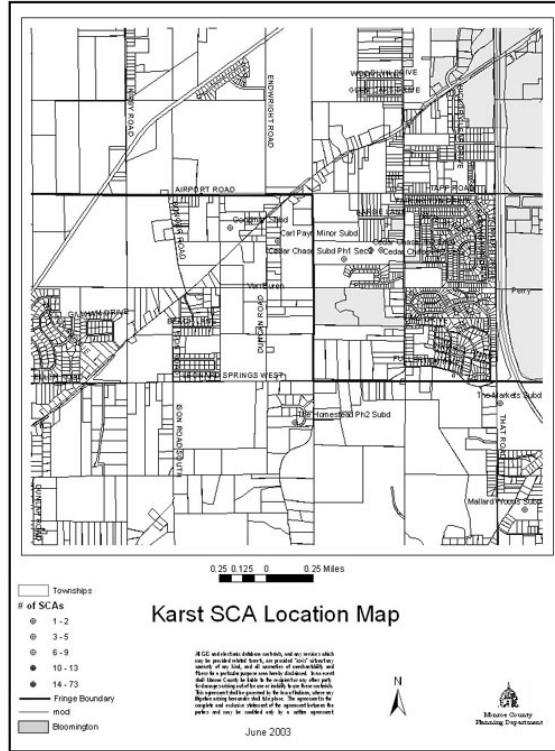


# CAVE CONSERVATION IN INDIANA

- Kriste Lindberg

Natural Features Inventory: Karst, Karst SCA  
(Sinkhole Conservation Area) Location Map  
- Monroe County, Indiana, U. S. A.



Greetings from the United States! The following are a few tips on conservation that have helped us here in Indiana. As you can see, they can be helpful anywhere karst is present!

In the March 2003 *NSS News*, I described the Indiana Karst Conservancy's (IKC) education and outreach highlights of 2002. Our efforts focused primarily on the Bloomington area.

The topics included activities in association with Project Underground (cave and karst education) at Leonard Springs Nature Park (LSNP – a Bloomington Parks and Recreation property focusing on karst conservation and education) and beyond, WonderLab (a regional science museum) and other venues, the Storm Drain Marking Program (SDMP – which focuses on man-made drainage as compared to caves which are nature's drainage), Hoosier Riverwatch (water quality monitoring), etc.

In 2003, additional progress was made in these areas and more. The accomplishments have been positively impacting other areas around the country, as well.

For example, a Project Underground workshop was taught for the Hoosier Heartland Resource Conservation & Development Council (HHRC&D) along with the City of Bloomington and has set a precedence for more to be given at related agencies

such as soil and water conservation districts. (Incidentally, in August, I was appointed to the board of Project Underground.) I am working with the Indiana Department of Natural Resources (IDNR) as part of a focus group to help them develop a statewide SDMP clearinghouse, as well as with a few of the state's 92 individual counties.

In addition, staff and I from WonderLab developed and presented a week-long educational program on karst, "Caves, Crystals, and Critters" (see photo), she and fellow IKC Director Don Ingle represented the IKC at an outreach event which The Nature Conservancy (TNC) hosted at the IDNR's Wyandotte Woods property, and the annual City of Bloomington/Monroe County EarthFest conveniently focused on water - *Water: Go with the Flow*.

It was held at the county's Karst Farm Park and included fieldtrips to LSNP – drainage from the former leads to the latter, approximately three miles away.

Speaking of drainage, a group of local agencies has been put together by Monroe County to work on the Environmental Protection Agency's Phase II (storm water quality) requirements. This focus group includes the county as well as the City of Bloomington and Indiana University.

A committee has been formed to address the educational component – the Storm Water Environmental Education Team (SWEET). It is invaluable for us to work together on these and related efforts! By doing so, we do not duplicate efforts but rather draw upon each other's strengths to create a whole that is stronger.

By working *with* various groups, agencies, and others, we can help each other to reach mutual goals. This article explores not only what has been done so far, but how to do it.

Creative solutions can be met by having an open mind and by being flexible. We believe that individuals and organizations can be healthy, adaptive, and conducive to growth such as learning more about our natural resources and dealing with them in a conservation-minded manner.

In order for a change in behavior to take place, though, the following sequence of events needs to occur:

Awareness → Education → Acceptance

Once someone is aware of something, they can learn more about it and be more receptive to the change that needs to take place. Working *with* them is key, not *against* them.

As complex systems, we need to take the human aspect into account – it helps to incorporate intellectual, emotional, physical, and spiritual

dimensions in order to create a balance that is conducive to such a positive change. Time can be a big ally, too.

We have found over the years that most people and organizations do not want to harm karst, they just need to know the consequences of actions which may adversely effect it, and what they can do to prevent the problem.

Education can be a great way of helping them with this process as it can be seen as neutral, thoughtful, and a non-threatening way to get the point across. See below for a few of our more notable achievements using this philosophy, including those that pertain to Geographic Information System software, and ultimately quality of life, as it can be used to visualize areas in order to protect natural areas and reduce sprawl.

An up and coming challenge for us is in the area of planning and zoning issues, including working with associated surveyors, engineers, contractors, developers, and so on, as that is where decisions are made on land use such as whether or not to use conservation-minded methods including best management practices – setbacks from karst features, buffer zones, etc.

In order to do so, I was appointed to the Bloomington Environmental Commission by the Mayor of the city. In addition, she now also serves on the commission's Planning Subcommittee. This committee interfaces directly with the Planning Department. The city lies in a transition zone with karst being on the west side.

One of the tools used by the municipality, developed by the Planning Department, is the *City of Bloomington Environmental Resource Inventory (COBERI)*. "The primary purpose of the report is to collect and analyze information on Bloomington's natural environment in an effort to help prioritize areas for future management and/or preservation." Simply put, it brings together the analysis of various natural resources into a comprehensive plan.

For example, "Karst geology has a profound influence on land uses and development in Bloomington. In the past, Bloomington's karstic landscape has influenced the location of municipal water supplies, public infrastructure, as well as building and development locations. The map (above) illustrates the general locations of large karst areas in Bloomington and surrounding areas". Note: LSNP is the site of a former city water reservoir, in use from approximately 1914 – the mid 40s; it did not hold water very well (literally) due to being constructed in karst terrain, therefore, as the city expanded, subsequent reservoirs were placed on the east side where the land is more conducive.

Bloomington is part of Monroe County. The county's *Natural Features Inventory: Karst, Final Report, August 2003*, developed by the Planning Department, states, "Karst is recognized as a highly valuable, non-renewable resource that can be

especially vulnerable to disturbance, more so than many other land resources.

The primary reason for this higher level of sensitivity is the three-dimensional nature of karst. Karst can provide benefits such as a source of drinking water in rural areas, tourism and recreation opportunities (i.e. Karst Farm Park), and opportunities for scientific and educational research (Geographical Survey of Ireland 2002)." And, "The various potentials for endangering public health are key concerns associated with development in karst terrains.

Thus, careful attention and recognition of areas that are highly susceptible to potential contamination are what the Natural Features Inventory can provide to the staff and County as development and growth continues in high-risk karst areas".

(Overall, if the community accepts how the land use effects them personally, they will be more willing to make necessary adjustments to their lifestyles in order to protect the natural resource in question). To assist in creating these reports, both of which were completed in 2003, GIS software was utilized.

It assists the agencies in producing maps and overlays of "spatial data", including natural features, population, political jurisdictions, land use, and so on. The information can, in turn, be used by a variety of entities that need it in order to make decisions on land use. See the websites for City of Bloomington and Monroe County:  
<<http://www.bloomington.in.gov/planning/>>  
<<http://www.co.monroe.in.us/planning/>>

Two different GIS software systems are currently being used by the city. The city started in the early 1990s by using GenaMap and soon the county was doing the same. Then, the county switched over to ESRI GIS and mapping software. Both systems are working well for the two entities and information can be transferred between them.

USDA Forest Service award – "Enhancing and Protecting the Nation's Natural Resource Base" –  
Kriste Lindberg, Dr. Julian "Jerry" Lewis, Kelle Reynolds (Photo: Bob Vandeventer)



Young people practicing their engineering skills during a Project Underground activity at WonderLab's "Caves, Crystals, and Critters" (Photo: Kriste Lindberg)



Both are continually working on learning more about karst features in their respective areas and including it in their systems. Using GIS to edit and store the data makes it possible to more easily maintain the information, keep it current, and distribute it when needed. Both governments are also working on strengthening zoning concerns involving karst.

The above have become important topics in the area, particularly as development is starting to encroach further and further into karst areas, mainly because they typically left as the last to be developed due to being particularly sensitive and challenging.

We are on a quest to assure that the features receive minimal impact. Care is being taken to protect particular locations, such as using color-coding to specify density. The Indiana Geological Survey and Indiana Cave Survey have helped tremendously in this endeavor.

In February, we, along with members of TNC, Hoosier National Forest (HNF), and St. Joseph Valley Grotto, assisted the state's largest newspaper, the Indianapolis Star, in producing an article on the acquisition of one of the state's longest and most biologically diverse caves, the Lost River Cave system (see newspaper clipping).

It soon led to a television spot. Both were great outreach opportunities that focused on the sensitivity of the land and the importance of its protection as society expands.

Other venues to spread the conservation word, particularly in the area of agency partnerships, included conferences. I attended and presented on the subject, *Creative Partnerships for Karst Protection*, at the Indiana Cave Symposium, an EPA

conference on Drinking Water Protection in Karst Terrain: A Groundwater Conference & Field Seminar in Virginia, the National Cave and Karst Management Society in Florida, and several other outlets.

In August, Bob Vandeventer (fellow IKC Director) and I, and several others interested in cave education from around the country, attended the first annual Education Luncheon hosted by the NSS Education Division Chair, Amy Bern, at the NSS Convention in Porterville, California.

It was a friendly, relaxed atmosphere to meet and network with this newly-revised division. There is much potential and good progress is being made!

In September, Indiana Cave Survey (ICS) Director/Bartholomew County Surveys Coordinator Ray Sheldon, and I, partnered to present on karst location and conservation techniques at an Indiana Society of Professional Land Surveyors, Greenville Treaty Line meeting. This joint effort was very well received - they were impressed with how well organized the caving community is!

The foundation for a mutually beneficial trust was built. The result is that they would like to work more with us on preserving karst locations, setbacks, additional outreach to related organizations such as engineering firms, etc. We have already been contacted to do more with them and related firms.

To cap off the year, we were informed that a cave biology study on the Lost River Cave system, conducted by Dr. Julian "Jerry" Lewis as part of the HNF/IKC Karst Inventory Project, received the USDA Forest Service Eastern Region Honors Award for "Preserving and Enhancing the Nation's Natural Resources Base".

I accepted the award on behalf of the IKC and her speech included the statement, "Thank you especially for recognizing the value of our nation's sensitive karst areas." Conservation-minded persons from the entire multi-state region and beyond were present.

It is our intent to reach more individuals and organizations with positive conservation messages such as these and to strengthen them along the way - all those mentioned are interrelated in this quest; systems such as GIS help pull them together and disseminate them in a conducive manner.

In the coming months, education and outreach efforts, many of which will include components of Project Underground if not complete workshops, will be conducted at the 2004 National Cave Conservancies Forum, with the HHRC&D and various related soil and water conservation districts, and of course at various planning venues including those involving surveyors, engineers, contractors, developers, and so on. A karst component is also being considered for Hoosier Riverwatch.

Thanks to *everyone* who has helped with these endeavors. Special thanks to IKC's Don Ingle and

Bob Vandeventer, Ray Sheldon of the Indiana Cave Survey, and agency partners Latika Bhide, Josh Campbell, Steve Cotter, Jason Eakin, Joey Fagan, Lynne Friedmeyer, Sam Frushour, Laura Haley, Sharon Hall, Todd Stevenson, and Carol Zokaite.

Take care and I hope to see you next year in New Zealand!

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**“HOW TO”** - Below are a few key points on what it takes:

- **Get involved!** Understand hot topics such as water quality in karst areas... or create one.
- Be *proactive*, not reactive.
- Be a *team player* – it adds to resources and increases expertise in different areas. You can get more done when you work together... Be as neutral as possible and keep the big picture in mind – natural resource conservation.
- *Network* – you can meet all sorts of interesting folks with similar interests.
- Align yourself with those that “can do” and be one of them.
- Be *open-minded* – Realize that people are in positions for a variety of reasons.
- *Communicate effectively* - simply and in a timely manner! In all forms – electronically, by phone, in person... Never ignore a communication; people will begin to mistrust your ability to get things done.
- Be *direct, open, honest, and upfront* - call it like it is and cut to the chase.
- Be a good *listener*.
- Be *diplomatic* and *fair* - people will respect you for it. There again, neutrality helps.
- *Include others* and *give credit* where it's due.
- *Coordinate* – share information and help each other.
- Remember *body language* counts. Make eye contact – a knowing glance – smile ☺ That

can go a long way, even in rough times. It's not all clear sailing...

- Take time to think things through... *If you have questions, ask!* Don't make assumptions – ASSUME (makes an A\*\* out of U and ME).

In the words of conservation media producer/director, Dave McGowan, “It's a difficult position to be in but it's more effective to prevent problems and be annoying than to be stoic and deal with disasters.”

- *Don't take things too personally* - most reactions are a form of projection from others.
  - *Be there* for each other! We're not all perfect - sometimes we have bad days. However, if someone(s) having too many, make alternate plans.
  - Recognize signs of dysfunction – inconsistency, ignoring, distancing, withholding, anger, passive aggression, making things up, backstabbing... (Don't burn bridges by being dysfunctional yourself - trust is key!)
  - Take time to (try to) fix the problems.
  - *Give things time* – some things take lots of it!
  - *Forgive* and don't hold grudges. People *can* truly change for the better.
  - Keep good *records*. You may need to refer back to something...
  - Overall – keep a *positive attitude and good sense of humor*... They are helpful – you can turn something bad into something good and even break the ice.
  - Be *flexible* – If something doesn't go to plan, no biggie... deal with it *constructively*, it may be for a good reason.
  - *Do what you can*. Sometimes you may need to cut back, especially if things are right and they snowball... be careful of avalanching. Delegate if you need to.
  - Strike a good *balance* and do your best!
  - *Grow* with it!
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\* Kriste Lindberg, an ACKMA member, is a Director of the Indiana Karst Conservancy and Chairman of its Education and Outreach Committee.

