numbers more consistent with 1993 and 1995. Thus the population here seems quite variable, although part of this may be explained by the difficulty of estimating cluster sizes on the high ceilings in this cave.

Figure 8 shows the number of bats counted in Parker's Pit. This is another difficult cave to census, not in counting the bats per se, but in getting the "counters" to the bats. The 1987-1997 counts include all areas from the entrance pit to the e<sup>i</sup> Room. The 1982 count (performed by Michelle Wright) and the 1999 count included only the entrance pit area and the room below the second drop (just before the S-bend). On the whole, since 1989, the population in Parker's seem to be relatively stable.

The final cave in the Harrison/Crawford area to highlight is Wallier Cave, southeast of Laconia. The 1991 and 1993 census in-



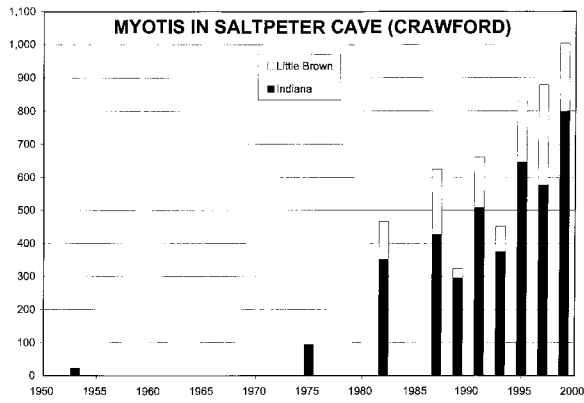


Figure 5

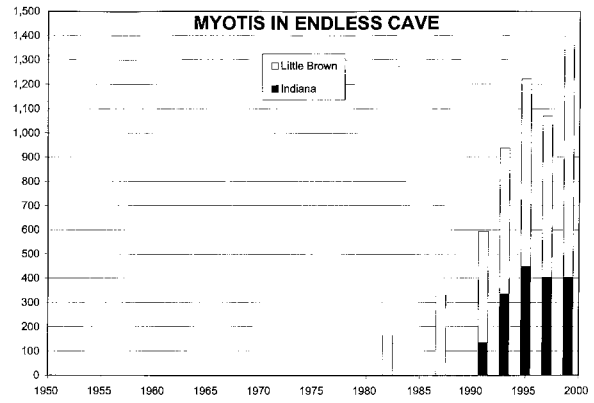


Figure 9

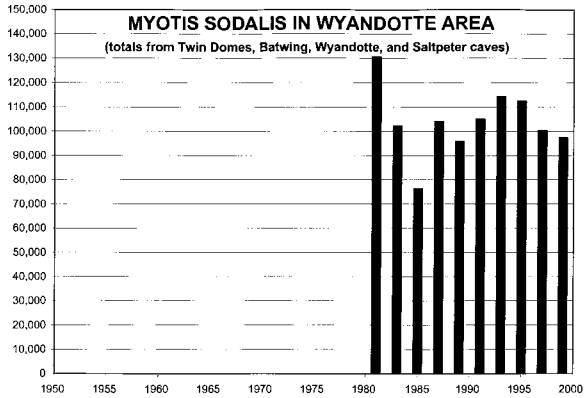


Figure 6

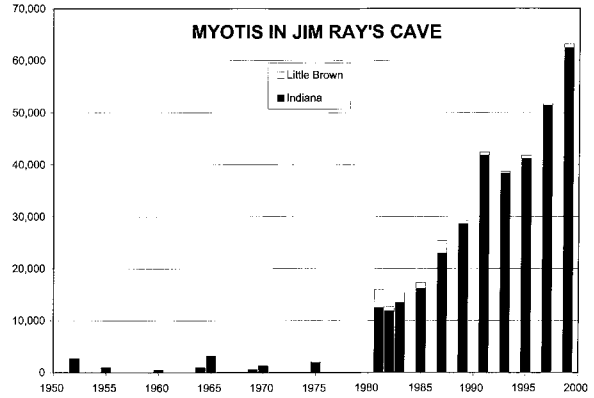


Figure 10

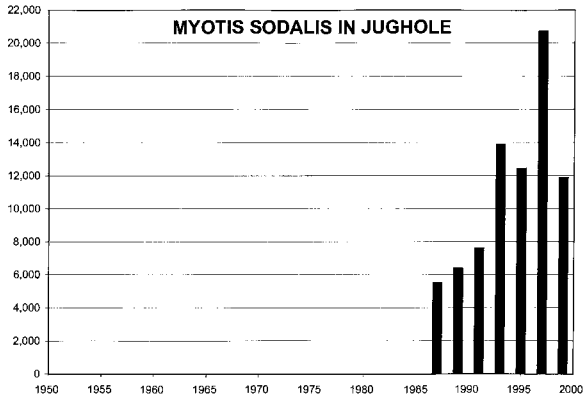


Figure 7

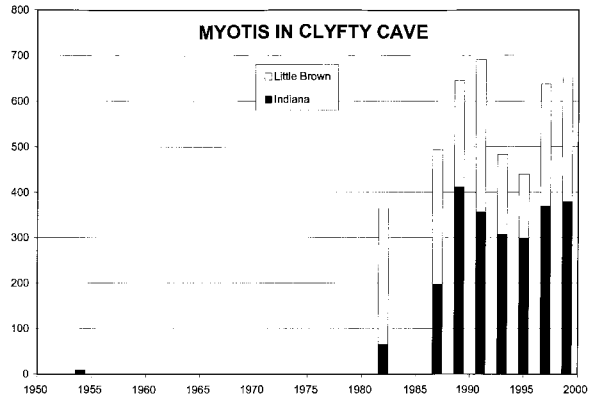


Figure 11

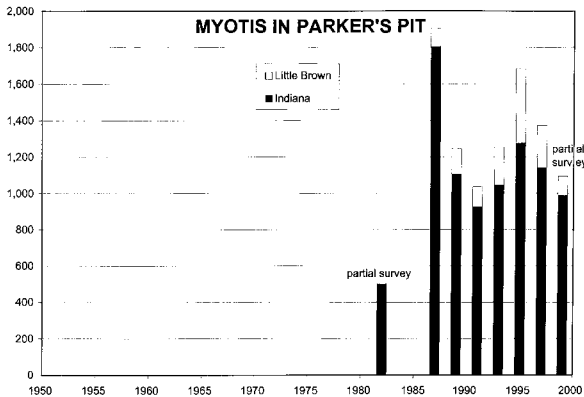


Figure 8

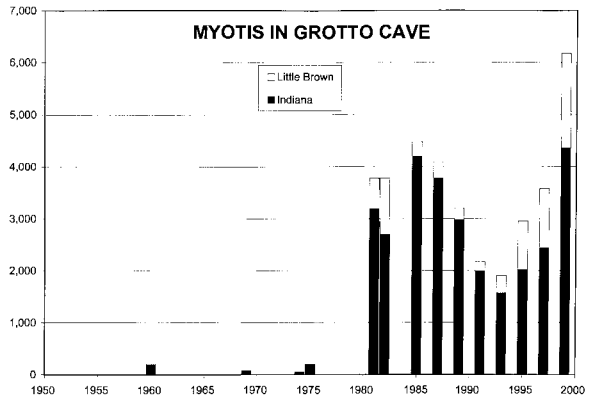


Figure 12



cluded 36 and 72 Indiana bats respectively. The 1995 through 1999 counts were 465, 409, and 381 bats. It is unclear what caused this significant jump in 1995 or where these additional bats came; and there are no other known hibernacula even remotely close. It will be interesting to see what the future holds for this cave.

Moving north to Washington County is Endless Cave in Cave River Valley. Visits in 1982 and 1987 found only 2 and 1 Indiana bats, respectively (see figure 9). However, the last five counts have shown an encouraging population of both Indiana and Little Brown bats.

Jim Ray's Cave in Greene County has had remarkable population growth in recent years (see figure 10). Historic records by Mumford and others showed the cave's population never exceeded 3200 bats in nine visits between 1952 and 1975. Brack's visits in the early 1980's showed the population had jumped to approximately 12,000 Indiana bats and several thousand Little Brown bats (*Myotis lucifugus*). In 1987, 1989, and 1991, the population exploded, topping out at almost 42,000 Indiana bats (making it the second largest hibernacula in Indiana). In 1993, the population decreased slightly, but rebounded slightly in 1995 and made another large jump in 1997 to over 50,000 bats. In

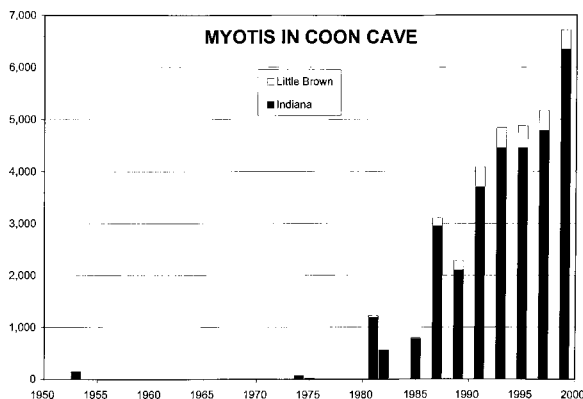


Figure 13

1999, the population jumped again to over 62,000 bats, now making Ray's Cave the largest hibernacula in Indiana and likely the largest single hibernacula *anywhere!*

There is no clear explanation for the dramatic population increases, but two contributing factors may have played important roles. First it is known that a medical researcher from IU was illegally collecting perhaps thousands of bats each winter dur-

ing the 1970's. This may have kept the population below some critical level to grow. Second, the "rear" entrance to the cave may

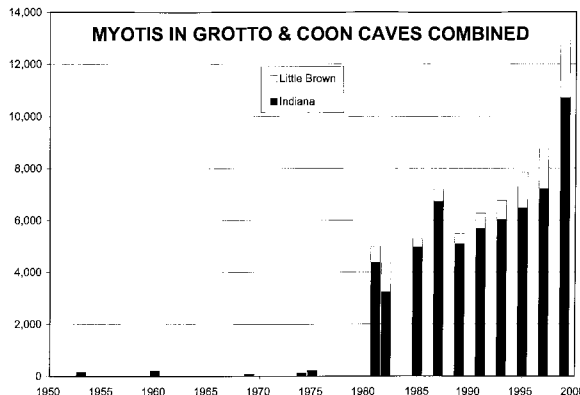


Figure 14

have naturally enlarged itself over the past twenty years, allowing more airflow to cool the cave, and thus making it a better hibernacula. Currently there are two a winter temperature study being conducted in Ray's (one by the DNR/IKC and one by BCI) to see if there is anything obvious to make this such an ideal cave for Indiana bats.

Approximately five miles to the north of Ray's is Clyfty Cave. Figure 11 shows a bat population that appears relatively stable over the past six counts.

Moving to Monroe County, Grotto Cave has been another puzzling hibernacula. Historic records showed very small populations in the 1960's and 1970's (see figure 12). However, in the early 1980's Brack reported significant numbers of Indiana and Little Brown bats. The cave peaked in 1985 with 4200 Indiana bats and then decreased the next four census to a low of less than 1600. In 1995 and 1997, the populations finally rebounded slightly, and in 1999 the numbers jump significantly to a new high of 4300 Indiana bats and 1,800 Little Browns. The Little Brown count is significant in that it's likely the largest winter cave population anywhere in Indiana.

The "sister" cave to Grotto is Coon Cave located less than one-half mile away. It too had historic records in the 1950's through 1970's of only a few hundred bats (see figure 13). Brack's observations in the early 1980's were around 1000 bats. Since 1985, the population has increased significantly and exceeded 6300 Indiana bats in 1999. In the early 1990's when Grotto's population was dropping as Coon's was increasing, it was



speculated that this might be another instance of inter-cave migration. However, looking at the combined numbers for Grotto and Coon (figure 14) shows that the meta-population appears to be consistently increasing with a significant jump in 1999.

The last cave in Monroe County for which there is long term data is Buckner Cave. Historically Buckner has had a stable popu-

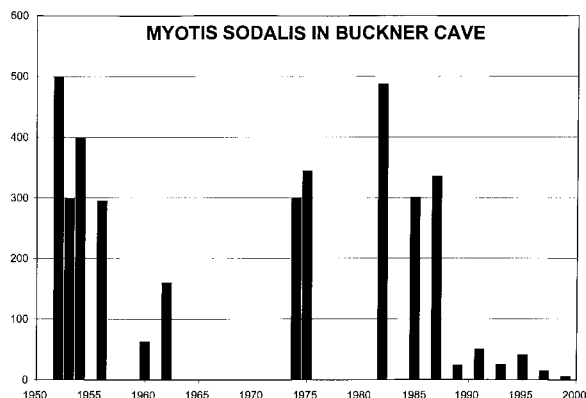


Figure 15

lation of 300 to 500 bats in its entrance room (see figure 15), but since 1989 there has not been more than 50 bats found. Obviously repeated disturbance could be blamed, but the sudden drop between 1987 and 1989 would be more indicative of a single-event, intentional or accidental eradication (e.g., shotgun or entrance room campfire). The six bats found in 1999 pretty much tells the story. There is little hope for this hibernacula unless there is a significant change in the winter visitation policy for the cave.

There are other interesting observations and speculations that can be made from this census data, but in reality the number of sample points are still too few and the time durations are too short to truly make any meaningful conclusions. Perhaps in another twenty years of systematic censusing, definitive trends can replace general speculations.

IKC members who participated on the 1999 bat census were Keith Dunlap, Tom Sollman, Bambi Dunlap, and Steve Collins. Scott Johnson (DNR) coordinated the project.

## HNF/IKC KARST PROJECT UPDATE

by Kriste Lindberg

The HNF/IKC Karst Project Training Session that took place on Saturday, October 16, went off without a hitch. Over twenty people attended. The day began with presentations - talks were given by some of the best people in their respective fields of Indiana cave research, including:


Archaeology - Patrick Munson (IU)  
 Biology - Julian "Jerry" Lewis  
 Geology - Sam Frushour (IGS)  
 Hydrology - John Bassett (Earth Tech)  
 Paleontology - Ron Richards (ISM)

After the talks, we proceeded to do some hands-on fieldwork in Elrod Cave near Wesley Chapel Gulf. Everyone had a good time and learned a lot. Dr Lewis even discovered a new critter in the cave. Video tapes of the morning presentations are available -- contact either myself or Kelle Reynolds at 812-275-5987 if you would like to view the tape.

Just a few days after the training session, Kelle and I took off for the National Cave and Karst Management Symposium (see also

the National Cave and Karst Management Symposium article, page 6). She spent most of her time networking with other federal agency personnel in various meetings, presentations, and workshops they had planned as well as in others. She learned quite a bit and made several invaluable contacts. Apparently, other national forests are planning on implementing a cave/karst program similar to what we are.

Also of special note is the overall HNF Management Plan Revision. The HNF is required to revisit their plan every 10 to 15 years and the HNF plan is 14 years old (although it underwent a major amendment in 1991). The revision process will take several years to complete and they are now soliciting comments on what needs to be changed. Those currently working on it from the IKC include Keith Dunlap, Bruce Bowman, Richard and Sue Vernier, Steve Lockwood and myself. There are many organiza-

...continued on page 20 



## INDIANA KARST CONSERVANCY TREASURY REPORT

### Income/Expense Statement From July 1, 1999 to September 30, 1999

INCOME:	
Dues Apportionment and Residuals	635.00
Donations - General	16.37
Aluminum recycling	18.17
Spelogger sales (6 units)	594.00
Transfer from restricted funds	2788.78
Interest	43.31
	<u>43.31</u>
	\$4,095.63
EXPENSES:	
IKC Update (printing, production, mailing)	219.78
Membership (postage, meeting notices, etc)	96.37
Conservation/Management/Education	60.72
Liability insurance	437.00
Spelogger construction (6 units)	535.37
Sullivan driveway and road maintenance	5868.84
Sullivan property asset increase (see note 1)	-3737.78
	<u>-3737.78</u>
	(\$3,480.30)
NET OPERATING EXCESS (DEFICIT) THIS PERIOD:	<u>615.33</u>

### Balance Sheet September 30, 1999

ASSETS:	
Cash in Checking Account	2050.69
Cash in Savings Account	10374.91
Accounts receivable (DNR speloggers)	297.00
Sullivan Property (see note 1)	72000.00
Orangeville Rise Property	TBD
	<u>TBD</u>
	<u>\$84,722.60</u>
LIABILITIES & OPERATING EXCESS:	
Hancock Property Maintenance Fund	104.69
Indiana DNR Nongame Fund	134.00
Sullivan Restricted Fund (see note 2)	0.00
Land Acquisition Restricted Fund	875.00
Deferred Dues Restrctited Fund	1627.50
Hat Fund (excluding 4 hats in inventory)	251.76
Previous Operating Excess	81114.32
Net Excess (Deficit) This Period	615.33
	<u>615.33</u>
Current Operating Excess	81729.65
	<u>81729.65</u>
Total Liabilities & Operating Excess	<u>\$84,722.60</u>

#### NOTES:

- 1) Part of the cost of the driveway was assumed to increase the overall book value of the Sullivan property. The new book value is set at \$72,000.
- 2) With the completion of the driveway, the Sullivan Restricted Fund has been depleted and will be abolished. A total of \$71,033 was collected in donations while \$74,131 has been spent to date on the property.

## IKC QUARTERLY MEETING MINUTES

Saturday, September 25th, 1999

Mitchell, Indiana

### BOARD MEMBERS PRESENT:

Bruce Bowman  
 Bruce DeVore  
 Bambi Dunlap  
 Keith Dunlap  
 Kriste Lindberg  
 Nick Noe  
 Tom Rea  
 Bob Sergesketter (by proxy Ernie Payne)  
 Tom Sollman  
 Bill Tozer (arriving late)  
 Richard Vernier  
 Kathy Welling (by proxy Steve Lockwood)

### BOARD MEMBERS ABSENT:

James Adams  
 Ronnie Burns  
 Bob Vandeventer

The September meeting was called to order at 5:20 PM at the home of Steve Lockwood, President Kriste Lindberg presiding. Introductions were made. Proxies for Bob Sergesketter (Ernie Payne) and Kathy Welling (Steve Lockwood) were accepted.

The minutes of the June Quarterly meetings were approved as published in the September issues of the *IKC Update*.

Treasurer Keith Dunlap reported \$13,968 in cash assets. With the Sullivan driveway complete, the Sullivan Restricted Fund has been depleted and will be abolished. We are still in very good financial shape considering we just finished a major land purchase project.

K Dunlap reported on the DNR abandon mine project. A total of seven gates were constructed over two weekends. The project went very well with tremendous volunteer support. The DNR coordinator (Mark Stacy) was very pleased with the results and our professionalism. The IKC netted \$3734 on the project which was above our target of \$500/gate.

K Dunlap reported on the Hancock Property workday held August (reported in the September *IKC Update*). The two routed signs along Spicer Lane were updated with our correct address (Bruce Bowman did the routing) and repainted. Trash was collected and the cave entrances were inspected.

K Dunlap reported on the Orangeville Rise workday just completed (the afternoon of the September meeting). Considerable trash was picked up, six Nature Preserve boundary signs were installed, and we attempted to locate some of the boundary corners.

Steve Lockwood discussed the completion of the driveway on the Sullivan Property. The contractor did an excellent job of installing the new section (including two new culverts), replacing the two old culverts (one rusted through, the other completely plugged), and regrading/adding rock to the old section of the driveway. To get the proper grade and side slopes on the new driveway as specified by InDOT, it took another 80 tons of fill dirt above the 140 tons quoted (approved by Lindberg and Dunlap). This and some other minor changes increased the total cost to \$5833. This was above the \$5000 motion passed at the June meeting. Bruce Bowman moved and Nick Noe seconded to approve the remaining \$833 payment. Motion passed 11-0-0.

InDOT has inspected the driveway and it passed. K Dunlap and B Dunlap have sowed grass seed and spread fertilizer on the shoulders, then covered with straw (all we need is rain!).

K Dunlap reported that he has talked to Lloyd Lucas (adjoining property owner) who reported that several people have turned into our new driveway, then exited via the old driveway across his property. We have temporarily "fixed" the problem by placing some boards on cement blocks across the drive at the property line, but a permanent fix is needed, such as two sections of split-rail fence. Steve Lockwood indicated he had the needed materials in his shed and would donate them. K Dunlap will see that they get installed.

K Dunlap reported on a meeting several board members had with the DNR district forester on the Sullivan Property. In order to enroll the entire property in the Classified Forest program, the western and ridge top clearings would need to be planted in trees. Dunlap proposed that for the upcoming year, 400 trees be planted to reforest the western clearing (the larger ridge top clearing would be



planted in 2001). The cost of the trees and first year mulching would be approximately \$200. K Dunlap moved and Rea seconded to allocate \$200 for this project. Motion passed 11-0-0.

The final discussion item on the Sullivan Property was the construction on the informational kiosk. Bruce Bowman offered to take on the task of designing and constructing the kiosk.

There was a thorough discussion on strategies for management/stewardship of our leased and owned properties. Tom Rea proposed that there should be a separate committee for each owned property, headed by a Property Manager, with additional committee members as necessary. Bruce Bowman proposed that there should be a single Management Committee to oversee all the properties. There were also discussions on the leased caves and the roles of the current cave patrons. After additional discussion, K Dunlap made a final proposal of having individual committees (headed by a Property Manager) for owned properties, and individual Patrons for leased and owned caves (the patrons being the main contacts for cave access). Each property committee could have committee members as needed. This proposal was generally accepted by the majority of the board. Since this proposal was just a confirmation/clarification of the current mode of operation for our caves/properties, it was decided no motion was required.

Bill Tozer announced that he would like to step down as the chairman of the Sullivan Property Committee, having accomplished the initial goals of purchasing the property, fundraising to pay for the property, and oversee installing the driveway. Bill nominated K Dunlap to become the new committee chair/Property Manager of Sullivan. The board confirmed the appointment 12-0-0.

Tom Rea moved to form a Orangeville Rise Property Committee to oversee the stewardship of this new property. Approved 12-0-0.

Bambi Dunlap nominated Steve Lockwood for the Orangeville Rise Property Committee chair/Property Manager. Bruce Bowman indicated he also would be interested in the position. A secret ballot was taken. Steve was appointed.

Bill Tozer gave the board an update on the negotiations he was pursuing with a cave

owner (all board members had been informed of this project previously). While initial discussions seemed promising, little progress has been made recently.

K Dunlap informed the board of a landowner contact he had made in the past month concerning purchase as part of the Land Acquisition Committee activities.

Kriste Lindberg has been communicating with a realtor serving on the Board of Realtors for Monroe/Owen. The realtor would like to have our "sinkhole" brochure as well as other karst related material to put in a welcoming packet for new home/landowners in karst areas.

Kriste Lindberg reported that she has been in discussions with the Monroe County Planning Committee. They are proposing some changes to their regulations concerning karst. The communications have been friendly and she will attend a hearing on September 28th.

There was additional discussion on our ability to become aware of pending legislation concerning karst and how we can successfully react in a timely manner. Currently we use the Hoosier Environmental Council for keeping up on what's going on in the State house.

Bruce Bowman reported on the status of Reprint #10. Barring unforeseen circumstances, the reprint should be ready for distribution with the December *Update* mailing. It was also noted that K Dunlap needs to re-print more IKC brochures.

K Dunlap reported on the new-style speloggers that Dick Vernier developed using Onset event dataloggers. Dick built six of them for the Indiana DNR to monitor unauthorized visitation to Indiana bat caves during their closure period. Five of the six speloggers were deployed in four caves this past fall along with the old-style speloggers. If successful, the IKC may offer/market these devices to other agencies.

Several bylaw changes were tabled from the June meeting. However, it was questionable if the board could consider these changes at this meeting because notification was not specifically announced per our bylaws. It was decided that these bylaw considerations would be postponed to the December meeting so that proper notification could be given.

Lindberg postponed the "office upkeep" discussion until the December meeting since

Secretary Jim Adams was not there to participate in the discussion.

Lindberg has a new e-mail address Lindberg@kiva.net.

As advertised in the September *IKC Update*, a new patron for Wayne's Cave is needed, pending Serena Smith's resignation due to her moving. Two potential candidates were identified. Charles Cummings and Tom Willet, both of Bloomington. After discussion the two candidates, Tom was appointed. K Dunlap will provide Tom with keys and paperwork.

Lindberg reported that the Leonard Springs Nature Park will have it's official dedication on October 18th. She has been working with the city of Bloomington on this park for the past six months.

Lindberg provided status reports on a number of activities related to the Hoosier National Forest. The IKC provided significant comments on the draft for Wesley Chapel Gulf

Special Interest Area management plan. The overall HNF Management Plan is also up for revision. This will take several years to complete and the IKC and our members will be involved as necessary. There will be a HNF cave/karst training session on October 16th. This will be a good one-day refresher course for most experienced cavers.

The IKC has one more auction item for the Sullivan Property funding. Member Jack Wood donated a sterling-silver "carbide" necklace he crafted. There was a standing bid of \$40 received from the web posting...that escalated to \$75 at the meeting. The Sullivan fund-raising project is now officially complete.

The next meeting will be hosted by Bill Tozer in the Anderson area. Bill will forward details.

The meeting adjourned at 7:30 PM. The annual cookout followed.

Submitted by Keith Dunlap, acting Secretary

Continued from page 16...

tions and individuals competing for the use of the land, including those with an interest in using trails for conflicting purposes. While our primary focus will be on caves and karst, it is crucial that we participate in the bigger picture of protecting the over all ecol-

ogy of the forest. This means allying with many other groups to leverage our voice and mission.

If you would like to help with this, please contact me at lindberg@kiva.net or 812-849-5766.

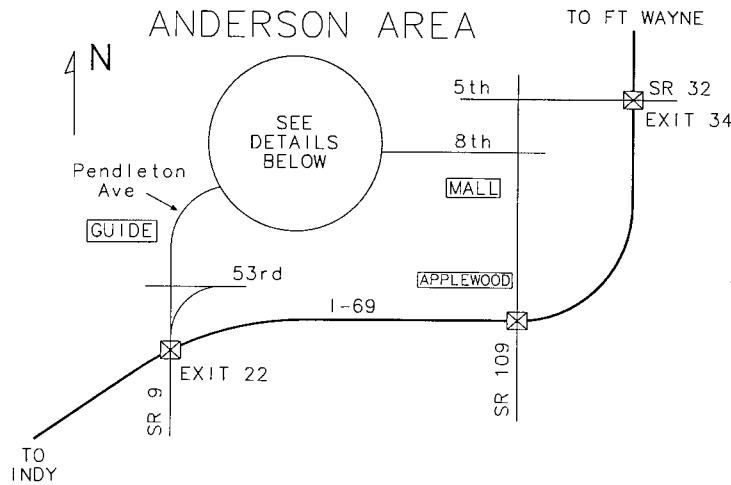
## IKC EXECUTIVE BOARD NOMINATIONS

As the end of the year approaches, it is time to start thinking about the upcoming March elections. The three officer (President, Secretary, and Treasurer) and six of the twelve Director positions are up for a vote. All members are eligible, with the only requirements being the willingness to be involved and to attend the five meetings each year (the four Quarterly meetings plus the February Board meeting). Officer positions are single year terms while the Director terms are two years in duration. Contact Kriste Lindberg for more information, to nominate yourself, or to suggest other IKC members who might be interested.

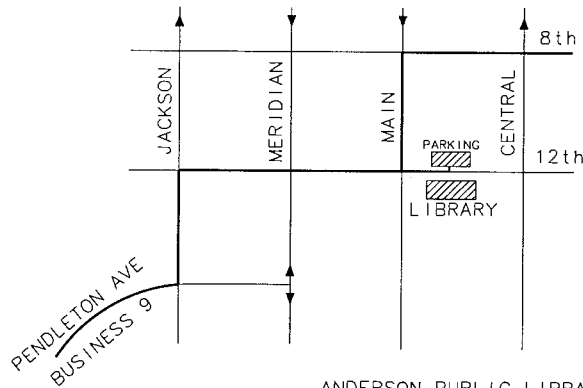
# QUARTERLY MEETING REMINDER

## SATURDAY, DECEMBER 4th, NOON

### ANDERSON PUBLIC LIBRARY



### ANDERSON DOWNTOWN



ANDERSON PUBLIC LIBRARY  
 SAGAMORE ROOM  
 111 E 12th ST  
 DEC 4th, NOON to 2 PM

**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.

